

EXHIBIT J

Site Assessment Report

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SITE ASSESSMENT REPORT ECOPOWER GENERATION LLC

MERCHANT ELECTRIC POWER GENERATING PLANT AND TRANSMISSION LINE

Pursuant to KRS 278.708

ecoPower Generation LLC supervised and approved the preparation of this Site Assessment Report.

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1.0 DESCRIPTION OF PROPOSED FACILITY(KRS 278.708(3)(a))

ecoPower Generation, LLC is a Kentucky limited liability company formed in May 2009. ecoPower intends to build and operate an approximate 50 megawatt renewable fuel electric generating plant (the Project) in Perry County, Kentucky. The plant will utilize atmospheric fluid bed combustion technology and will be fired with wood waste (saw dust, bark, wood chips, tip wood, low quality logs etc.). A 69 KV transmission line will be constructed to transmit the electric power generated by the facility to the American Electric Power Engle substation, approximately one mile from the Project.

The proposed site is depicted on **Figure 1 Site Location Map**. ecoPower proposes to construct the facility approximately 10-miles north/northwest of Hazard, Perry County, Kentucky. It will be situated on 125-acres of a reclaimed coal mine in the Coal Fields Regional Industrial Park located off US Highway 15. The facility layout is shown on **Figure 2 Conceptual Site Plan**. The proposed facility will include several buildings including: a boiler building; a turbine building; a wood hog building; a chipper building; a warehouse/shop building; a service building and the following equipment:

- One fluidized bed boiler (FBB) with a maximum heat input of 672 mmBtu/hr (fired exclusively on biomass with propane available as the startup fuel), and a steam turbine generator with a nominal gross output of 50 MW;
- One propane fired auxiliary boiler;
- An air cooled condenser;
- Material handling systems that include, but are not limited to, two truck dumps, receiving hopper, conveyors, roads, storage piles, silos, screens, wood chipper, and wood hog;
- Ancillary equipment (i.e., emergency generator, fire water pump, and fuel tanks); and
- A 69 KV transmission line approximately one-mile long.

The boiler and steam turbine generator will produce a nominal 50 MW-gross electrical output. The FBB will be designed to generate 450,000 lb/hr of steam, operate at 950°F and 1,800 psig, and have an air cooled condenser to reduce water use. The boiler will be fired by blended biomass that includes bark, wood chips, chipwood, and sawdust. A propane-fired auxiliary boiler will be utilized to provide steam during startup of the main boiler.

A planned 1,600 kW, diesel-fired emergency generator and a 450 hp, diesel-fired emergency fire water pump will be used in emergency situations (i.e., interrupted

electrical supply, wood fires) at the facility. Diesel storage tanks for these two units, as well as a tank to supply diesel fuel for facility heavy equipment will be located on site.

ecoPower also proposes to construct a 69 KV transmission line sufficient to transmit the electric power generated to the American Electric Power Engle substation. The substation is located at the entrance to the Coal Fields Regional Industrial Park, a distance of approximately one mile from the proposed site boundary. The transmission line will exit the ecoPower property at its southeast corner and will traverse south-southeast over currently-existing easements or easements to be acquired for this purpose. The location of the proposed generating plant and transmission line are depicted on **Figure 3 Setback, Site Layout and 2000-Foot Vicinity Map** and on **Figure 5 Transmission Line Route and 1-Mile Vicinity Map**.

1.1 Condition of the Site

ecoPower selected the proposed site as the best alternative in an extensive search for an appropriate location for the Project. The site is located within a defined industrial park. It is an appropriate size and has access to adequate service and transportation assets for the Project. The site is located within a fuel supply area that will enable ecoPower to obtain adequate fuel for the Project in accordance with sustainable forestry practices.

Upon identifying the site, ecoPower conducted appropriate due diligence to confirm that the site could be used for the Project and did not contain obvious evidence of releases or threatened releases of hazardous substances.

A Phase I Environmental Site Assessment was conducted and the resulting report is included as **Exhibit J1 Phase I Environmental Site Assessment**. The Phase I evaluation consisted of site observation, interviews of site contacts with information about the history and use of the property and research of available public records. The report concluded that there was no evidence of the release or threatened release of hazardous materials on or adjacent to the site.

1.2 Surrounding Land Uses

The Project will be located on approximately 125-acres of land which has been previously surface mined and reclaimed for industrial use. The Project is located within the Coal Fields Regional Industrial Park in Perry County, Kentucky. The industrial park is located on a mountain ridge above US Highway 15, approximately 10 miles north/northwest of Hazard, Kentucky (refer to **Figure 1 Site Location Map**). The site is located approximately 1 mile south of the intersection of Tenmile Creek Road and Highway 15 and is not within the boundaries of any city.

The Coal Fields Regional Industrial Park contains both developed and undeveloped industrial tracts. Developed tracts and their locations relative to the Project are listed below:

<u>Adjacent Industrial Occupant</u>	<u>Distance and Direction From Project</u>
Sykes Communication	Approximately 2,000-feet southeast
AOD Transport, Inc.	Approximately 2,500-feet southeast
Weyerhaeuser	Approximately 3,000-feet southeast
M.B. Lumber Company	Approximately 3,000-feet southwest
American Woodwork	Approximately 4,500-feet south southeast
Pine Branch Coal Sales	Approximately 5,000-feet south

The areas surrounding the Industrial Park are rural and consist of active and reclaimed mining operations, wooded areas and scattered residences. The Wendell H. Ford Airport is located over a mile distant to the northeast of the site on the east side of State Route 15. Other small commercial, industrial and service entities within two miles of the Project are generally located along State Routes 15 and 28.

The nearest incorporated community is Hazard, Kentucky, approximately 10 miles south. Nearby unincorporated communities are: Lamont, approximately 2.75 miles southwest; Rowdy, approximately 1.75 miles northeast; and Chavies, approximately 5 miles southwest.

Residential Neighborhoods and Structures

There are no residences or “residential neighborhoods” in close proximity to the Project. The closest residential structures have been indicated on **Figure 4 2-Mile Site Vicinity Map**. No residential structures are located within 2,000 feet of the Project, measured from the proposed location of the stack, in accordance with KRS 278.704(2). The closest residential structures depicted on **Figure 4** include a trailer within the Industrial Park, located 3,000-feet to the south of the Project and residential structures located along Tenmile Creek to the north and Highway 15 to the east at a distance of over half a mile. The residences along Highway 15 and Tenmile Creek are located at a substantially lower elevation than the Project and are isolated from a view of the Project site.

Figure 4 also depicts those residential neighborhoods located within a 2-mile radius of the facility, centered on the facility stack. Various scattered residences are located along State Route 15, Tenmile Creek and Grapevine Creek within the 2-mile radius of the Project.

“Residential neighborhood” is defined by KRS 278.700(6) as “a populated area of five (5) or more acres containing at least one (1) residential structure per acre”.

Most of the areas marked as residential neighborhoods consist of houses located along Tenmile Creek, Highway 15 or Highway 28, making the identification of an appropriate “residential neighborhood” more difficult. Two residential neighborhoods, located to the east of the Project across Highway 15, adjacent to the airport, consist of small clusters of houses located in a planned development. ecoPower has been conservative in defining areas as meeting the definition of residential neighborhood and has included any area that potentially meets the definition.

Schools

There are no schools within 2 miles of the proposed Project. The nearest school is the Chavies Elementary School approximately 3.5 miles southwest of the Project.

Hospitals and Nursing Homes

There are no hospitals, clinics or nursing homes within 2 miles of the proposed project. The nearest hospital, clinic and/or nursing home is located in Hazard approximately 7 miles away.

Public and Private Parks

There are no public or private parks within 2 miles of the proposed Project. The nearest public parks are in Hazard, approximately 7 miles away. The closest state park or nature preserve is Buckhorn Lake State Park, approximately 10.75 miles west of the Project and the nearest federal park or nature preserve is the Daniel Boone National Forest, approximately 25 miles northwest of the Project.

1.3 Legal Boundaries

ecoPower has entered into an option agreement with the Coal Fields Regional Industrial Park Authority, Inc. The Option Agreement is included in **Exhibit A1 Site Option Agreement** and contains the legal description of the Project property. A property survey map is included in **Exhibit A2 Property Survey**.

1.4 Proposed Access Control

ecoPower understands the critical importance of access control for a power generating facility. The facility will operate 24-hours a day and therefore access will be managed at all times. The Project will be fenced with access through two gates at the southern end of the site. The gates will be monitored at all times.

Access will be granted to employees, fuel delivery trucks and documented visitors and vendors.

1.5 Location of Facility Buildings and Transmission Lines

Figure 2 Conceptual Site Plan identifies and provides the relative locations of various proposed structures to be constructed for the Project. **Figure 5 Transmission Line Route and 1-Mile Vicinity Map** depicts the location of the transmission route from the Project to the Engle Substation. **Figures 6 and 7** provide detail of the location and construction of each transmission structure.

1.6 Location and Use of Access Ways, Internal Road and Railways

Access to the site has not yet been constructed. **Figures 2 and 3** depict access and internal roadways. There is no rail access to the site. Access to the Industrial Park is by Coalfields Industrial Drive from State Route 15.

1.7 Existing or Proposed Utilities to Service the Project

The Project will be serviced by the following utilities:

Electric:	American Electric Power
Water:	City of Hazard (8" and 12" service lines)
Sewer:	City of Hazard (8" and 10" service lines)

The design of the project calls for air cooling, which substantially reduces potential water needs from those of a water cooled system. As a result of this design decision, ecoPower plans to obtain all process and other water from the City of Hazard, pursuant to an agreement provided in **Exhibit A4 Water Supply Agreement**. In the event of an interruption in service from the City of Hazard water supply, ecoPower has designed water holding tanks as part of the Project which will immediately supply the approximately 35-gallons per minute demand of the process.

ecoPower has identified two secondary sources of water for use in the event water supply from the City of Hazard becomes unavailable. The first option for water supply will be the Hollybush impoundment (MSHA ID No. 1211-KY07-07089-01) which is located approximately 4000-feet to the northeast of the Project. This impoundment was constructed in the 1980's as a slurry impoundment and is maintained by Lexington Coal Company (LCC) KY, LLC. In the past, it has been maintained to service Pine Branch Coal Company in the immediate area. However, the impoundment no longer supplies water to the coal company. According to an Annual Drainage Certification completed by CBC

Engineers in June 2009, the maximum design storage capacity of the impoundment is 258.9 acre feet, or approximately 84.36 million gallons of water. The June 2009 certification indicated that the impoundment was estimated to contain 68.4 acre-feet of sediment reducing the estimated storage volume to 190.5 acre-feet or 62.07 million gallon. Review of the Discharge Monitoring Records (DMRs) for the impoundment's outlet (Outlet #644) indicated measured flows from January 2008 through June 2009 ranging between 16 and 45 gallons per minute.

ecoPower has conducted initial inquiries to determine the requirements to access the water and has conducted water quality sampling to identify the type of pretreatment that will be required to use the impoundment for process water. Copies of analysis information and data are included in **Exhibit A5 Hollybush Impoundment Data**.

The second option for water supply is the groundwater present beneath the site within the overburden emplacement. Preliminary geotechnical investigations for foundation design were conducted in 2009 and encountered substantial water resources within the fill material at the site. Preliminary calculations indicate these resources will be adequate to supply the low volume required by the process. A more comprehensive study with several test wells is being designed to confirm the preliminary data.

Waste water discharge is similarly low volume and ecoPower plans to discharge to the City of Hazard subject to a pre-treatment agreement which will be entered into as the potential wastewater constituents are developed during final design tasks. The city of Hazard representatives have confirmed that the system has sufficient capacity to accept the wastewater from the Project.

Electric service to the Project will be accomplished through the proposed transmission line, using a transformer to allow the Project to access service.

1.8 Compliance with Applicable Setback Requirements

KRS 278.704 (2) applies to the Project. This regulation states that the exhaust stack of the proposed facility should be at least one thousand feet from the property boundary of any adjoining property owner and two thousand feet from any residential neighborhood, school, hospital or nursing home facility.

The located of the proposed Project stack is located more than 2,000 feet from any residential structures or neighborhoods, schools, hospitals or nursing home facilities; and, therefore the project is in compliance with the 2000' setback requirement.

The stack is, however, less than 1,000 feet from adjacent properties owned by two separate owners. The properties within the 1000 radius are depicted on **Figure 3, Setback, Site Layout and 2000-Foot Vicinity Map**. Portions of the Coal Fields Regional Industrial Park, located directly south of the Project, are within a 1000-radius from the proposed Project stack location. These lots were previously surface mined and are vacant, waiting for industrial development in accordance with the purpose of the Industrial Park. A portion of property owned by Mountain Properties, Inc., located to the west of the Project, is within the 1000-radius. This property is vacant and was previously surface-mined, as was the majority of the immediate area.

KRS 278.710 (4) allows the board to grant a deviation from these setback requirements if the proposed facility is designed and located to meet goals of other applicable statutes (KRS 224.10-280, 278.010, 278.212, 278.214, 278.216, 278.218, and 278.700 to 278.716) at a distance closer than those specified above. Both of the above listed property owners are aware of the plans for the property and have expressed their support for the Project (See **Exhibit D**).

The legislative history and statutory language of the statute suggest that the primary purpose of the setback requirements is to protect the assumptions and expectations of property owners who had no reason to expect the construction of a merchant power plant near their property.

As both property owners are aware of and in support of the proposed Project, the applicant requests that a deviation from the setback requirements be issued based upon a finding that the proposed project is designed and located to meet the goals of applicable statutes at a distance closer than 1,000 feet.

1.9 Evaluation of Noise Levels

An Environmental Noise Impact Study was prepared for the Project (**Exhibit J2 Noise Impact Study**) by Smith Management Group. This study was performed and the data evaluated by David Johnson, P.E. and Kevin Chaplin, Industrial Hygienist. The purpose of the study was to assess existing ambient noise levels, predict environmental noise emissions during operations and determine the probable impact on existing ambient noise levels and potential receptors.

Data describing the noise generated from various equipment proposed for the Project was gathered by Sargent & Lundy, the Project engineers. That data is included as an appendix to the Noise Impact Study in **Exhibit J2**. Ambient noise levels were monitored at selected locations on the property's perimeter boundaries closest to potential receptors. Continuous monitoring was conducted over a 24 hour period beginning on November 19, 2009 and concluding on November 20, 2009. Data from the ambient monitoring was propagated to other

locations around the property perimeter or beyond to develop a baseline for ambient noise and to determine the level of noise that may be perceived by nearby receptors. Locations of monitoring points and the modeled receptor points are shown on mapping within the Noise Impact Study.

Noise modeling was conducted to predict the environmental noise emissions during normal power generation facility operation, which excludes construction period noise and intermittent facility activities such as start up and shut down. The measured ambient noise levels were compared to propagated power generation facility noise levels intruding at the monitored locations to determine the probable impact on existing ambient noise levels.

The Noise Impact Study used an Ldn of 55 dBA as a guide. "Ldn" requires a day/night noise level average over the sampling time with 10 decibels (dB) added during the hours of 10:00 PM and 7:00 AM. This accounts for a greater expectation of quiet during nighttime hours and greater sensitivity of residences to noise during nighttime. According to the EPA, noise levels are sufficient to protect public health and welfare if they do not exceed an Ldn of 55 dBA outdoors in sensitive areas such as residences, schools, and hospitals. It was noted that there are no sensitive areas in proximity to the Project site.

No mitigation measures will be required if the proposed facility's intruding operational noise levels do not exceed EPA's 55 dBA Ldn guideline or cause a significant increase (greater than 3 dBA) over existing ambient noise levels and above EPA's 55 dBA Ldn guideline. Noise Measurement Location #1 had an intruding noise Ldn of 57.8 dBA from noise emission point #20, while all other propagated noise levels at the other locations were at or beneath the EPA 55 dBA Ldn guideline.

Data gathered and generated indicates that no sensitive receptors will be impacted by noise levels above the EPA guideline. At this time, absent specific noise regulations or ordinances impacting this project and based upon the site location (an industrial park) and preliminary data generated within the report, there does not appear to be a significant impact from the projected noise sources to adjacent properties (sensitive receptors) as it pertains to the EPA 24-hour Ldn of 55 dBA. Therefore, the report concluded that no mitigation is required at this site.

Regardless, noise levels from the Project are not expected to reach the estimated levels due to the addition of panels partially enclosing the wood handling equipment at noise emission point #20. This enclosure is included in the Project to better control potential dust arising from the wood handling process. A side benefit will be a reduction in noise levels.

2.0 COMPATIBILITY OF THE FACILITY WITH THE SCENIC SURROUNDINGS

The Project has been sited within the Coal Fields Regional Industrial Park which has been designated for industrial use and is located on a former surface mine. The immediate surrounding area is composed of former mined lands, portions of which are included in the Industrial Park which contains several businesses and industries (refer to **Figure 3 Setback, Site Layout and 2000-Foot Vicinity Map** and **Figure 4 2-Mile Site Vicinity Map**). The remaining immediately surrounding property is undeveloped.

Figure 5 Transmission Line Route and 1-Mile Vicinity Map depicts the transmission line route from the generating facility to the existing Engle Substation. The route for the transmission line was selected to minimize impact to residences or sensitive land, minimize impact on property parcels, minimize overall route length, maximize use of existing linear corridors by following existing transmission lines or roads, minimize number of line angles, and minimize crossings of public roads.

The transmission line will travel across ecoPower property to its eastern boundary and will then travel along an easement as shown on **Figure 5. Figure 6 Transmission Line Plan & Profile** shows the location of the proposed line and all proposed structures that will support it. **Figure 5** also shows the proposed right-of-way, existing property lines and the names of persons who own the property over which the line will cross. The distance from the line to residential neighborhoods is shown as well. There are no schools or public or private parks within one mile of the proposed line.

The line will head southeast from the biomass plant switchyard, remaining on the plant property for approximately a half-mile. This section will first be parallel to an existing easement, and will then turn slightly northward to avoid the AOD Transport, Inc. property.

The line then heads south along the east side of the AOD Transport Inc. property line before turning southeast to parallel an existing road for approximately 800 ft. Two steel poles will then be used to span a 1400-ft wide ravine. Spanning this ravine will avoid placing several poles on the steep slopes, minimizing clearing and grading, and impacts to vegetation and the waterway located at the bottom of the ravine.

South of the ravine, the line will follow an existing private road until it crosses Coalfields Industrial Drive and enters the existing Engle Substation.

The path followed by the transmission line is predominantly over previously mined lands. Care has been taken to span the previously undisturbed areas to reduce or eliminate potential impacts to sensitive areas.

Surrounding land use includes active surface mining, coal preparation, industrial activity, pasture and rural residential. In addition, the Wendell H. Ford Airport is located east of the Project site across Highway 15, at approximately the same elevation.

The location of the Industrial Park, on top of a previously mined ridge, isolates it from view of most of the surrounding community. The plant exhaust stack will extend approximately 280-feet above the ground surface and the boiler building will be up to 175-feet above the ground surface (refer to **Figure J1 Plant Elevation**).

Due to the rural setting of the Project, there are no incorporated cities or culturally sensitive receptors nearby. EcoPower confirmed that the project would have no impact on cultural or historic assets through investigations conducted by Cultural Resource Analysts, Inc., whose findings have been confirmed by the State Historic Preservation Officer (refer to **Exhibit J3 Cultural, Historic and Archaeological Studies**). ecoPower has also conducted an investigation into the likelihood of impact on threatened or endangered species by the siting, construction and operation of the Project. No impact has been identified through the investigation or through consultation with appropriate regulatory bodies. See **Exhibit J4 Threatened & Endangered Species Consultation**.

The majority of residential structures located within 2 miles of the Project will be unable to see the structures associated with the plant. These residences are generally located along Highways 15 and 28 and along Tenmile Creek. These roads are located at the base of the hill and the steep incline up to the Industrial Park eliminates any possible views of structures in the Park. A Line of Sight Profile has been prepared to illustrate the extent to which residents along Highway 15 may be able to see the Project structures (refer to **Figure J2 Line of Sight Profile and Location Map**). Residences along Tenmile Creek will similarly have no view of the Project.

Due to previous mining of surrounding areas, accurate topographic data is not available for the surrounding hilltops, limiting the use of profiles to illustrate line of sight potential.

There are residences that will be able to observe portions of the structures constructed on site. There are five residences located within the Industrial Park or along its boundaries. Each has been identified on **Figure 4** and photographs of each residence and their existing view shed are included in **Exhibit J5, Residential Viewsheds**.

- The closest residence (referred to in photographs as No. 1) is a trailer located in the middle of the Industrial Park about 3,000 feet south of the Project site. This residence will be able to see the Project stack and may be able to see portions of the boiler structure. A rendering depicting the likely view of the Project from Residence #1 is included in **Exhibit J6 Conceptual Viewsheds**. Due to the existing topography of the Industrial Park and the distance to the Project, the view of the Project is likely to be no more intrusive than the existing industrial structures surrounding this residence.
- There is a trailer residence (No. 2) located on the north side of the entrance road to the Industrial Park, near the Engle Substation. This trailer sits below the road surface in a depression. The trailer is located over a mile from the Project site. It is unlikely that the residence will be able to view the plant. This residence will be able to see the transmission line as it passes to the east and connects at the Engle Substation. This residence currently has a view of the distribution lines running from the Engle substation to various areas of the Industrial park. The transmission line is designed with single wooden poles at this location and will not significantly change the existing view shed from this residence.
- Two residences are located along the southern boundary of the Industrial Park between the Park and the coal preparation plant (Nos. 3 and 4). These residences are located over a mile from the Project site. It is possible these residences will be able to see portions of the Project structures, however, their intervening view includes the entire Industrial Park.
- One residence is located over a mile to the southwest (No. 5). This residence, a large cabin-type structure, sited on a hill and will be able to see portions of the Project structures. However, the intervening views include several existing industrial structures which are currently operating within the Industrial Park. This residence also has a view of the Pine Branch Coal preparation plant and slurry pond to its east.

There is a residential neighborhood (No. 6) located east of the Project site, across Highway 15 and adjacent to the airport. This neighborhood is located greater than a mile from the project site and at a slightly lower elevation. This neighborhood will likely be able to see the Project structures. However, view of the Project site includes a view of the existing structures and activity within the Industrial Park, and will include subsequent industries that will locate within the Park. Due to the distance to the Project site (over 1-mile) it is unlikely that the transmission line will be a significant change in the existing viewshed. A rendering depicting the likely view of the Project from this residential

neighborhood is included in **Exhibit J6 Conceptual Viewsheds**. Additionally, this residential neighborhood can also view, and hear, the air traffic arriving and leaving the adjacent airport. It is likely that the airport view and noise levels are more disruptive to the neighborhood than the proposed Project will be. This neighborhood also has a view shed that includes active and former surface mining.

ecoPower has included in **Exhibit J6** an additional conceptual rendering of the likely view from the airport which is located to the northeast of the Project site at a distance of about 1.5-miles.

ecoPower will paint the Project structures a neutral color, with the exception of markings which may be required by OSHA, the Federal Aviation Administration (FAA) and/or Kentucky Airport Zoning Commission (KAZC) or to otherwise protect the safety of employees.

The transmission line is expected to be visible to much of the surrounding Industrial Park and will be visible to residence No. 2 as it passes to the east. The transmission line structures are depicted in **Figures 6 and 7** and are predominantly made of wood. They are positioned to have as little impact on the ground surface of the easement as possible. These single pole structures are unlikely to alter the scenic view of any observer, especially given their location within or adjacent to an existing Industrial Park and active and former mine sites.

The character of the existing viewshed for each of these residences will not be substantially changed by the construction of the Project as each currently views industrial structures and activity as well as active mining operations and evidence of prior mining. Each also views existing electric lines throughout the Industrial Park. Finally, the Project is proposed for a site within an existing industrial park where the expectation of surrounding properties is for industrial development.

3.0 POTENTIAL CHANGES IN ADJACENT PROPERTY VALUES

ecoPower employed Mr. Vance Mosely of Kentucky Field Service Realty, Inc. to assess the potential changes in values for properties adjacent to the Project site resulting from the siting, construction and operation of the proposed facility. Mr. Mosely is a certified General Appraiser/Consultant (CA-G Lic. No. 0832) and has been appraising property in this vicinity and of this type since 1970. Resumes for Mr. Vance Mosely and his associate, Coby Wade Mosely, are included with the Report. Mr. Mosely prepared his report in conformity with *the Uniform Standards of Professional Appraisal Practice*. His report is included as **Exhibit J7**.

In summary, Mr. Mosely found that all adjoining properties would experience either a neutral or a positive effect on their property values as the result of the siting, construction and operation of the proposed facility.

Mr. Mosely determined that industrial use of the Project site would be its highest and best use. He further determined that based on current use, configuration and potential uses, each adjoining property would either experience a neutral effect or a positive effect as the result of the development of the Project.

4.0 ANTICIPATED NOISE LEVELS AT PROPERTY BOUNDARY

The Environmental Noise Impact Study conducted for the Project is included as **Exhibit J2**. The procedures used to measure, model and assess the Project are described in that Report and summarized in Section 1.8 above. Following is a discussion of the data measured and the findings of the report.

Ambient Noise Monitoring

SMG collected **24-Hour Ldn** (day/night noise level average over the sampling time with 10 decibels (dB) added during the hours of 10:00 PM and 7:00 AM) noise samples from two (2) locations at the proposed facility's property boundaries.

- **Noise Measurement Location #1** was located at the southwest corner of the property approximately 850 feet from the nearest existing access road on the west side of the property. This location would be approximately 800 feet from the proposed chimney and baghouse location and approximately 780 feet from the proposed Wood Hog building indicated on the site development map (Drawing # EM-5 prepared by Sargent & Lundy included in Appendix D). The 24-Hour Ldn at sample location #1 was 44.9 dBA.
- **Noise Measurement Location #2** was located in the southeast corner of the property approximately 1,025 feet from the nearest commercial receptor, an operating Call Center (Sykes Enterprises). The sampling location is approximately 1,875 feet from the projected locations of the facility ID Fan and chimney and approximately 2,500 feet east of Route 15 where residential and light commercial businesses are interspersed in a rural setting. The 24-Hour Ldn at sample location #3 was 43.4 dBA.

In addition to the monitoring locations, three (3) locations were chosen as propagated noise level points where modeling utilized reference distances for calculating estimated noise levels at those points during equipment (noise source) operation. Estimated background noise levels at the three propagated noise level locations are the average of the two measured locations. The location of the monitoring and propagated points are depicted on Appendix B of the Noise Impact Report.

Receptors

The receptors identified were primarily limited to industrial and commercial facilities in the partially developed industrial park. Residential receptors identified

were predominantly located more than a mile away from the proposed facility location. One residential receptor is located more than 3,000' from the project. Site topography is predominantly flat with some undulation and small rises, covered with grasses and isolated areas of secondary growth trees. The proposed site is at an elevation higher than most of the sound receptors identified and beyond these locations are additional forested ridges and hills.

Predicted Operational Noise

Predicted equipment noise levels were provided by Sargent & Lundy, engineers for ecoPower Generation, LLC. Based upon the conceptual power generating facility plan and the site emission point locations, the primary facility noise will be emitted from the following sources:

Noise Points	Level	Description	Noise Level
#4		ID Fan	85 dBA @ 3'
#6		Transformer	85 dBA @ 3'
#10		Air Cooled Condenser	55 dBA @ 500' (see Table 3)
#20		Log Building	100 dBA @ 3' Inside (but building with multiple significant openings)
#23		Hog Building	100 dBA @ 3' Inside (but building with multiple openings)

Predicted Noise at Property Boundaries

To evaluate the potential noise impacts on surrounding noise sensitive receptors, the propagated facility noise levels were compared to the measured or estimated background noise levels. The calculated noise levels are based upon all equipment at the facility running 24 hours per day and 7 days per week.

At Noise Measurement Location #1, the Ldn intruding-operational noise levels from the noise emission points were as follows:

#4 (ID Fan)	42.4 dBA
#6 (Transformer)	38.4 dBA
#10 (Air Cooled Condenser)	51.8 dBA
#20 (Log Building)	57.6 dBA
#23 (Hog Building)	53.4 dBA

With the existing ambient Ldn measured at 44.9 dBA and after the logarithmic sum with the predicted intruding operational noise levels, the incremental noise increase over ambient conditions is as high as 12.9 dBA for noise emission point #20, primarily due to its location in close proximity to the receptor or monitoring point (780'). However, there were no identified sensitive receptors (i.e. residences, commercial or retail businesses) on the western adjacent properties. Also, noise emission point #20 has predicted intruding noise just above the EPA's 55 dBA Ldn guideline (57.6 dBA).

At Noise Measurement Location #2, the Ldn intruding-operational noise levels from the noise emission points were as follows:

#4 (ID Fan)	31.0 dBA
#6 (Transformer)	33.1 dBA
#10 (Air Cooled Condenser)	45.1 dBA
#20 (Log Building)	41.1 dBA
#23 (Hog Building)	40.6 dBA

With the existing ambient Ldn measured at 43.4 dBA and after the logarithmic sum with the predicted intruding operational noise levels, the incremental noise increase over ambient conditions ranged from 0.2 dBA to 4.0 dBA. The highest incremental increase over ambient was 4.0 dBA for noise emission point #10, which would be just barely perceived by the typical listener.

At Propagated Noise Location - A, the Ldn intruding-operational noise levels from the noise emission points were as follows:

#4 (ID Fan)	36.2 dBA
#6 (Transformer)	39.5 dBA
#10 (Air Cooled Condenser)	54.7 dBA
#20 (Log Building)	45.6 dBA
#23 (Hog Building)	48.0 dBA

With the existing ambient Ldn estimated at 44.2 dBA and after the logarithmic sum with the predicted intruding operational noise levels, the incremental noise increase over ambient conditions is as high as 10.8 dBA for noise emission point #10, primarily due to its location in close proximity to the receptor point (850'). There are intervening areas of heavy woods and underbrush to the east of this data point and between this location and State Route 15 and sensitive receptors (i.e. residences) located off of State Route 15. The dense woodlands to the north and east will provide attenuation to the sensitive receptors along State Route 15 although this not considered in noise extrapolation calculations. Only the significant mechanisms of outdoor sound propagation (i.e. atmospheric absorption and ground) from the proposed plant to the data point are attenuation

factors for the propagated noise levels. However, noise levels for emission point #10 do not exceed the EPA recommended level of 55 dBA.

At Propagated Noise Location - B, the Ldn intruding-operational noise levels from the noise emission points were as follows:

#4 (ID Fan)	30.0 dBA
#6 (Transformer)	31.0 dBA
#10 (Air Cooled Condenser)	45.1 dBA
#20 (Log Building)	42.9 dBA
#23 (Hog Building)	45.7 dBA

With the existing ambient Ldn estimated at 44.2 dBA and after the logarithmic sum with the predicted intruding operational noise levels, the incremental noise increase over ambient conditions was as high as 3.8 dBA for noise emission point #23. A noise shift of 3 dBA or less is generally indistinguishable to the human ear outside a controlled, laboratory-type environment.

At Propagated Noise Location - C, the Ldn intruding-operational noise levels from the noise emission points were as follows:

#4 (ID Fan)	22.3 dBA
#6 (Transformer)	22.9 dBA
#10 (Air Cooled Condenser)	36.9 dBA
#20 (Log Building)	35.7 dBA
#23 (Hog Building)	35.7 dBA

With the existing ambient Ldn estimated at 44.2 dBA and after the logarithmic sum with the predicted intruding operational noise levels, the incremental noise increase over ambient conditions was insignificant. The highest incremental increase over ambient noise levels was only 0.7 dBA for noise emission point #10, which would not be perceived by the typical listener.

Conclusion

No mitigation measures will be required if the proposed facility's intruding operational noise levels do not exceed EPA's 55 dBA Ldn guideline or result in a significant increase over ambient conditions and exceed EPA's 55 dBA Ldn guideline. Noise Measurement Location #1 had an intruding noise Ldn of 57.8 dBA from noise emission point #20, while all other propagated noise levels at the other locations were at or beneath the EPA 55 dBA Ldn guideline.

Data gathered and generated indicates that no sensitive receptors will be impacted by noise levels above the EPA guideline. At this time, absent specific noise regulations or ordinances impacting this project and based upon the site

location (an industrial park) and preliminary data generated within this report, there does not appear to be a significant impact from the projected noise sources to adjacent properties (sensitive receptors) as it pertains to the EPA 24-hour Ldn of 55 dBA. Therefore, no mitigation is required at this site.

Construction Noise

Major construction phases will consist of mobilization, foundation construction, equipment installation, facility structure erection and site cleanup. Noise emissions will vary with each phase of the construction depending on the construction activity and equipment and are expected to be intermittent and predominantly limited to day time hours. Construction noise emissions are not expected to exceed the predicted equipment noise emissions.

ecoPower Mitigation

ecoPower has identified two operational and design aspects which it believes will mitigate noise levels below those predicted. First, enclosures around the two highest noise sources will be increased, primarily to control fugitive dust. The result will be attenuation in noise produced at these locations below that predicted, and a resulting drop in perceived noise levels by any receptors.

5.0 ROAD, RAIL AND FUGITIVE DUST

5.1 Rail Impacts

The Project does not have access to a railway and is not proposing to construct a rail spur for access. Large construction equipment and materials will be brought to the site predominantly over Highway 15. Therefore, there will be no rail impacts.

5.2 Road Impacts

Access to the Project will be by highway, predominantly by Highway 15 and to a lesser extent, Highway 28. Construction is expected to provide employment for up to 400 workers over a 2-year period of time. The construction workers are not expected to all be present at one time. Construction will result in increased traffic for workers and periodic delivery of large equipment, machinery and building supplies. This increase in traffic will be for a limited period of time.

During operations, up to 40 full time workers will be employed at the plant. Because the plant will operate 24-hours a day, the 40 workers will be arriving and leaving the plant at staggered intervals.

Fuel delivery is projected to result in approximately 100 truck deliveries per day, predominantly during daytime hours. The fuel delivery trucks will enter the Coal Fields Regional Industrial Park by the main entrance and will proceed up Coal Field Drive and access the plant at the main entrance as shown on **Figure 3**.

The Kentucky Transportation Cabinet has classified Highway 15 as a rural principal arterial highway. In 2008, the published traffic count closest to the Industrial Park was 8,710 (at station #768). The computer estimate for this station for 2009 is 8,950. An increase in trips of 140, accounting for 40 employees and 100 fuel delivery trucks would increase the count by less than two percent at this location if all traffic were routed through Station 768.

The Industrial Park is located only a few miles south of the Breathitt County line. Therefore, Transportation Cabinet information for Highway 15 in Breathitt County was also reviewed. In 2007, traffic counts close to the Perry County line (station # 251) were at 6,032. A computer estimate for 2009 listed a count of 6,140 at this station. An increase of 140 would increase the traffic count by about two percent.

Highway 28 is classified as a rural major collector and traffic counts in 2007 (station #761) register at 4,060. Computer estimates for 2009 at this station are 4,470. Although the majority of the traffic will be from Highway 15, an increase of the full 140 trips would increase traffic at this station by less than four percent.

Traffic maps and data are included in **Exhibit J8**

Both Highways 15 and 28 are classified by the Transportation Cabinet as AAA for truck weight. This indicates that the highways can support trucks of a maximum gross weight of 80,000 pounds. Refer to **Exhibit J9** for weight classes. Both Highways 15 and 28 are part of the Coal Haul Extended Weight System which indicates that a road is designed to support extended weights from coal hauling. **Exhibit J10** includes the listing of roads included in this system.

Until 2009, the Weyerhaeuser plant located within the Industrial Park was responsible for truck traffic roughly equivalent to that projected to be experienced with the Project. Weyerhaeuser's employee traffic was significantly higher than that projected for the Project's operations. This plant operated for a number of years with no reported associated degradation of roads accessing the site. It can be inferred that the existing road system is stable and constructed to support the projected traffic anticipated from the Project operations.

Based upon the classification of the surrounding roads and existing traffic, the Project is not expected to have a negative impact on road transportation and traffic.

5.3 Fugitive Dust Impact

The Project will minimize fugitive particulate emissions (i.e., dust) in accordance with its obligations under its permit to be issued by the Division for Air Quality. ecoPower recognizes that potential emissions of fugitive dust can be generated from material handling operations and road operations. These emissions will be addressed in ecoPower's air permit which is currently under review. ecoPower has identified the ways and means to control fugitive dust at the facility and will remain in compliance with its permit.

Biomass inherently contains moisture that is an aid in controlling dust. ecoPower will also install and use a fog-type dust control system in areas of material handling that are more likely to produce dust. Permanent roads and parking lots will be paved. Additionally, dust suppressants will be used as needed to control dust from paved roads, unpaved roads and material stockpiles. Material transfer equipment will be designed and operated with enclosures or water fogging to reduce potential emissions. Fly ash will be treated with water to approximately

twenty percent moisture. Bins will be vented through filters with appropriate capture.

Similar measures will be taken during construction to manage dust.

Fugitive dust is an issue addressed by the air permitting for a facility such as the ecoPower electricity generating plant. As such, stringent standards will apply and ecoPower will comply with those permit standards.

Fugitive dust from fuel delivery operations could be generated if delivery trucks do not abide by applicable regulations and common courtesy. EcoPower will require that all deliveries made to the Project will comply with load cover rules.

No negative impact is expected from the operations of the Project.

6.0 MITIGATING MEASURES

ecoPower considers mitigating measures in each segment of the design and permitting of the Project. Following are a summary of some of the actions taken and proposed by ecoPower to identify and mitigate potential impacts to the environment and the surrounding community.

- ecoPower selected a site in a preexisting industrial park to minimize the effect of this Project on an area less compatible with the Project.
- ecoPower will agree to pave all internal roads and driving surfaces and will be obligated by its air permit to keep dust from its operations to a minimum to mitigate the impact of dust on the surrounding community.
- ecoPower will require all fuel delivery trucks to comply with applicable load cover rules.
- ecoPower will provide screening and enclosures of areas around the wood handling process to accomplish two objectives; screening will reduce dust from the fuel handling process; and the noise levels generated by the handling process will be reduced.
- Fuel deliveries will be scheduled predominantly during daytime hours, to reduce the truck traffic on external highways at night and reduce the sound of deliveries during traditionally quiet times.
- ecoPower will paint Project structures a neutral color, except for markings which may be required by OSHA, the Federal Aviation Administration (FAA) and/or Kentucky Airport Zoning Commission (KAZC) or to otherwise protect the safety of employees.
- ecoPower has considered potential impacts to wildlife and jurisdictional waters in its site design and has taken steps to minimize any potential impact by locating all transmission towers on previously disturbed land.
- ecoPower has assessed the potential for effects on the cultural and historic assets of the area and provided investigations of the visual impacts and potential for direct impacts.

EXHIBIT J1

Phase I ESA

**PHASE I ENVIRONMENTAL SITE ASSESSMENT
ECOPOWER GENERATION, LLC
COAL FIELDS INDUSTRIAL REGIONAL PARK
CHAVIES, PERRY COUNTY, KENTUCKY**

JANUARY 11, 2010

**Smith Management Group
1860B Williamson Court
Louisville, Kentucky 40223
502-587-6482**

**PHASE I ENVIRONMENTAL SITE ASSESSMENT
ECOPOWER GENERATION, LLC
COAL FIELDS INDUSTRIAL REGIONAL PARK
CHAVIES, PERRY COUNTY, KENTUCKY
SMG Project Number 2009-4752E**

DECEMBER 23, 2009

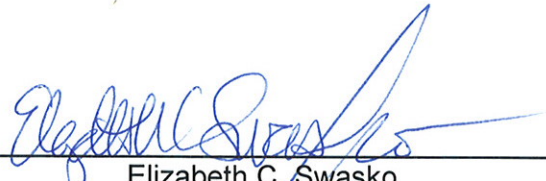
Prepared for:

**ECOPOWER GENERATION, LLC
Lexington, Kentucky**

Prepared by:

**SMITH MANAGEMENT GROUP
Louisville, Kentucky**

I declare that to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in 40 CFR 312.10. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.


Elizabeth C. Swasko
Environmental Scientist


Sara G. Smith
President

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FIGURES

FIGURE 1	Site Location Map
FIGURE 2	Site Diagram (based on 2004 Aerial Photograph)
FIGURE 3	1940 Aerial Photograph
FIGURE 4	1960 Aerial Photograph
FIGURE 5	1988 Aerial Photograph
FIGURE 6	1913 Topographic Map

APPENDICES

APPENDIX A	Site Photographs
APPENDIX B	Environmental FirstSearch Report
APPENDIX C	Regulatory Contacts
APPENDIX D	Qualifications – Environmental Professional

1.0 EXECUTIVE SUMMARY

Smith Management Group (SMG) was employed by ecoPower Generation, LLC ("ecoPower") to perform a Phase I Environmental Site Assessment (ESA) of an undeveloped property located within the Coal Fields Regional Industrial Park in Chavies, Perry County, Kentucky (hereinafter "subject site"). The assessment was conducted to identify releases or threatened releases of hazardous substances and petroleum products on, at, in or to the subject property within the limitations of the scope and process described in **Sections 2.0** and **10.0** of this report. The assessment was completed in December 2009.

Based upon the information obtained and described herein, SMG did not identify any recognized environmental conditions (RECs) at the site. However, SMG did observe:

- Three areas where miscellaneous debris had been burned in what appeared to be a camp-like fire.

It should be noted that this Executive Summary does not contain the details of the methods used, limitations of available information, or information obtained. Therefore, the user must read this report in its entirety for a comprehensive understanding of the potential environmental risks that may or may not be present on this property.

2.0 INTRODUCTION

2.1 Purpose

The assessment was conducted using professional judgment with ASTM Standard E 1527-05, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, utilized as a guideline. The purpose of the assessment was to identify conditions indicative of releases and threatened releases of hazardous substances on, at, in or to the subject property, within the limitations of the scope and process described in **Sections 2.0 and 10.0** of this report. SMG was authorized by ecoPower Generation, LLC to perform the assessment.

For the purposes of this investigation, conditions indicative of releases or threatened releases *do not include de minimis* conditions which are not considered likely to represent a material risk of harm to human health or the environment and would not likely be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

2.2 Scope

This investigation was limited to visual observations of the property, review of information provided by Mr. Gary Crawford, Chief Executive Officer (CEO), ecoPower Generation, LLC, interviews with individuals listed in this report and a review of readily accessible and publicly available records described in this report. SMG did not collect any samples of soil, water, or air for laboratory analysis or for any other purpose.

The scope of work did not include evaluation of the property for:

- Jurisdictional wetlands or floodplains;
- Radon, lead paint, or drinking water quality;
- Health and safety concerns; or
- Environmental compliance.

2.3 Limitations and Exceptions

SMG used professional judgment to make an appropriate inquiry into the current and previous use of the property to obtain commonly known or reasonably ascertainable information with respect to recognized environmental conditions on the property. This report is subject to the limitations of historical documentation, availability and accuracy of pertinent records, and the accuracy and personal recollection of those persons contacted. No site excavation, borings or other subsurface investigations or sampling of water, soil or air was conducted. Therefore, this document should not be construed as a guarantee or assurance that undiscovered environmental problems do not exist. Information sought and not obtained or incomplete information may represent a data gap which could influence the ability of the reviewer to reach a conclusion about the property. These gaps, if any, are described and discussed in **Section 8.0** of this report.

2.4 Reliance and Understanding

This report has been prepared for ecoPower Generation, LLC and is provided for use by them. No other individual or entity shall have the right to rely upon this document or any part thereof, without SMG's express written consent.

SMG has requested information regarding known or suspected environmental problems associated with the property that were known to ecoPower Generation, LLC. SMG has presumed that all information obtained is reliable and accurate. Specific information requested may include an unusually low appraisal or sale price, environmental liens, current or prior sources of contamination or remediation activities.

3.0 GENERAL SITE INFORMATION

3.1 Site Location and Description

The subject site consists of approximately 125-acres of undeveloped land located within the Coal Fields Regional Industrial Park. The property is accessed via Coalfields Industrial Drive off Kentucky 15 (see **Site Location Map, Figure 1**).

The subject site is a reclaimed surface mine that is covered with grasses and a few secondary growth trees. The current topography is predominantly flat with some undulation (see **Figure 2**). Photographs of the property have been provided in **Appendix A - Site Photographs**.

There are no utilities currently at the site. However, reported utilities available at Coal Fields Regional Industrial Park are: electricity provided by AEP – Kentucky Power Company; potable water and sanitary wastewater/stormwater management by Hazard Utilities; cable by TV service & United Cable; and Broadband by Windstream Corporation. Currently there is no natural gas available to the industrial park.

3.2 Current Use Of The Site

The site is currently an undeveloped reclaimed mine site.

3.3 Historic Use of the Site

According to information obtained by SMG, the subject site was utilized as a surface mine since at least 1940. Historical topographic maps indicate that the site does not appear to have been utilized for any purpose other than mining since at least 1913.

3.4 Uses of Adjacent and Nearby Property

The subject site is located within an industrial park. Based on information obtained during the site visit, properties adjacent to the site are as follows:

North:	ACIN Property (undeveloped reclaimed mine lands), Hollybush Branch Impoundment with Ten Mile Creek Road and residences beyond;
East:	Undeveloped reclaimed mine lands (part of ACIN property) with residences (Napier family homes) and Kentucky 15 and beyond;
South:	Coalfields Industrial Park property (undeveloped reclaimed mine lands), Sykes Enterprises, AOD Transportation and Trus Joist Lane with Trus Joist/Weyerhaeuser beyond; and
West:	ACIN property (undeveloped reclaimed mine lands) with Pine Branch (AKA Mountain Properties) surface mine, residences (Floyd Mullins Estate and VG Combs).

Active mining at the Pine Brach surface mine can be seen from the western portion of the property. Coalfields Industrial Park properties are predominantly located adjacent to the south and beyond.

4.0 USER RESPONSIBILITIES

4.1 Chain of Title

A chain of title for the property was not provided to SMG for review. Therefore, SMG cannot confirm whether deed restrictions or environmental liens apply to the property.

4.2 User Knowledge and Property Limitations

A User Questionnaire was provided to ecoPower by SMG to ascertain whether their representatives had any knowledge of potential site contamination issues. The questionnaire requested a response to knowledge of any of the following items:

- Environmental liens.
- Deed restrictions controlling the use of the property due to the presence of hazardous substances or petroleum products.
- Pending, threatened or past litigation or administrative proceedings regarding hazardous substances or petroleum products.
- Notices or actions from any governmental entity regarding any possible violation or liability relating to hazardous substances or petroleum products.
- Purchase price that is significantly less than comparable properties.
- Activity and land use limitations (AUL) that are in place or that have been filed or recorded in a registry.
- Specialized knowledge or experience of the person seeking to qualify for the limited liability protection.
- Relationship of the purchase price to the fair market value of the property if it were not contaminated.
- Commonly known or reasonably ascertainable information about the property.
- The degree of obviousness of the presence or likely presence of contamination at the property, and the ability to detect the contamination.

Mr. Gary Crawford, CEO of ecoPower Generation, LLC, reported that he is not aware of any environmental liens, deed restrictions or control orders/mandated remediation actions are attributed to the property. Mr. Crawford reported that currently ecoPower has an option on the property and will conduct title research prior to closing.

5.0 RECORDS REVIEW

The following readily available federal, state, and/or local records were reviewed to identify recognized environmental conditions associated with the site and to develop a historical perspective of prior use.

5.1 Topographic and Geologic Maps

The US Geological Survey (USGS) Haddix and Krypton, KY 7.5-Minute Topographic Quadrangle maps were reviewed for information regarding site history and conditions. The site is located on portions of both maps. Both maps are dated 1972 and have no revisions. The subject site is located in an undeveloped area located approximately 1600-ft southwest of Engle, KY. The map indicates that surface mining has occurred on the site and that portions are wooded. Kentucky 15 is present to the east of the site. Based on the topographic map, the site elevation ranges from 1,000-ft to 1,400-ft above mean sea level; however, the site is a reclaimed surface mine and the depicted topography does not appear to be accurate.

A review of the USGS Haddix and Krypton Geologic Quadrangle maps was also conducted. The site is underlain by the Breathitt Formation from the lower to middle Pennsylvanian. The Breathitt formation is comprised of siltstone, shale, sandstone, coal and underclay. There are three coal seams present: the Hindman Coal Bed, the Hazard No. 7 Coal bed and the Hazard Coal Bed. Bedrock contours on the map indicate that the bedrock regionally dips to the west-southwest.

The Natural Resources Conservation Services Web Soils Survey website (<http://websoilsurvey.nrcs.usda.gov/app/>) was consulted for information pertaining to soils located on-site. The site is comprised of three soils: the Fairpoint soils, steep, benched; the DeKalb-Rock outcrop Latham Association, steep; and the Shelocta-Gilpin Association, steep. The Fairpoint soil is well drained, has a low available water capacity, a moderate shrink-swell potential, and does not meet hydric soils criteria. The DeKalb-Rock Outcrop Latham Association is well drained, has a low shrink-swell potential and available water capacity, is not flooded or ponded and does not meet hydric soils criteria. The Shelocta-Gilpin Association is well drained, has a low shrink-swell potential, high available water capacity, is not flooded or ponded and does not meet hydric soils criteria.

Groundwater in this area will generally occur in two different zones. The upper zone typically occurs in the unconsolidated surface materials near the soil/bedrock interface. The lower zone occurs within the deeper bedrock stratum. Flow direction in the upper zone typically follows the local topography. Based on a review of the site and the topographic map, the general flow on-site is anticipated to flow to the northeast/east toward Hollybush Branch. It is anticipated that the lower zones will most likely follow bedrock contours and flow to the west-southwest. However, actual groundwater flow at the subject site cannot be determined without well installation, monitoring, and instrumentation.

5.2 Aerial Photographs and Historical Topographic Map

SMG reviewed four readily available aerial photographs of the site taken in 1940, 1960, 1988, and 2004. The 1940, 1960 and 1988 aerial photographs were obtained from FirstSearch Technology Corporation (FirstSearch). The 2004 aerial was obtained from Google Earth (see

Figures 2 through 5). Aerial photographs are generally flown at medium to high altitudes and specific site details are not always discernable. However, aerial photographs are generally useful in comparing historical and current conditions.

1940 and 1960 Aerial Photographs: These aerials depict the site as wooded and undeveloped. Evidence of mining can be seen to on the western side of Kentucky 15. Kentucky 15 is visible to the east of the subject site (see **Figures 3 and 4**).

1988 Aerial Photograph: This aerial depicts the subject site as undeveloped. Unlike the 1940 and 1960 aerial photographs, contours suggest surface mining operations have occurred at the subject site. Tributaries of the North Fork of the Kentucky River are visible to the north, northeast, and northwest of the site.

2004 Aerial Photograph: The subject site and surrounding areas appear to be consistent with current site conditions (see **Figure 2**).

SMG also reviewed a historical topographical map dated 1913 obtained from FirstSearch (see **Figure 6**).

1913 Historical Topographical Map: No structures are depicted at the subject site. The map is sparsely populated with structures. Tenmile Fork, Hollybush Branch and Rockhouse Fork, tributaries of the North Fork of the Kentucky River are visible to the north, northeast, and northwest of the subject site.

5.3 Sanborn Maps

On October 28, 2009, SMG requested whether Sanborn Maps were available from FirstSearch. FirstSearch reported that Sanborn maps were not available for the subject site area (see **Appendix B** for FirstSearch documentation).

5.4 Federal Agencies Database Review

SMG obtained federal environmental database information from FirstSearch on November 10, 2009. This information is contained in **Appendix B - Environmental FirstSearch Report**. Standard ASTM database information available from FirstSearch is typically updated on approximate 90 day intervals. A summary of the search of the ASTM standard resource databases within the ASTM specified distances is provided on the following page. Also shown are the numbers of occurrences on each database.

Source	Description	Distance	Sites
NPL	Federal National Priorities List	within 1 mile	0
CERCLIS	Sites which have been or are currently under review for releases of hazardous substances on the Comprehensive Environmental Response, Compensation and Liability Information System	within 0.5 mile	0
NFRAP	CERCLIS archived sites with no further required action	within 0.5 mile	0
CORRACTS	RCRA facilities with reported violations and subject to corrective actions	within 1 mile	0

RCRA TSD	Hazardous waste treatment storage or disposal sites	within 0.5 mile	0
RCRA Generators	Hazardous waste generators, large or small	property or adjoining property	0
ERNS	Emergency Response Notification System, list of petroleum or hazardous substance spills	property only	0
Federal IC/EC	Federal Brownfield Management System	within 0.5 mile	0

Review of the information supplied by FirstSearch indicates that there are *no* reported NPL, CERCLIS, NFRAP, CORRACTS, TSD, RCRA Generators or ERNS facilities on the subject property or within the distances specified by ASTM Standard 1527-05.

5.5 State Environmental Databases

SMG obtained state environmental database information from FirstSearch on November 10, 2009. This information is contained in **Appendix B - Environmental FirstSearch Report**. Standard ASTM database information available from FirstSearch is typically updated on approximate 90 day intervals. A summary of the search of the ASTM standard resource databases within the ASTM specified distances is provided below.

Source	Description	Distance	Sites
STATE SITE	State Level CERCLA/Superfund Sites	within 1 mile	0
SWF/LF	Solid Waste Facilities/Landfills	within 0.5 mile	0
UST	State UST facilities	property or adjoining property	0
LUST	Leaking Underground Tanks	within 0.5 mile	0
BROWNFIELDS/VCP	State Contaminated Sites list	within 0.5 mile	0

Review of the information supplied by FirstSearch indicates that there are *no* reported STATE, SPILLS, SWF/LF, UST/AST, LUST, IC/EC or VCP/Brownfield facilities on the subject property or within the distances specified by ASTM Standard 1527-05.

Unmapped/Non-Geocoded Facilities

Unmapped or non-geocoded facilities are those that have incomplete address information or the location of the facilities are not known or could not be located on the database. SMG reviews this list and makes an attempt to locate these facilities during the site reconnaissance. The FirstSearch database identified fifteen (15) unmapped facilities within the zip code(s) searched. Based on the vehicle reconnaissance of the area at the time of the site visit, these non-geocoded facilities were not identified in close proximity to the subject site. Therefore, these facilities are not likely to be considered a source of contamination to the site.

5.6 State FOIA Records Review Request

A request was submitted to the Open Records representatives in Kentucky's Department for Environmental Protection, Division of Water (DOW), Division for Air Quality (DAQ), Division of

Waste Management (DWM), and DWM – Underground Storage Tank Branch. The DOW, DAQ, DWM, Underground Storage Tank Branch and DAQ reported that there were no files or records for the subject site. However, the DOW and DAQ indicated that they have files that pertain to Trus Joist/Weyerhaeuser, an adjacent property to the south. Files from the DAQ were not reviewed. However, the DOW provided the documents that they have on file via an email. SMG reviewed these documents from the DOW, including: wastewater treatment inspection reports, a work hazard assessment, a letter with a deficiency based upon a 2005 inspection, a notification of transfer of facility ownership and photos. Review of these files indicated that the Trus Joist facility would be of minimal environmental concern to the subject site.

On November 13, 2009, SMG spoke with Ms. Kristen Gale of the Kentucky Department of Natural Resources, Division of Mine Reclamation & Enforcement's Office to inquire about two closed mining permits associated with the site (Permit #s: 2970391 and 0970122). Permit # 2970391 was listed under River Coal Company, Inc. and Permit # 0970122 was listed under the Kem Coal Company. Ms. Gale indicated that the bonds had been released for both permits, indicating closure in compliance with the permits.

Copies of the initial e-mail and the responses are included in **Appendix C, Regulatory Contacts**.

5.7 City Directories and Local Agencies

City directories were not requested due to the rural location of the site.

5.8 Previous Environmental Investigations

SMG was not provided a previous environmental assessment to review.

6.0 SITE RECONNAISSANCE

6.1 General Observations

SMG conducted a site reconnaissance of the subject property on October 30, 2009 and was accompanied by Mr. Grant Curry, ecoPower. The site is located in Coal Fields Regional Industrial Park. The address is reported as 1244 Coal Fields Industrial Drive and is approximately 10.7-miles north of Hazard, KY. Photographs of the site have been included in **Appendix A**. The area surrounding the site is rural, has been mined or is undergoing active mining.

6.2 Wastewater Discharges

The site contains no apparent manufacturing or other commercial process wastewater sources. SMG did not observe pits, ponds or lagoons on-site that may have been utilized for wastewater treatment or storage.

The Hollybush Dam Impoundment was observed approximately 1,500-ft northeast of the site. This large pond was created by damming up Hollybush Creek.

6.3 Hazardous Materials Use and Disposal

SMG did not observe any obvious evidence of petroleum or hazardous substance releases (e.g., staining or spilled material). However, there were three easily accessible spots where burning of tires, shingles, bottles cardboard, wooden posts, plates and scrap wood had occurred (see **Appendix A, Photographs 11 through 13**).

SMG recommends that all of this material be removed prior to acquisition of the subject site.

6.4 PCB Equipment

SMG did not observe obvious evidence of the presence of PCB containing equipment on-site.

6.5 Storage Tanks

SMG observed no evidence of the presence of any aboveground or underground storage tanks on site.

6.6 Contaminated Fill

No obvious evidence of the placement of contaminated fill was observed by SMG during the site visit. Mr. Crawford (ecoPower) indicated that he was not aware of any contaminated fill being brought onto the property.

The site is a reclaimed mine site and fill materials were utilized to bring it up to the proper grade. These fill materials are typically comprised of overburden and interburden rock from the site that is returned to its original location or placed in designated fill areas. A site is not considered reclaimed and the bond released until all requirements described in the permits are met.

Ms. Kristen Gale of the Kentucky Department of Natural Resources, Division of Mine Reclamation & Enforcement's Office indicated that the bonds for the site had been released.

6.7 Asbestos Evaluation

An asbestos survey was not completed as part of this assessment. Additionally, there are no known structures present on-site.

7.0 INTERVIEWS

SMG spoke with Mr. Grant Curry, while onsite October 30, 2009. Mr. Crawford provided the following information:

- ecoPower has an option to purchase on the property;
- The subject site is approximately 125 acres; and
- He has limited knowledge of the site's history.

8.0 DATA GAPS

The information provided to and obtained by SMG was not complete enough to evaluate every aspect of the property. The bullet items below provide an analysis of the known and relevant data gaps for the assessment of the property.

- No chain of title was provided to SMG for review for the subject site or identified adjacent properties. Evidence of prior ownership and documentation of potential restrictive covenants or environmental liens could not be confirmed.
- Historical use of the property is surface mining, however, information pertaining to the exact dates and ownership was not readily available.

It is not expected that the existence of these data gaps has materially changed or altered the opinion expressed by the Environmental Professional in this report. In the event that additional information is discovered that changes the conclusions of this report, ecoPower Generation, LLC will be immediately notified.

9.0 CONCLUSIONS

SMG was employed by ecoPower Generation, LLC to perform a Phase I ESA of an undeveloped property in Coal Fields Regional Industrial Park in Chavies, Perry County, Kentucky. The reported address is 1244 Coal Fields Industrial Drive. The assessment was conducted to identify releases or threatened releases of hazardous substances on, at, in or to the subject property within the limitations of the scope and process described in **Sections 2.0** and **10.0** of this report. The assessment was completed in November 2009.

The subject site consists of an undeveloped reclaimed surface mine site containing approximately 125-acres of land. The property is accessed via Coal Fields Industrial Drive from Kentucky 15. It is located in an industrial park that is situated in a rural area of Chavies, Kentucky (see **Site Location Map, Figure 1**).

- Based upon the information obtained and described herein, SMG did not identify any Recognized Environmental Conditions (RECs) at the site. While not considered a REC, SMG did observe three areas where miscellaneous debris had been burned. It is recommended that this material be removed prior to site development.

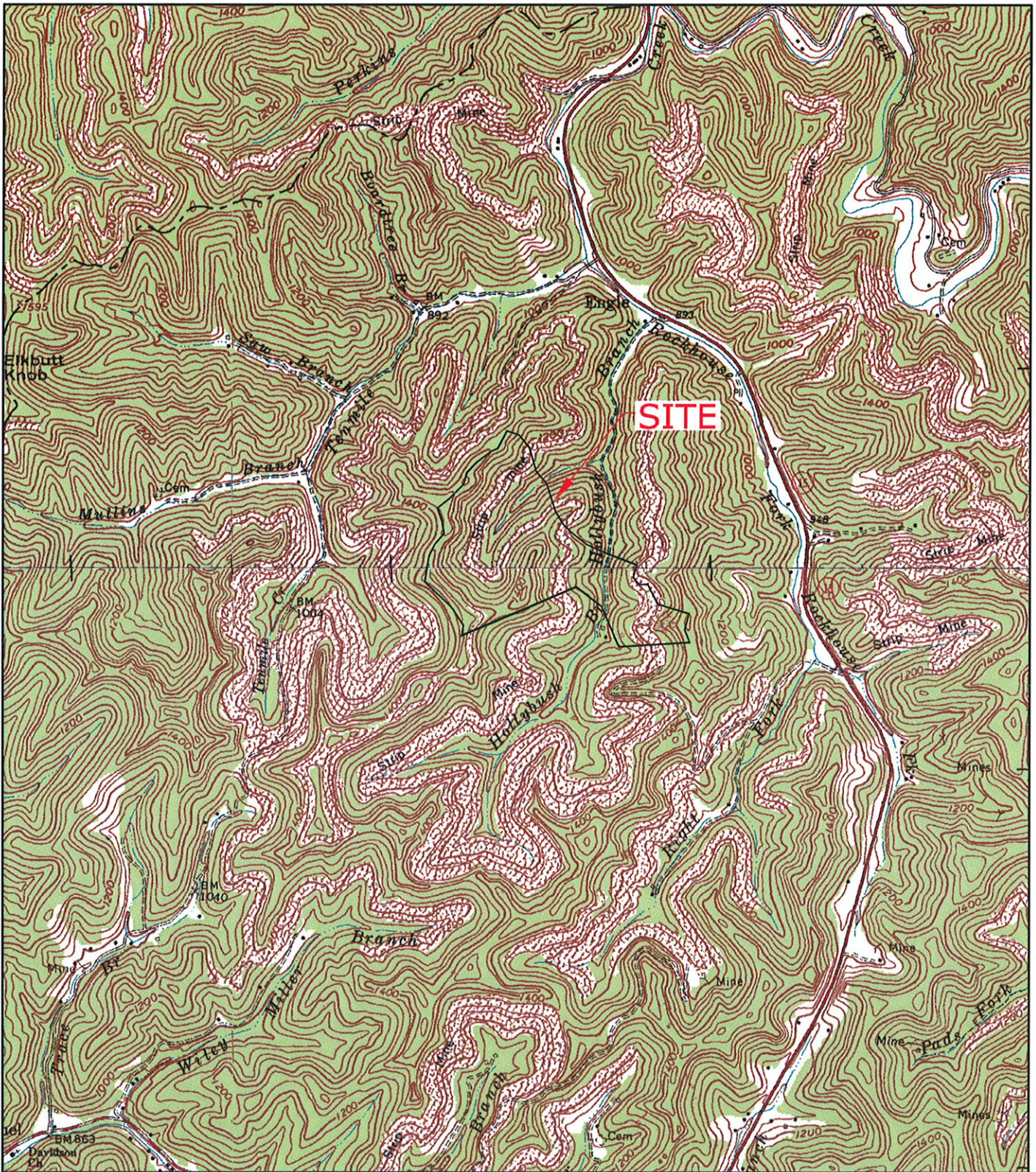
This report should be read in its entirety for details regarding the site conditions.

10.0 QUALIFICATIONS

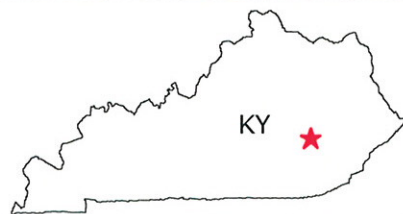
This report is intended as a limited assessment of the environmental conditions associated with the subject site. It was prepared in accordance with generally accepted practices for projects of this nature. SMG does not warrant the work of regulatory agencies or other third parties supplying information that may have been used in preparation of this report. The assessment relied primarily upon readily available and easily accessible historic information, visual observations and verbal/written reports of others. The limitations and data gaps of this assessment should be recognized as ecoPower Generation, LLC draws any conclusions with regard to environmental issues associated with this property.

Resumes of the SMG personnel responsible for the preparation of this environmental site assessment are included in **Appendix D** to this report.

FIGURES



1405 Mercer Road
Lexington, KY 40511
1860 B Williamson Court
Louisville, KY 40223
www.smithmanage.com



QUADRANGLE INFORMATION
NORTHERN QUAD:
HADDIX, KY - 1972
SOUTHERN QUAD:
KRYPTON - 1972

SITE LOCATION MAP

ECOPOWER GENERATION, L.L.C.
COAL FIELDS REGIONAL INDUSTRIAL PARK
HAZARD, PERRY COUNTY, KENTUCKY

SCALE: 1"=2000'
DATE: 11/13/09
PREPARED BY: KAF
CHECKED BY: ECS

JOB NO.
2009-4752E

FIGURE
1

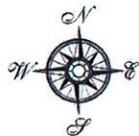


SITE DIAGRAM		2004 AERIAL - GOOGLE EARTH	
ECOPOWER GENERATION, L.L.C.		COAL FIELDS REGIONAL INDUSTRIAL PARK	
HAZARD, PERRY COUNTY, KENTUCKY		SCALE: NTS	
DATE: 11/13/09		JOB NO. 2009-4752E	
PREPARED BY: KAF		FIGURE 2	
CHECKED BY: ECS			

SMG
Smith Management Group
1405 Mercer Road
Lexington, KY 40511
1860 B Williamson Court
Louisville, KY 40223
www.smithmanage.com

FIGURE 3 1940 AERIAL

Source: FirstSearch

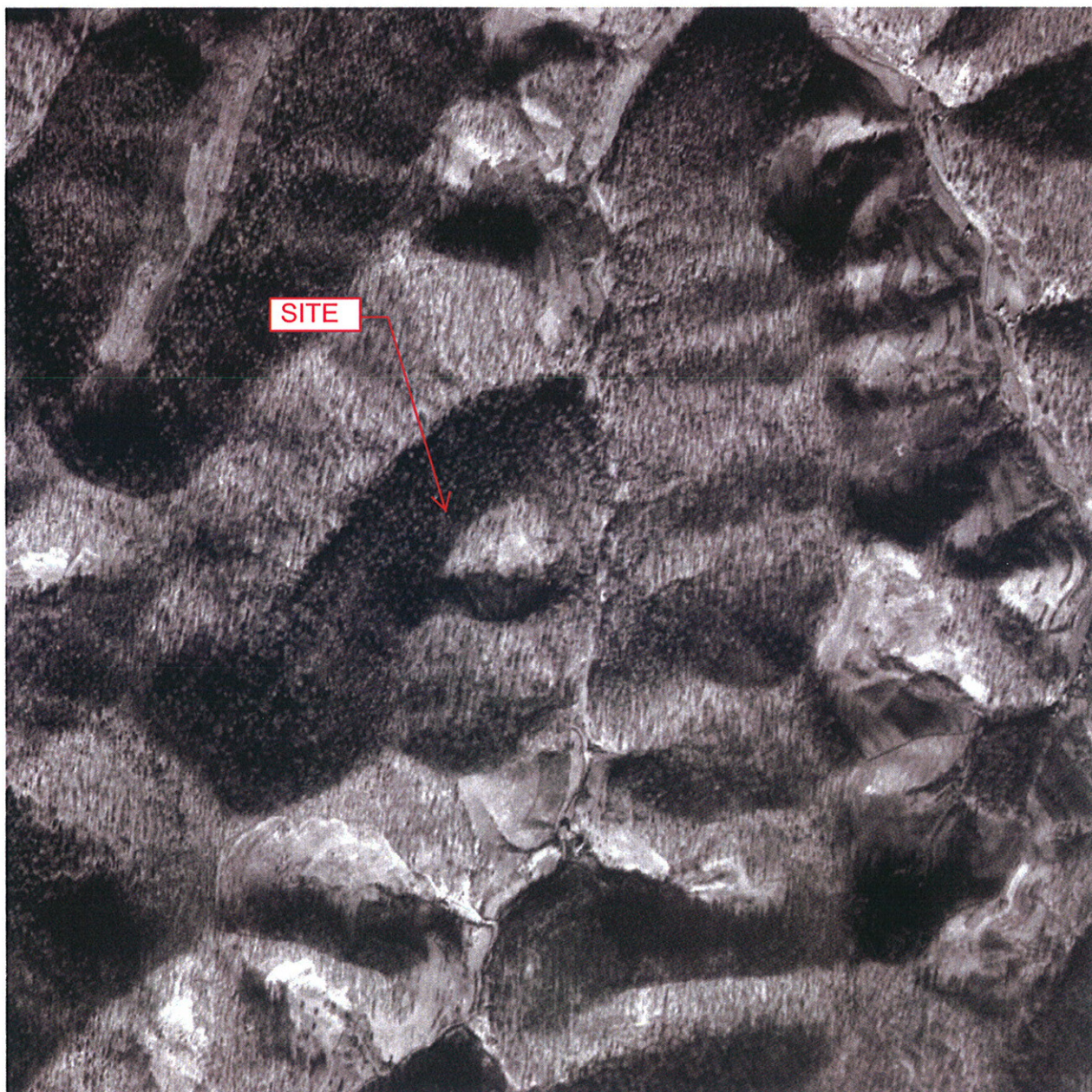


Environmental FirstSearch

Historical Aerial

1940

, HAZARD KY 41701



Source:

Target Site (Latitude: 37.376716 Longitude: -83.272582)

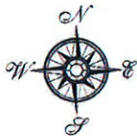
Quad Name: Haddix

Date: 1940

Approximate Scale: 1 inch equals 900 feet

FIGURE 4 1960 AERIAL

Source: FirstSearch

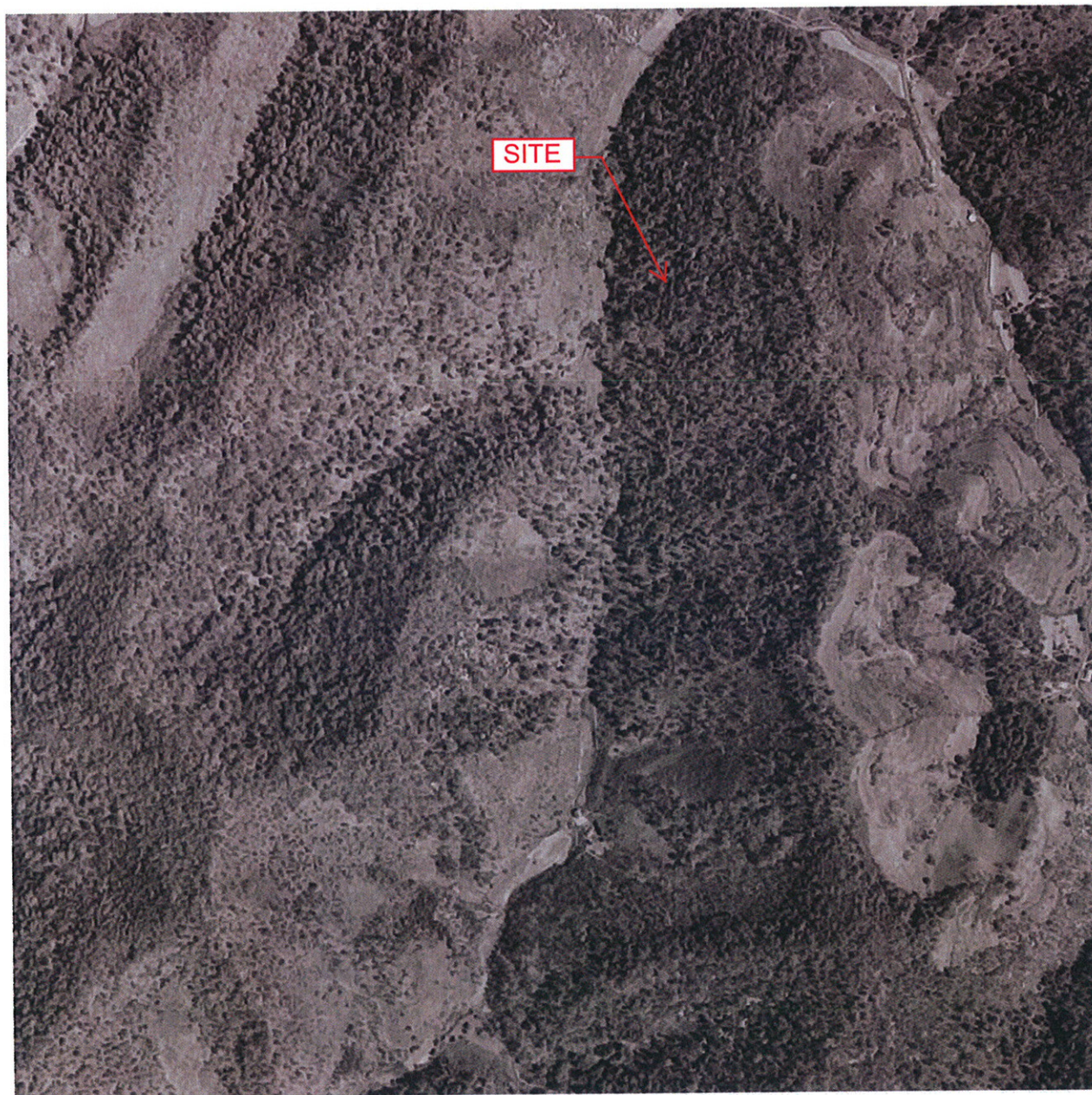


Environmental FirstSearch

Historical Aerial

1960

, HAZARD KY 41701



Source:

Target Site (Latitude: 37.376716 Longitude: -83.272582)

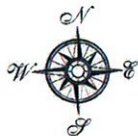
Quad Name: Haddix

Date: 1960

Approximate Scale: 1 inch equals 900 feet

FIGURE 5 1988 AERIAL

Source: FirstSearch



Environmental FirstSearch

Historical Aerial

1988

, HAZARD KY 41701



Source:

Target Site (Latitude: 37.376716 Longitude: -83.272582)

Quad Name: Haddix

Date: 1988

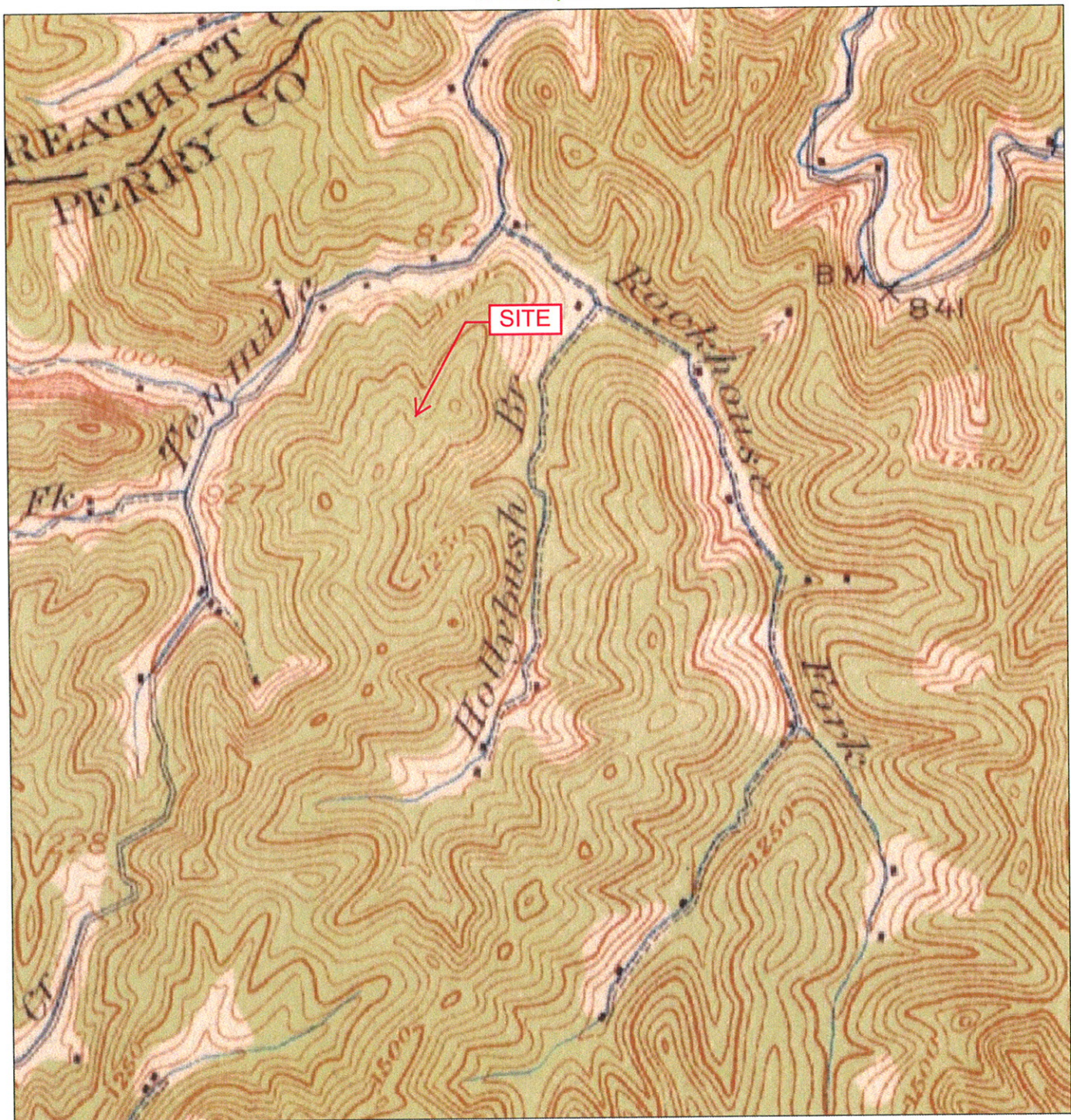
Approximate Scale: 1 inch equals 900 feet

FIGURE 6 1913 TOPOGRAPHIC MAP

Source: FirstSearch



Environmental FirstSearch
Topo: Current Map 1.25 Mile Radius
Historical Topo
Quad Name: Buckhorn, KY
Year: 1913 Scale: 1: 62500
HAZARD, KY



APPENDIX A



1) View from the subject site to the north. Photograph taken from the central portion of the property.



2) View from the subject site to the south. Photograph taken from the central portion of the property.



3) View from the subject site to the west. Photograph taken from the central portion of the property.



4) Photograph of mowed area on the northwest portion of the property.



5) View of the site from the western side of the property to the east.



6) View of property from the southwest corner of the property to the northeast.



7) View of Sykes Enterprises, Inc., an adjacent property, to the south-southwest of the subject site.



8) View of Trus Joist/Weyerhaeuser facility to the south-southeast of the subject site.



9) View of Pine Branch surface mine, an adjacent property, to the west of the subject site.



10) View of undeveloped property, adjacent to the north of the subject site, with the Wendell H Ford airport in the background.



11) Photograph of burn pile located in the central portion of the property.



12) Photograph of burn pile located in the central portion of the property.



13) Photograph of burn pile located in the central portion of the property.

APPENDIX B

FirstSearch Technology Corporation

Environmental FirstSearch™ Report

Target Property:

HAZARD KY 41701

Job Number: 2009-4752E

PREPARED FOR:

Smith Management Group, Inc

1860 B Williamson Court

Louisville, KY 40223

11-10-09



Tel: (407) 265-8900

Fax: (407) 265-8904

Environmental FirstSearch Search Summary Report

Target Site:

HAZARD KY 41701

FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	09-11-09	1.00	0	0	0	0	0	0	0
NPL Delisted	Y	09-11-09	0.50	0	0	0	0	-	0	0
CERCLIS	Y	10-01-09	0.50	0	0	0	0	-	0	0
NFRAP	Y	10-01-09	0.50	0	0	0	0	-	0	0
RCRA COR ACT	Y	10-14-09	1.00	0	0	0	0	0	0	0
RCRA TSD	Y	10-14-09	0.50	0	0	0	0	-	0	0
RCRA GEN	Y	10-14-09	0.25	0	0	0	-	-	4	4
Federal IC / EC	Y	08-06-09	0.50	0	0	0	0	-	0	0
ERNS	Y	09-13-09	0.12	0	0	-	-	-	11	11
Tribal Lands	Y	12-01-05	1.00	0	0	0	0	0	0	0
State/Tribal Sites	Y	09-15-09	1.00	0	0	0	0	0	0	0
State Spills 90	Y	NA	0.12	0	0	-	-	-	0	0
State/Tribal SWL	Y	01-01-09	0.50	0	0	0	0	-	0	0
State/Tribal LUST	Y	08-01-09	0.50	0	0	0	0	-	0	0
State/Tribal UST/AST	Y	07-28-09	0.25	0	0	0	-	-	0	0
State/Tribal EC	Y	NA	0.50	0	0	0	0	-	0	0
State/Tribal IC	Y	NA	0.25	0	0	0	-	-	0	0
State/Tribal VCP	Y	NA	0.50	0	0	0	0	-	0	0
State/Tribal Brownfields	Y	07-24-09	0.50	0	0	0	0	-	0	0
State Other	Y	01-01-07	0.25	0	0	0	-	-	0	0
- TOTALS -				0	0	0	0	0	15	15

Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to FirstSearch Technology Corp., certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in FirstSearch Technology Corp.'s databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

Waiver of Liability

Although FirstSearch Technology Corp. uses its best efforts to research the actual location of each site, FirstSearch Technology Corp. does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of FirstSearch Technology Corp.'s services proceeding are signifying an understanding of FirstSearch Technology Corp.'s searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.

***Environmental FirstSearch
Site Information Report***

Request Date: 11-10-09
Requestor Name: Elizabeth Swasko
Standard: AAI

Search Type: AREA
0.25 sq mile(s)
Job Number: 2009-4752E
Filtered Report

Target Site:

HAZARD KY 41701

Demographics

Sites: 15	Non-Geocoded: 15	Population: NA
Radon: 0.9 PCI/L		

Site Location

	<u>Degrees (Decimal)</u>	<u>Degrees (Min/Sec)</u>		<u>UTMs</u>
Longitude:	-83.272582	-83:16:21	Easting:	298777.562
Latitude:	37.376716	37:22:36	Northing:	4138883.147
Elevation:	N/A		Zone:	17

Comment

Comment:EPG/HAZARD/KY/ESA

Additional Requests/Services

Adjacent ZIP Codes: 1 Mile(s)

Services:

ZIP Code	City Name	ST	Dist/Dir	Sel
41727	CHAVIES	KY	0.00 --	Y
41367	ROWDY	KY	0.45 NE	N

	Requested?	Date
Fire Insurance Maps	No	
Aerial Photographs	No	
Historical Topos	No	
City Directories	No	
Title Search/Env Liens	No	
Municipal Reports	No	
Online Topos	No	

Environmental FirstSearch

Sites Summary Report

Target Property:

HAZARD KY 41701

JOB: 2009-4752E
EPG/HAZARD/KY/ESA

TOTAL: 15 **GEOCODED:** 0 **NON GEOCODED:** 15 **SELECTED:** 1

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Page No.
	ERNS	NORTHWEST OF HAZARD KY IN A RURAL NRC-538624/PIPELINE	BULL CREEK RD HAZARD KY	NON GC	N/A	N/A
	ERNS	NORTH MAIN ST. AT THE CITY PARK NRC-582129/FIXED	HAZARD KY	NON GC	N/A	N/A
	ERNS	LESLIE RESOURCES INC 294719/RAILROAD	LENNET TIPPLE FACILITY ROUT HAZARD KY 41701	NON GC	N/A	N/A
	ERNS	KY/WV GAS CO 628213/FIXED FACILITY	STRAIGHT FORK OF LOTS CREEK HAZARD KY 41701	NON GC	N/A	N/A
	ERNS	KY POWER CO 469718/HIGHWAY RELATED	HIGH ST HAZARD KY 41701	NON GC	N/A	N/A
	ERNS	KENTUCKY/WV GAS CO. 615667/PIPELINE RELATED	RTE 80, NEAR BIG CREEK HAZARD KY	NON GC	N/A	N/A
	ERNS	ABANDONED STRIP SITE, OFF OF RT 80 NRC-566905/MOBILE	UNKNOWN HAZARD KY 41701	NON GC	N/A	N/A
	ERNS	497 GORMAN HOLLOW ROAD NRC-895100/FIXED	497 GORMAN HOLLOW RD HAZARD KY 41701	NON GC	N/A	N/A
	ERNS	2199 MAIN STREET NRC-811670/FIXED	HAZARD KY	NON GC	N/A	N/A
	ERNS	10 MILES SOUTH OF HAZARD KY. NRC-644252/FIXED	UNKNOWN HAZARD KY 41701	NON GC	N/A	N/A
	ERNS	1 MILE WEST OF HAZARD ON THE HAL R NRC-895535/MOBILE	1 W MILE OF HAZARD ON THE H HAZARD KY 41701	NON GC	N/A	N/A
	RCRAGN	VIRGIL RALEIGH TRUCKING KYR000034264/SGN	RALEIGH RD CHAVIES KY 41727	NON GC	N/A	N/A
	RCRAGN	WHAYNE SUPPLY COMPANY KYD981853153/VGN	DIABLOCK RD HAZARD KY 41701	NON GC	N/A	N/A
	RCRAGN	MIDCO KENTUCKY COMPANY KYD079666590/VGN	HIGHWAY 15 NORTH HAZARD KY 41701	NON GC	N/A	N/A
	RCRAGN	LOWE S OF HAZARD 1819 KYR000048447/VGN	81 COMMERCE DR HAZARD KY 41701	NON GC	N/A	N/A

Environmental FirstSearch Descriptions

NPL: EPA NATIONAL PRIORITY LIST - The National Priorities List is a list of the worst hazardous waste sites that have been identified by Superfund. Sites are only put on the list after they have been scored using the Hazard Ranking System (HRS), and have been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money.

A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

FINAL - Currently on the Final NPL

PROPOSED - Proposed for NPL

NPL DELISTED: EPA NATIONAL PRIORITY LIST Subset - Database of delisted NPL sites. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

DELISTED - Deleted from the Final NPL

CERCLIS: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS)- CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL.

PART OF NPL- Site is part of NPL site

DELETED - Deleted from the Final NPL

FINAL - Currently on the Final NPL

NOT PROPOSED - Not on the NPL

NOT VALID - Not Valid Site or Incident

PROPOSED - Proposed for NPL

REMOVED - Removed from Proposed NPL

SCAN PLAN - Pre-proposal Site

WITHDRAWN - Withdrawn

NFRAP: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM ARCHIVED SITES - database of Archive designated CERCLA sites that, to the best of EPA's knowledge, assessment has been completed and has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

NFRAP – No Further Remedial Action Plan

P - Site is part of NPL site

D - Deleted from the Final NPL

F - Currently on the Final NPL

N - Not on the NPL

O - Not Valid Site or Incident

P - Proposed for NPL

R - Removed from Proposed NPL

S - Pre-proposal Site

W – Withdrawn

RCRA COR ACT: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

RCRAInfo facilities that have reported violations and subject to corrective actions.

RCRA TSD: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM TREATMENT, STORAGE, and DISPOSAL FACILITIES. - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that treat, store, dispose, or incinerate hazardous waste.

RCRA GEN: EPA/MA DEP/CT DEP RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM GENERATORS - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that generate or transport hazardous waste or meet other RCRA requirements.

LGN - Large Quantity Generators

SGN - Small Quantity Generators

VGN - Conditionally Exempt Generator.

Included are RAATS (RCRA Administrative Action Tracking System) and CMEL (Compliance Monitoring & Enforcement List) facilities.

CONNECTICUT HAZARDOUS WASTE MANIFEST - Database of all shipments of hazardous waste within, into or from Connecticut. The data includes date of shipment, transporter and TSD info, and material shipped and quantity. This data is appended to the details of existing generator records.

MASSACHUSETTES HAZARDOUS WASTE GENERATOR - database of generators that are regulated under the MA DEP.

VQN-MA = generates less than 220 pounds or 27 gallons per month of hazardous waste or waste oil.

SQN-MA = generates 220 to 2,200 pounds or 27 to 270 gallons per month of waste oil.

LQG-MA = generates greater than 2,200 lbs of hazardous waste or waste oil per month.

Federal IC / EC: EPA BROWNFIELD MANAGEMENT SYSTEM (BMS) - database designed to assist EPA in collecting, tracking, and updating information, as well as reporting on the major activities and accomplishments of the various Brownfield grant Programs.

FEDERAL ENGINEERING AND INSTITUTIONAL CONTROLS- Superfund sites that have either an engineering or an institutional control. The data includes the control and the media contaminated.

ERNS: EPA/NRC EMERGENCY RESPONSE NOTIFICATION SYSTEM (ERNS) - Database of incidents reported to the National Response Center. These incidents include chemical spills, accidents involving chemicals (such as fires or explosions), oil spills, transportation accidents that involve oil or chemicals, releases of radioactive materials, sightings of oil sheens on bodies of water, terrorist incidents involving chemicals, incidents where illegally dumped chemicals have been found, and drills intended to prepare responders to handle these kinds of incidents. Data since January 2001 has been received from the National Response System database as the EPA no longer maintains this data.

Tribal Lands: DOI/BIA INDIAN LANDS OF THE UNITED STATES - Database of areas with boundaries established by treaty, statute, and (or) executive or court order, recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority. The Indian Lands of the United States map layer shows areas of 640 acres or more, administered by the Bureau of Indian Affairs. Included are Federally-administered lands within a reservation which may or may not be considered part of the reservation.

BUREAU OF INDIAN AFFAIRS CONTACT - Regional contact information for the Bureau of Indian Affairs offices.

State/Tribal Sites: KYDEP STATE LEADS LIST - database of state level cercla/superfund sites. The data includes river basin affected, contaminant and the program overseeing the site.

State/Tribal SWL: KY DEP PERMITTED OPERATING LANDFILLS - database of the permitted

contained landfills and the permitted construction/demolition debris landfills.

State/Tribal LUST: *KY DEP* SB 193(SENATE BILL 193) - database of facilities eligible for reimbursement from the Petroleum Storage Tanks Environmental Assurance Fund (OPSTEAF).

State/Tribal UST/AST: *KY DEP* STATEWIDE UST LISTING - database of all registered underground storage tanks. The data includes installation date, removed date, capacity and construction information.

State/Tribal Brownfields: *KY DEP* BROWNFIELD INVENTORY - Database of verified brownfield sites. The data includes past and current use, utilities available, and owner and contact information.

RADON: *NTIS* NATIONAL RADON DATABASE - EPA radon data from 1990-1991 national radon project collected for a variety of zip codes across the United States.

State Other: *US DOJ* NATIONAL CLANDESTINE LABORATORY REGISTER - Database of addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the U.S. Department of Justice ("the Department"), and the Department has not verified the entry and does not guarantee its accuracy. All sites that are included in this data set will have an id that starts with NCLR.

Environmental FirstSearch Database Sources

NPL: EPA Environmental Protection Agency

Updated quarterly

NPL DELISTED: EPA Environmental Protection Agency

Updated quarterly

CERCLIS: EPA Environmental Protection Agency

Updated quarterly

NFRAP: EPA Environmental Protection Agency.

Updated quarterly

RCRA COR ACT: EPA Environmental Protection Agency.

Updated quarterly

RCRA TSD: EPA Environmental Protection Agency.

Updated quarterly

RCRA GEN: EPA/MA DEP/CT DEP Environmental Protection Agency, Massachusetts Department of Environmental Protection, Connecticut Department of Environmental Protection

Updated quarterly

Federal IC / EC: EPA Environmental Protection Agency

Updated quarterly

ERNS: EPA/NRC Environmental Protection Agency

Updated annually

Tribal Lands: DOI/BIA United States Department of the Interior

Updated annually

State/Tribal Sites: KYDEP Kentucky Department for Environmental Protection, Division of Waste Management Superfund Branch.

Updated when available

State/Tribal SWL: ***KY DEP*** Kentucky Department for Environmental Protection, Division of Waste Management Solid Waste Program

Updated annually

State/Tribal LUST: ***KY DEP*** Kentucky Department for Environmental Protection

Updated quarterly

State/Tribal UST/AST: ***KY DEP*** Kentucky Department for Environmental Protection

Updated quarterly

State/Tribal Brownfields: ***KY DEP*** Kentucky Department for Environmental Protection

Updated when available

RADON: ***NTIS*** Environmental Protection Agency, National Technical Information Services

Updated periodically

State Other: ***US DOJ*** U.S. Department of Justice

Updated when available

Environmental FirstSearch
Street Name Report for Streets within .25 Mile(s) of Target Property

Target Property: HAZARD KY 41701

JOB: 2009-4752E
EPG/HAZARD/KY/ESA

Street Name	Dist/Dir	Street Name	Dist/Dir
Brandon Ln	0.23 NE		
State Highway 15	0.25 NE		
Sykes Blvd	0.13 SE		
Tenmile Creek East C	0.23 NE		
Tenmile Creek West C	0.16 NW		
Trus Joist Ln	0.09 SE		
Upper Ten Mile Creek	0.10 NE		



HISTORICAL FIRE INSURANCE MAPS

NO MAPS AVAILABLE

10-28-09

2009-4752E

HAZARD KY 41701

A search of FirstSearch Technology Corporation's proprietary database of historical fire insurance map availability confirmed that there are NO MAPS AVAILABLE for the Subject Location as shown above.

FirstSearch Technology Corporation's proprietary database of historical fire insurance map availability represents abstracted information from the Sanborn® Map Company obtained through online access to the U.S. Library of Congress via local libraries.

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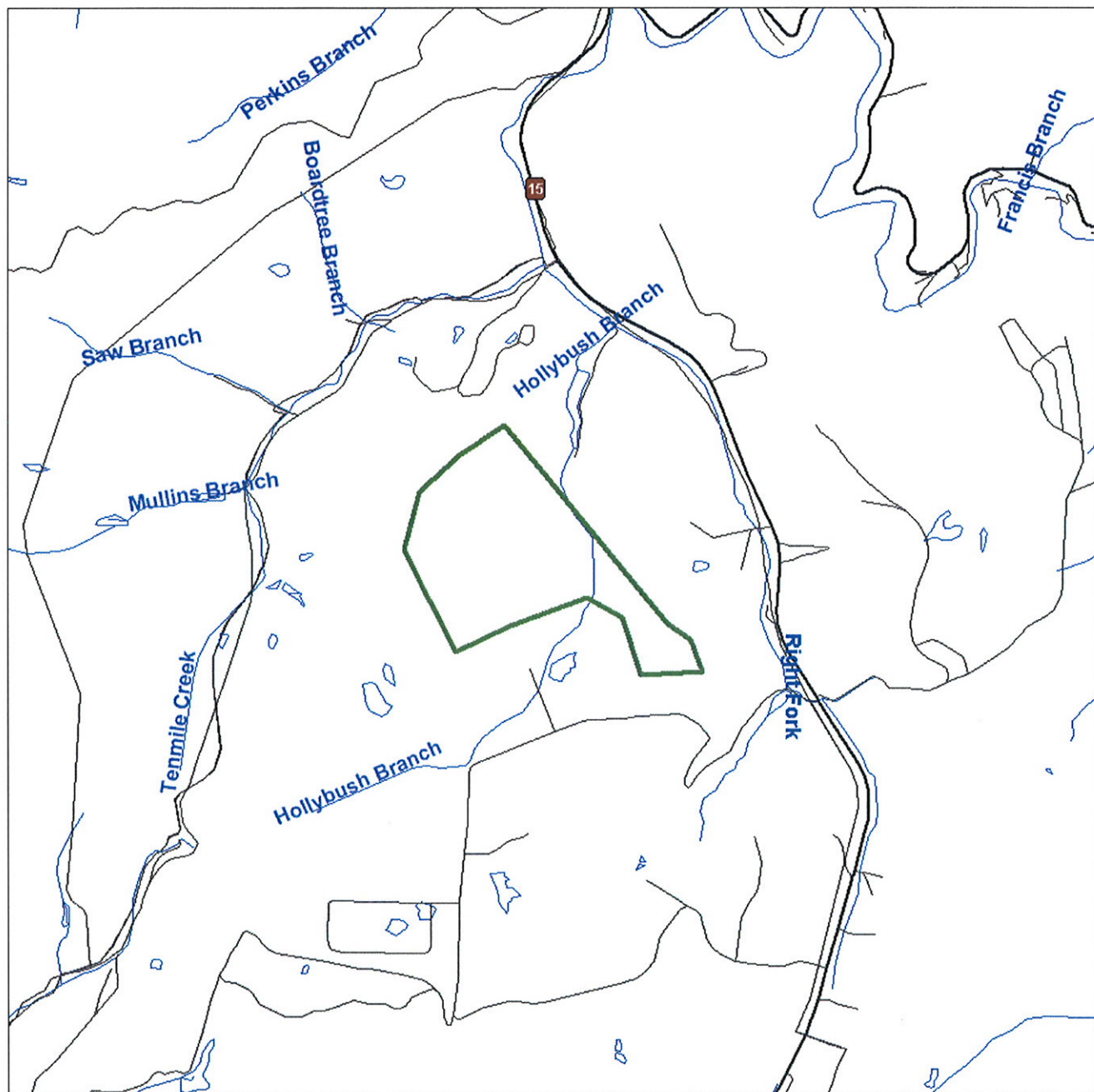


Environmental FirstSearch

1 Mile Radius from Area
ASTM Map: NPL, RCRACOR, STATE Sites



, HAZARD KY 41701



Source: 2005 U.S. Census TIGER Files

Area Polygon
Identified Site, Multiple Sites, Receptor
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
Triballand.....
Railroads



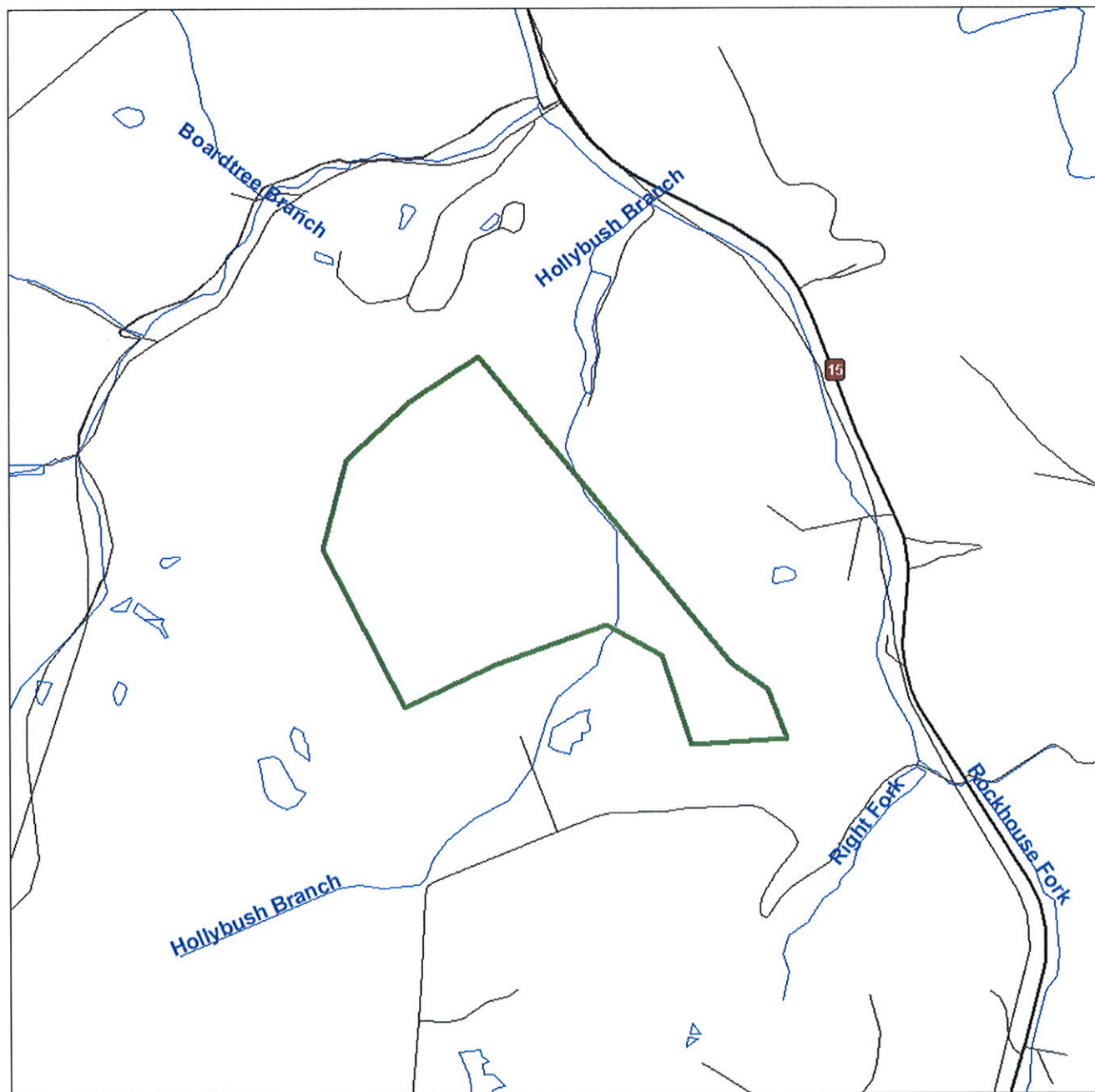


Environmental FirstSearch

.5 Mile Radius from Area
ASTM Map: CERCLIS, RCRATSD, LUST, SWL



, HAZARD KY 41701



Source: 2005 U.S. Census TIGER Files

Area Polygon	
Identified Site, Multiple Sites, Receptor	
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste	
Triballand.....	
Railroads	

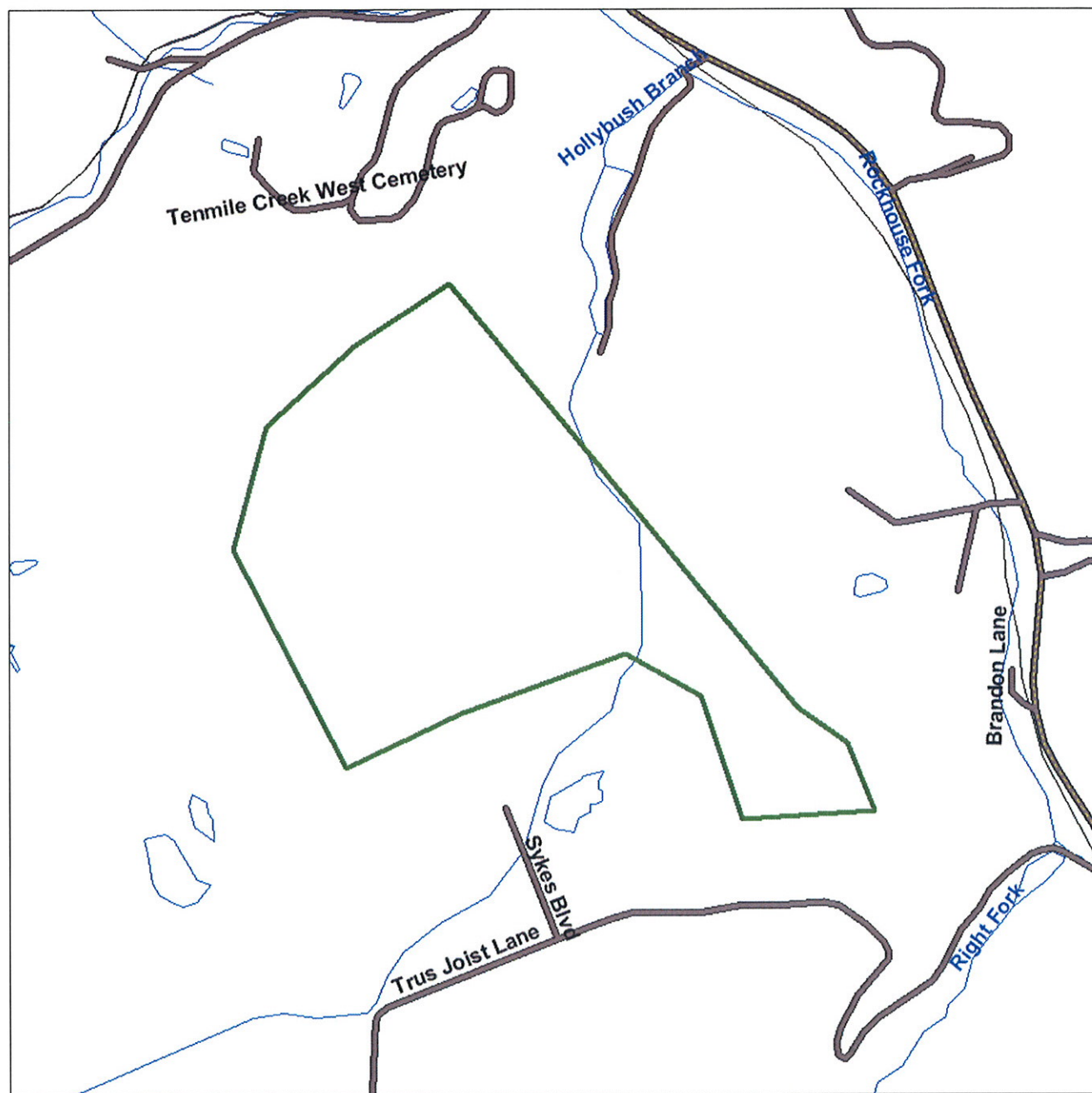


Environmental FirstSearch

.25 Mile Radius from Area
ASTM Map: RCRA GEN, ERNS, UST



, HAZARD KY 41701



Source: 2005 U.S. Census TIGER Files

Area Polygon				
Identified Site, Multiple Sites, Receptor				
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste				
Triballand				
Railroads				

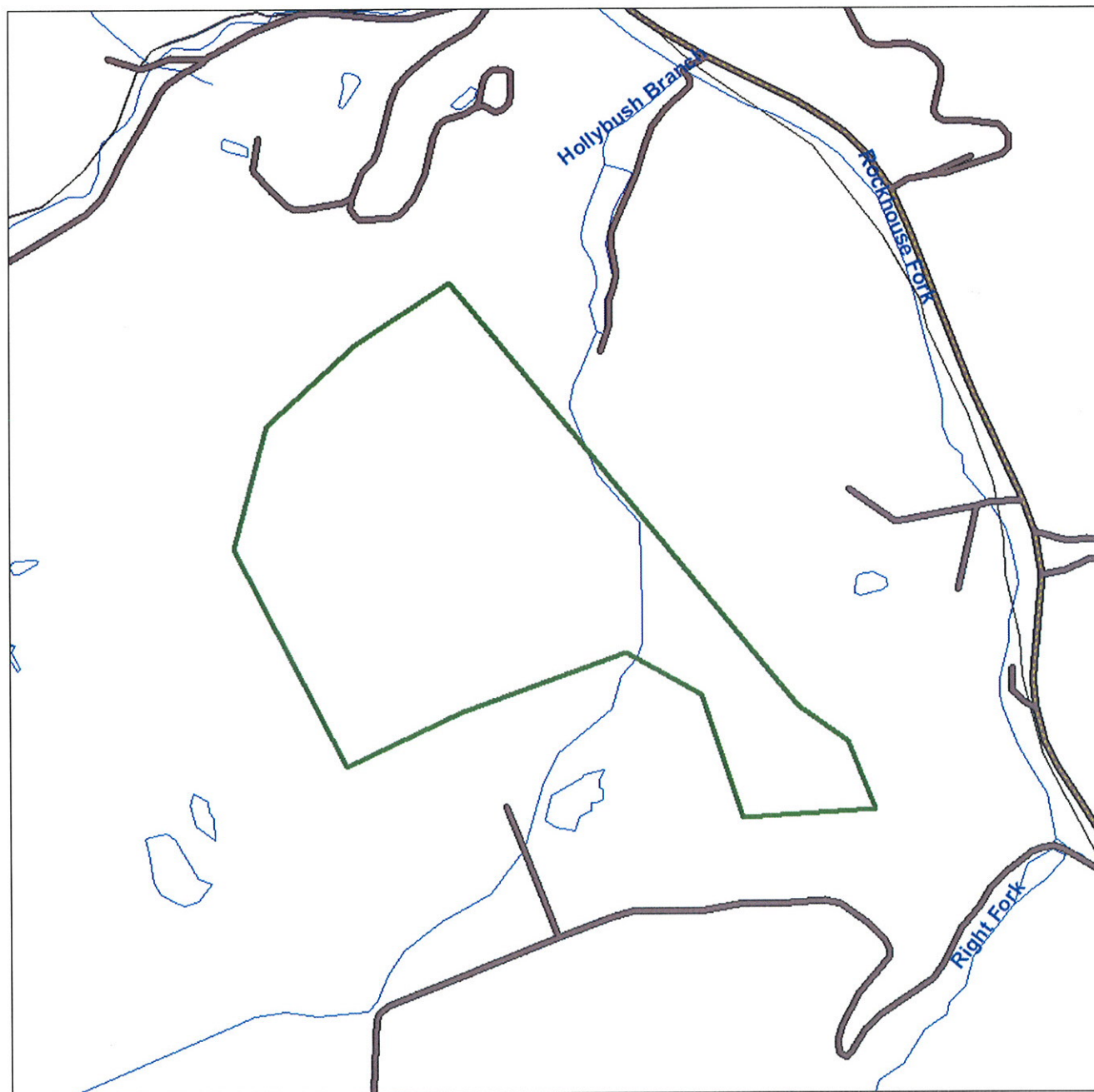


Environmental FirstSearch

.25 Mile Radius from Area
Non-ASTM Map: No Sites Found



, HAZARD KY 41701



Source: 2005 U.S. Census TIGER Files

Area Polygon
Identified Site, Multiple Sites, Receptor
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
Triballand
National Historic Sites and Landmark Sites
Railroads



APPENDIX C

Liz Swasko

From: Liz Swasko [lizes@smithmanage.com]
Sent: Wednesday, November 11, 2009 1:27 PM
To: 'UST.KORA@ky.gov'; 'Mary.Hawkins@ky.gov'; 'tina.fisher@ky.gov'; 'Morgan.Elliston@ky.gov'
Subject: Open Records Request for Coal Fields Regional Industrial Park, Perry Co., KY
To Whom It May Concern:

Smith Management Group (SMG) is requesting to review files or records concerning the following businesses, properties, facilities and/or releases located in **Chavies, Perry County, Kentucky**. Specifically, I am requesting a review of files which you may have for any of the names, addresses and/or facility numbers referenced below:

Coal Fields Regional Industrial Park*, Sykes Enterprises, Trus Joist and/or Weyerhaeuser Company
Lat: 37:22:36
Long: -83:16:21
Chavies, Perry County, Kentucky 41727

*The site is an undeveloped portion of the industrial park; the closest address is listed as Sykes Enterprises, 101 Sykes Blvd, Chavies, Perry Co, KY 41727-9100

Please inform me of the results of your review so I may schedule an appointment to review the file, if needed. If no records are found, please let me know. My contact information is provided below. Any assistance you can provide in this matter would be greatly appreciated.

Thanks!

Liz Swasko

Environmental Scientist
Smith Management Group 1860B Williamson Court
Louisville, KY 40223
(502) 587-6482 x 209

11/18/2009

Liz Swasko

From: Murphy, Darlene (EEC) [Darlene.Murphy@ky.gov] on behalf of EEC DEP UST KORA [UST.KORA@ky.gov]
Sent: Monday, November 16, 2009 9:51 AM
To: Liz Swasko
Subject: RE: Open Records Request for Coal Fields Regional Industrial Park, Perry Co., KY

I conducted a UST records search specifically for:

Coal Fields Regional Industrial Park, Sykes Enterprises, Trus Joist and/or Weyerhaeuser Co, Chavies, Perry Co KY. I did not find any UST records for this specific information.

Regards,

Darlene Murphy

Underground Storage Tank Branch
200 Fair Oaks Lane, 1st Floor
Frankfort, KY 40601
Phone: 502-564-5981, ext 4564
Fax: (502)-564-9232
Email: ust.kora@ky.gov
Website: www.waste.ky.gov/branches/ust

From: Liz Swasko [mailto:lizs@smithmanage.com]
Sent: Wednesday, November 11, 2009 1:27 PM
To: EEC DEP UST KORA; Hawkins, Mary (EEC); Fisher, Tina (EEC); Elliston, Morgan (EEC)
Subject: Open Records Request for Coal Fields Regional Industrial Park, Perry Co., KY

To Whom It May Concern:

Smith Management Group (SMG) is requesting to review files or records concerning the following businesses, properties, facilities and/or releases located in **Chavies, Perry County, Kentucky**. Specifically, I am requesting a review of files which you may have for any of the names, addresses and/or facility numbers referenced below:

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Please inform me of the results of your review so I may schedule an appointment to review the file, if needed. If no records are found, please let me know. My contact information is provided below. Any assistance you can provide in this matter would be greatly appreciated.

Thanks!

Liz Swasko

Environmental Scientist
Smith Management Group 1860B Williamson Court
Louisville, KY 40223
(502) 587-6482 x 209

11/18/2009

Liz Swasko

From: Hawkins, Mary (EEC) [Mary.Hawkins@ky.gov]
Sent: Monday, November 16, 2009 9:25 AM
To: Liz Swasko
Subject: RE: Open Records Request for Coal Fields Regional Industrial Park, Perry Co., KY
[The only thing I have on this request is Trus Joist. Are you interested in their files?](#)

From: Liz Swasko [mailto:lizs@smithmanage.com]
Sent: Wednesday, November 11, 2009 1:27 PM
To: EEC DEP UST KORA; Hawkins, Mary (EEC); Fisher, Tina (EEC); Elliston, Morgan (EEC)
Subject: Open Records Request for Coal Fields Regional Industrial Park, Perry Co., KY

To Whom It May Concern:

Smith Management Group (SMG) is requesting to review files or records concerning the following businesses, properties, facilities and/or releases located in **Chavies, Perry County, Kentucky**. Specifically, I am requesting a review of files which you may have for any of the names, addresses and/or facility numbers referenced below:

Coal Fields Regional Industrial Park*, Sykes Enterprises, Trus Joist and/or Weyerhaeuser Company
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Chavies, Perry County, Kentucky 41727

*The site is an undeveloped portion of the industrial park; the closest address is listed as Sykes Enterprises, 101 Sykes Blvd, Chavies, Perry Co, KY 41727-9100

Please inform me of the results of your review so I may schedule an appointment to review the file, if needed. If no records are found, please let me know. My contact information is provided below. Any assistance you can provide in this matter would be greatly appreciated.

Thanks!

Liz Swasko

Environmental Scientist
Smith Management Group 1860B Williamson Court
Louisville, KY 40223
(502) 587-6482 x 209

11/18/2009

Liz Swasko

From: Fisher, Tina (EEC) [Tina.Fisher@ky.gov]
Sent: Monday, November 16, 2009 10:40 AM
To: Liz Swasko
Subject: RE: Open Records Request for Coal Fields Regional Industrial Park, Perry Co., KY

Ms. Swasko,

A search has been done in the DWM file room and no files have been found for the facility names / address listed below.

Tina

From: Liz Swasko [mailto:lizs@smithmanage.com]
Sent: Wednesday, November 11, 2009 1:27 PM
To: EEC DEP UST KORA; Hawkins, Mary (EEC); Fisher, Tina (EEC); Elliston, Morgan (EEC)
Subject: Open Records Request for Coal Fields Regional Industrial Park, Perry Co., KY

To Whom It May Concern:

Smith Management Group (SMG) is requesting to review files or records concerning the following businesses, properties, facilities and/or releases located in **Chavies, Perry County, Kentucky**. Specifically, I am requesting a review of files which you may have for any of the names, addresses and/or facility numbers referenced below:

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Please inform me of the results of your review so I may schedule an appointment to review the file, if needed. If no records are found, please let me know. My contact information is provided below. Any assistance you can provide in this matter would be greatly appreciated.

Thanks!

Liz Swasko

Environmental Scientist
Smith Management Group 1860B Williamson Court
Louisville, KY 40223
(502) 587-6482 x 209

11/18/2009

Liz Swasko

From: Elliston, Morgan (EEC) [Morgan.Elliston@ky.gov]
Sent: Thursday, November 12, 2009 8:31 AM
To: Liz Swasko
Subject: RE: Open Records Request for Coal Fields Regional Industrial Park, Perry Co., KY
Attachments: AI3457 06-26-2006 INSPTN 06177DEPC007050.pdf; AI3457 06-26-2006 INSPTN 06177DEPC007052.pdf; AI3457 06-26-2006 INSPTN 06177DEPC007055.pdf; AI3457 06-26-2006 INSPTN 06177DEPC007058.pdf; AI3457 08-05-2005 INSPTN 05220DEPA672369.pdf; AI3457 12-10-2008 ARNAPR 09016DEPC615111.pdf; DOWSW061305.pdf; TF146724.pdf

Ms. Swasko,

The Division of Water has NO files for the following is Chavies, Perry County, Kentucky:

- Coal Fields Regional Industrial Park
- Sykes Enterprises
- Weyerhaeuser Company
- Sykes Enterprises, 101 Skykes Blvd., Chavies, Perry Co, KY 41727-9100

However, the Division of Water has files for the following:

Trus Joist (AI 3457)
 610 Trus Joist Ln
 Chavies, (Perry), KY 41727

I have attached all files that are in the database. There may be some additional hard copy documents that are not in the database. If interested in those, you will need to set up a file review or I can make copies for you (\$0.10 each + shipping).

Thank you,

Morgan P. Elliston

KY Division of Water
 200 Fair Oaks Lane
 Frankfort, KY 40601
 Phone: 502-564-3410 ext. 4571
 Fax: 502-564-9232

From: Liz Swasko [mailto:lizs@smithmanage.com]
Sent: Wednesday, November 11, 2009 1:27 PM
To: EEC DEP UST KORA; Hawkins, Mary (EEC); Fisher, Tina (EEC); Elliston, Morgan (EEC)
Subject: Open Records Request for Coal Fields Regional Industrial Park, Perry Co., KY

To Whom It May Concern:

Smith Management Group (SMG) is requesting to review files or records concerning the following businesses, properties, facilities and/or releases located in **Chavies, Perry County, Kentucky**. Specifically, I am requesting a review of files which you may have for any of the names, addresses and/or facility numbers referenced below:

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11/18/2009

Thanks!

Liz Swasko

Environmental Scientist
Smith Management Group 1860B Williamson Court
Louisville, KY 40223
(502) 587-6482 x 209

11/18/2009

APPENDIX D

ELIZABETH C. SWASKO

GEOLOGIST

Education & Certification

B.A., Geology,
Wittenberg
University

Certified 40-hr
Hazardous Waste
Site Worker

Certified Asbestos
Inspector:
Kentucky
Indiana
Virginia

Qualified as an
Environmental
Professional
under AAI (ASTM
1527E-05)

Elizabeth Swasko has experience in numerous areas, but her primary focus has been hazardous site supervision and remediation. She has participated in landfill closures and field activities associated with RCRA facility investigations and quarterly groundwater monitoring events. Ms. Swasko has overseen groundwater monitoring well installations, as well as conducted Phase I and II site assessments. She has also performed the primary air monitoring on several asbestos investigation sites, where she was responsible for documenting asbestos levels with air pumps during the abatement process. She is very familiar with the federal regulations regarding asbestos and asbestos removal. Ms. Swasko qualifies as an Environmental Professional under the All Appropriate Inquiry regulations.

Professional Experience

- Conducted numerous Phase I site assessments and NEPA reviews for telecommunications towers in KY, IN, OH, IL, VA, WV, NC and TN in accordance with ASTM 1527-00, ASTM 1527-05 and ASTM 1527E-05.
- Conducted Phase I site assessments for various manufacturing facilities complying with ASTM 1527-00, ASTM 1527-05 and ASTM 1527E-05.
- Provided technical oversight on a remediation project where excavation of soils was utilized to remove contamination of selected metals, SVOCs, PAHs and PCBs. Conducted soil sampling of walls and floor of excavated areas to delineate if additional soils needed to be removed.
- Oversaw and coordinated project where chlorinated solvents were reduced via injection of an oxidizing agent while working within the confines of a small space that was utilized by delivery trucks, personal vehicles and foot traffic to and from the businesses. Maintained a working relationship with the businesses to ensure the safety of all personnel.
- Participated in the performance of a long term groundwater monitoring program for large scale manufacturing firm to meet RCRA Part B Closure/Post Closure permit requirements. Oversaw the installation of a groundwater collection trench and soil blending to reduce the concentration of chlorinated solvents via bioremediation. Conducted groundwater sampling and compiled and compared data in quarterly & semi-annual reports.
- Has overseen large-scale abatement and air monitoring for asbestos projects and performed asbestos assessments for local post offices, manufacturing facilities and commercial buildings.
- Work with various manufacturing facilities through the performance of chemical exposure assessments and noise monitoring to ensure occupational exposures are compliant with OSHA and ACGIH standards.



SARA G. SMITH

Principal

Sara Smith is the President of Smith Management Group. She analyzes project risk management, provides ongoing analysis of legal developments in the environmental arena and directs interpretation of environmental regulations. Ms. Smith provides consulting services to SMG clients with regard to project development, regulatory issues and interface with agencies.

Education

J.D. with Highest Distinction, University of Kentucky College of Law

B.A., American Studies, Temple University, Summa Cum Laude

Professional Certifications

Admitted to Kentucky Bar

Certified Mediator

Ms. Smith received the first legal fellowship granted by the Institute for Mining and Minerals Research under Title III of the Federal Surface Mining and Reclamation Act. Prior to her legal practice, Ms. Smith worked as a title abstractor for an oil & gas exploration and development company and as a surveyor. Ms. Smith has developed experience as a transactional attorney, a certified mediator and as the senior manager for Smith Management Group.

Experience

- Principal responsible for development of Kentucky's Energy Project Site Bank for renewable, nuclear and coal gasification energy.
- Assists clients with compliance with environmental, health & safety issues and regulations; Review of environmental reports and plans for legal implications
- Environmental Consultants Advisory Board, DPIC (Chairman of Education Committee) 1994-2002
- Organizer and facilitator for Kentucky's Workgroup on Legal Issues of Carbon Sequestration
- Advisory Board, Center for Applied Energy Research, University of Kentucky, 2009-
- Attorney for seven years for corporate, banking, licensing and environmental issues at Kentucky's largest legal firm

Selected Publications/Presentations

"Utah International, Inc. v. Watt: Adjudicative or Legislative Hearing", Kentucky Law Journal, Volume 72, Number 1, 1983-84.

"Implied and Conditional Consent in the Sale of Horse Shares or Seasons", Kentucky Law Journal, Volume 74, Number 4, 1985-86

Legal and Technical Ramifications of Environmental Data Collection
National Symposium on Surface Mining Hydrology, Sedimentology and Reclamation, December 1984.

"How EPA's Toxic Release Inventory Regulations and ISO 14000 Certification Affect Coal Mining", 1997, 10th Annual Professional Engineers In Mining Seminar



EXHIBIT J2

Noise Impact Study

Environmental Noise Impact Study

**Proposed ecoPower Site for
Biomass Electric Generating Station
Coalfields Regional Industrial Park
1244 Coalfield Industrial Drive
Chavies, Perry County, KY 41727**

Prepared by:

**Smith Management Group
1405 Mercer Road
Lexington KY 40511**

**1860 Williamson Court, Suite B
Louisville, KY 40223**

Environmental Noise Impact Study

Proposed ecoPower Site for Biomass Handling System

1244 Coalfield Industrial Drive

Truss Joist Lane

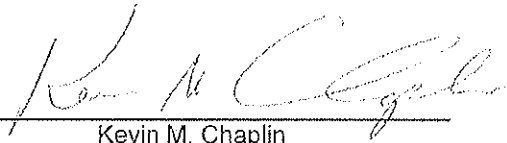
Hazard, Perry County, KY

JANUARY, 2010

Prepared By:



David Johnson, P.E., CSP
Project Manager



Kevin M. Chaplin
Senior Industrial Hygienist

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TABLES

TABLE 1	Preliminary Ambient Noise Monitoring (24-Hours)
TABLE 2	Typical Noise Source Levels
TABLE 3	Air Cooled Condenser Noise Data
TABLE 4	Facility Propagated Noise Levels
TABLE 5	Facility Propagated Noise Levels after Mitigation

APPENDICES

APPENDIX A	Noise Data Sheets
APPENDIX B	Monitoring Location Map
APPENDIX C	Photographs
APPENDIX D	Site Plan With Equipment Noise Data
APPENDIX E	References

1.0 INTRODUCTION

Smith Management Group (SMG) was retained by ecoPower Generation, LLC to conduct an environmental noise impact study of the proposed Biomass Handling and Power Generation facility to be located at 1244 Coalfield Industrial Drive in Perry County, Kentucky. Ambient noise levels were monitored at selected locations on the property's perimeter boundaries closest to potential receptors. Continuous ambient conditions monitoring was conducted over a 24 hour period beginning on November 19, 2009 and concluding on November 20, 2009. Noise modeling was conducted to predict the environmental noise emissions during normal power generation facility operation, which excludes construction period noise and intermittent facility activities such as start up and shut down. The measured ambient noise levels were compared to propagated power generation facility noise levels intruding at the monitored locations to determine the probable impact on existing ambient noise levels.

The property chosen for development is approximately 125 acres on a reclaimed strip mine site located within the Coalfields Regional Industrial Park. Site topography is predominantly flat with some undulation and small rises, covered with grasses and isolated areas of secondary growth trees.

SMG collected **24-Hour Ldn** (day/night noise level average over the sampling time with 10 decibels (dB) added during the hours of 10:00 PM and 7:00 AM) noise samples from two (2) locations at the proposed facility's property boundaries. The noise samples were located at two perimeter points on the property boundary. Location #1 was on the southwest to west side of the property, location #2 was in the southeast corner of the property. The twenty-four (24) hour Ldn averaged noise samples were 43.4 dBA and 44.9 dBA. Refer to **Table 1** for further sampling data. Individual noise data sheets are found in **Appendix A**.

In addition to the monitoring locations, three (3) locations were chosen as propagated noise level points where modeling utilized reference distances for calculating estimated noise levels at those points during equipment (noise source) operation. The noise measurement locations and propagated noise level reference points are identified on the Monitoring Location Map found in **Appendix B.**

This Introduction does not contain the details of the methods used, limitations of available information, or information obtained. Therefore, the user must read this report in its entirety for a comprehensive understanding of the actions taken, data generated and the resulting conclusions.

2.0 MONITORING METHODS

Two (2) Quest model 2900 sound level meters were pre-calibrated with a Quest QC-10 calibrator traceable to the National Institute of Standards and Technology prior to the sampling event. Each sound level meter collected noise levels for approximately 24 hours and the recorded data was downloaded for review. Refer to **Appendix A** for the Noise Data sheets and **Appendix B** for Monitoring Locations. Twenty-four (24) hour Ldn are represented on the data sheets as LDN. The 24-hour average without the included 10 dB added to all noise levels received during the hours of 10:00 PM and 7:00 AM are represented on the data sheets as the Equivalent Sound Pressure Level (LEQ). Additional information provided includes start/stop times, dates, run time, preset monitoring parameters, location #, serial #, etc.

Each of the sound level meters was mounted on a tripod with a wind screen over the microphone allowing data collection to occur (see Site Photographs in **Appendix C**). The windscreen inhibits the effects of wind blowing across the microphone which can produce higher than normal sound level readings. Tentative sampling locations were determined prior to site arrival through a review of aerial maps, proposed facility location (noise source) drawings and topographic maps. The locations were selected to capture acoustical environments representative of the nearby noise-sensitive receptors (rural commercial and residential). In addition, the locations were selected to capture the existing sound levels at two points near the proposed plant/property boundaries. The sound level meters were placed approximately four (4) to five (5) feet above the ground surface.

At the time of initial setup and sampling (11/19/09), the temperature was approximately 52 degrees Fahrenheit with overcast conditions, humidity at 62% and wind calm. The low temperature during the 24 hour period was in the mid 30's. There was no precipitation throughout the 24-hour sampling period.

3.0 MONITORING RESULTS

SMG collected one 24-Hour Ldn noise sample from two (2) locations located on the property boundaries close to potential noise receptors. The receptors identified were primarily limited to industrial and commercial facilities in the partially developed industrial park. Residential receptors identified were located more than a mile away from the proposed facility location. Site topography is predominantly flat with some undulation and small rises, covered with grasses and isolated areas of secondary growth trees. The proposed site is at an elevation higher than most of the sound receptors identified and beyond these locations are additional forested ridges and hills.

The sampling conducted on November 19-20, 2009 is a snapshot of one 24-hour period of ambient noise conditions present at the two (2) sampling locations. Environmental conditions and the quantity of industrial and commercial traffic which could be seasonal in nature could also have an impact on noise levels. Therefore, noise levels collected during this sampling event may vary from future sampling events depending on environmental conditions at that time.

The 24-Hour noise samples (Ldn) ranged from 43.4 dBA to 44.9 dBA. The two sampling locations and results are as follows:

- **Noise Measurement Location #1** (SLM Serial# 030019) was located at the southwest corner of the property approximately 850 feet from the nearest access road on the west side of the property. This location would be approximately 800 feet from the proposed chimney and baghouse location and approximately 780 feet from the proposed Wood Hog building indicated on the site development map (Drawing # EM-5 prepared by Sargent & Lundy included in **Appendix D**). The 24-Hour Ldn at sample location #1 was 44.9 dBA.
- **Noise Measurement Location #2** (SLM Serial# 010026) was located in the southeast corner of the property approximately 1,025 feet from the

nearest commercial receptor, an operating Call Center (Sykes Enterprises). The sampling location is approximately 1,875 feet from the projected locations of the facility ID Fan and chimney and approximately 2,500 feet east of Route 15 where residential and light commercial businesses are interspersed in a rural setting. The 24-Hour Ldn at sample location #3 was 43.4 dBA.

Individual Data Sheets

Individual data sheets for each 24-hour sampling location are provided in **Appendix A**. Additional data provided on the data sheets includes the LEQ which is the equivalent-continuous sound level (L_{eq}) as a hypothetical steady sound that has the equivalent sound energy as the actual fluctuating sound over a given time duration which in this case is 24 hours. The LEQ does not include the 10 dB addition used between the hours of 10:00 PM and 7:00 AM. The LEQ provided is the average sound level accumulated throughout the 24-hour sampling period.

The exceedance sound level (L_5 , L_{10} , L_{50} & L_{90}) is the sound level exceeded "x" percent of the sampling period and is commonly referred to as a statistical sound level. L_{90} is referred to as the residual sound level because it measures the background sound level without the influence of loud, transient noise sources. L_{50} is the sound level exceeded 50% of the sampling period or the median sound level. L_{10} is the sound level exceeded 10% of the sampling period. L_{10} is often referred to as the intrusive sound level because it measures the occasional louder noises. The variation between these values can provide an indication of the variability and distribution of the noise environment. If the noise environment were perfectly steady, all of the values would be identical. A large variation between the values would indicate a large range of sound levels within the environment. An example would be measurements near a roadway

with frequent passing vehicles. This would cause a large variation in the statistical sound levels.

4.0 BACKGROUND NOISE INFORMATION

4.1 GENERAL INFORMATION

Sound is defined as any pressure variation that can be detected by the human ear. Noise is often considered unwanted sound. The human response to noise is complex and can be influenced by a variety of acoustic and non-acoustic factors. Acoustic factors generally include the sound's amplitude, duration, spectral content and fluctuations. Non-acoustic factors generally include the listener's ability to become used to the noise, the listener's attitude toward the noise and the noise source, the listener's view of the necessity of the noise, and the predictability of the noise. Humans are exposed to noise at work, leisure, travel, and at home; however, it is necessary that humans are not exposed to an excessive amount of noise throughout the day and night. Community noise or environmental noise, or any noise that would affect a person in a home, school, business, place of worship, etc., is measured by the amount of noise that is produced during different times of the day. Noise levels produced in the daytime may not be acceptable during the night, due to the sleep patterns of most people. Noise is measured logarithmically in "decibels" or "dB". "Logarithmically" means that 50 dB added to 50 dB does not equal 100 dB, it equals 53 dB. Normal conversation ranges from 60 to 65 dB, while a jet engine taking off measures near 140 dB. A summary of typical noise source levels is presented in **Table 2**.

Two different tones of noise produced at the same level (i.e. a low pitched hum from a heating unit and a high pitched ring from a telephone) do not sound the same to the human ear. Frequency is measured in hertz (Hz) which is the number of cycles per second. The typical human ear can hear frequencies ranging from approximately 20 Hz to 20,000 Hz. On average, the human ear is most sensitive to sounds in the middle frequencies (1,000 to 8,000 Hz) and is less sensitive to sounds in the low and high frequencies. Most people do not hear the low pitched sound as well as the high pitched sound and as such the A-weighting scale was developed to simulate the frequency response of the human ear to sounds at typical environmental levels, emphasizing sounds in the middle

frequencies. Therefore, noise is measured in the "A-Weighted" sound level scale, referred to as "dBA".

This measuring system accounts for the difference in the actual sound level and what the human ear actually registers. A shift of less than 3 dBA is generally indistinguishable to the human ear outside a controlled, laboratory-type environment.

4.2 NOISE SOURCES

Current noise sources (acoustical environment) in the vicinity of the proposed development are somewhat typical for predominantly rural communities. However, the site is within an industrial park that has operating businesses in the vicinity. The closest operating facility is the Sykes Enterprises facility which is a Call Center with minimal noise sources outside of automobile and vendor traffic. Farther from the site (approximately 2,750 feet) is a wood truss and joist manufacturing facility that is currently operating at minimal production which could add to the overall acoustical environment when fully operational. Additional sources include the Wendell H. Ford Airport located northeast of the site on the other side of State Route 15 and vehicle traffic on State Route 15 including a significant contribution from trucks primarily hauling coal and timber. The primary sources of natural noise in the area include insects, dogs and other native wildlife. Hunting and four-wheel drive recreational vehicles provide other noise sources that are currently a part of the acoustical environment on a non-consistent basis but which could change as the site is developed. These uncontrolled and transient noise sources may have been present during some of the 24-hour sampling period but that could not be confirmed. Both were observed on the property at the time the sound level meters were collected on November 20, 2009.

5.0 APPLICABLE GOVERNMENTAL GUIDELINES

The impact on community noise levels can be evaluated with respect to existing background sound levels and the increase which the noise source would impose on this background level of noise. To our knowledge, there are no current federal, state, county or local industrial noise statutes or regulations, other than general nuisance, that are applicable to this project. In the absence of regulations there are guidelines which can be applied to understand the relative sound levels experienced at the sampling locations.

The EPA identifies residential areas as those areas where human beings live, including apartments, seasonal residence, mobile homes, and year round residences. The EPA states that a quiet environment is necessary in both urban and rural residential areas in order to prevent activity interference and annoyance, and to permit the hearing mechanism to recuperate if it is exposed to higher levels of noise during other periods of the day. According to the EPA, yearly levels are sufficient to protect public health and welfare if they do not exceed an L_{dn} (Equivalent A-weighted sound level exposure over a 24 hour period) of 55 dBA outdoors in sensitive areas such as residences, schools, and hospitals. The day-night sound level, L_{dn} , is the 24-hour average sound level with a 10 dB penalty applied to the nighttime sound levels (10:00 PM to 7:00 AM) to account for increased sensitivity to noise during nighttime hours. This equates to a constant sound level of 55 dBA during daytime hours and 45 dBA during nighttime hours. The EPA emphasizes that since the protective sound levels were derived without concern for technical or economic feasibility, and contain a margin of safety to ensure their protective value, they must not be viewed as standards, criteria, regulations, or goals. EPA believes there is no reason to suspect that the general population will be at risk from any of the identified effects of noise at these levels. The EPA has no authority to regulate ambient noise levels.

6.0 ENVIRONMENTAL NOISE EMISSIONS AND IMPACT

The environmental noise emissions include propagated noise levels from the facility equipment to three surrounding locations, two along the facility property line perimeter and the third located closer to State Route 15.

6.1 NOISE MODELING METHODOLOGY

The propagated noise levels were modeled using the following basic equation of outdoor sound propagation (see **Table 4**):

$$\text{SPL} = \text{PWL} - 20 \cdot \log(R/R\text{-ref}) + \text{DI-rec} - 10 \cdot \log(\Omega/4\pi) - 0.5 - \text{A-combined-rec.}$$
where:

SPL = Sound Pressure Level at receiver location;

PWL = Sound Power Level at reference distance;

R = distance in feet to receiver;

R-ref = reference distance for sound power level calculations,
usually 3';

DI-rec = directivity index in receiver's direction, equals 0;

$10 \cdot \log(\Omega/4\pi)$ = solid angle of sound propagation, equals +3 for
semi-spherical propagation;

0.5 = constant for using feet as units;

A-combined-rec. = combined attenuations
(i.e. atmospheric and ground).

For use in this equation, PWL is most often obtained from the sound pressure level measured at a reference position near the source, using an inverse of the equation where R-ref is the distance from the source to the reference position, DI-ref is the source directivity index (0), Ω is the solid angle at the source that is available for sound propagation, and A-combined-ref is the combined attenuation from all significant propagation mechanisms between source and reference position. When Ω is 4π radians (a sphere), this term is 0, semi-spherical is +3 ($\Omega = 2\pi$ radians), and quarter -spherical is +6 ($\Omega = \pi$ radians). The term is a correction to the divergence term when the noise is not propagating through a complete sphere. It assumes sound reflection from the ground and from vertical and horizontal surfaces, if any are present.

6.2 EQUIPMENT NOISE SOURCES

Based upon the conceptual power generating facility plan and the site emission point locations, the primary facility noise will be emitted from the following sources:

Noise Level Points	Description	Noise Level
#4	ID Fan	85 dBA @ 3'
#6	Transformer	85 dBA @ 3'
#10	Air Cooled Condenser	55 dBA @ 500' (see Table 3)
#20	Log Building	100 dBA @ 3' Inside (but building with multiple significant openings)
#23	Hog Building	100 dBA @ 3' Inside (but building with multiple openings)

Equipment noise levels were provided by Sargent & Lundy, engineers for ecoPower Generation, LLC. Refer to Site Plan With Noise Data in Appendix D.

6.3 FACILITY NOISE IMPACT ON EXISTING AMBIENT CONDITIONS

In order to evaluate the potential noise impacts on the surrounding noise sensitive receptors, the propagated facility noise levels were compared to the measured or estimated background noise levels. Estimated background noise levels at propagated noise level locations NML-A, NML-B and NML-C are the average of the two measured locations NML-1 and NML-2. The predicted facility operational intruding noise levels and their respective impact on existing ambient noise levels are detailed in **Table 4 - Facility Propagated Noise Levels**. The calculated noise levels are based upon the facility running 24 hours per day and 7 days per week.

At Noise Measurement Location #1 (NML-1), the Ldn intruding-operational noise levels from the noise emission points were as follows:

#4 (ID Fan) - 42.4 dBA;
#6 (Transformer) 38.4 dBA;
#10 (Air Cooled Condenser) - 51.8 dBA;
#20 (Log Building) - 57.6 dBA;
#23 (Hog Building) - 53.4 dBA.

With the existing ambient Ldn measured at 44.9 dBA and after the logarithmic sum with the predicted intruding operational noise levels, the incremental noise increase over ambient conditions is as high as 12.9 dBA for noise emission point #20 (see **Table 4**), primarily due to its location in close proximity to the receptor or monitoring point (780'). However, there were no identified sensitive receptors (i.e. residences, commercial or retail businesses) on the western adjacent properties. Also, noise emission point #20 has predicted intruding noise just above the EPA's 55 dBA Ldn guideline (57.6 dBA).

At Noise Measurement Location #2 (NML-2), the Ldn intruding-operational noise levels from the noise emission points were as follows:

#4 (ID Fan) - 31.0 dBA;
#6 (Transformer) 33.1 dBA;
#10 (Air Cooled Condenser) - 45.1 dBA;
#20 (Log Building) - 41.1 dBA;
#23 (Hog Building) - 40.6 dBA.

With the existing ambient Ldn measured at 43.4 dBA and after the logarithmic sum with the predicted intruding operational noise levels, the incremental noise increase over ambient conditions ranged from 0.2 dBA to 4.0 dBA. The highest incremental increase over ambient being 4.0 dBA for noise emission point #10 (see **Table 4**), which would be just barely perceived by the typical listener.

At Propagated Noise Location - A (NML-A), the Ldn intruding-operational noise levels from the noise emission points were as follows:

#4 (ID Fan) - 36.2 dBA;
#6 (Transformer) 39.5 dBA;

#10 (Air Cooled Condenser) - 54.7 dBA;

#20 (Log Building) - 45.6 dBA;

#23 (Hog Building) - 48.0 dBA.

With the existing ambient Ldn estimated at 44.2 dBA and after the logarithmic sum with the predicted intruding operational noise levels, the incremental noise increase over ambient conditions is as high as 10.8 dBA for noise emission point #10 (see **Table 4**), primarily due to its location in close proximity to the receptor point (850'). There are intervening areas of heavy woods and underbrush to the east of NML-A and between NML-A and State Route 15 and sensitive receptors (i.e. residences) located off of State Route 15. The dense woodlands to the north and east will provide attenuation to the sensitive receptors along State Route 15 although this not considered in noise extrapolation calculations. Only the significant mechanisms of outdoor sound propagation (i.e. atmospheric absorption and ground) from the proposed plant to the point NML-A are attenuation factors for the propagated noise levels. However, noise levels for emission point #10 do not exceed the EPA recommended level of 55 dBA.

At Propagated Noise Location - B (NML-B), the Ldn intruding-operational noise levels from the noise emission points were as follows:

#4 (ID Fan) - 30.0 dBA;

#6 (Transformer) 31.0 dBA;

#10 (Air Cooled Condenser) - 45.1 dBA;

#20 (Log Building) - 42.9 dBA;

#23 (Hog Building) - 45.7 dBA.

With the existing ambient Ldn estimated at 44.2 dBA and after the logarithmic sum with the predicted intruding operational noise levels, the incremental noise increase over ambient conditions was as high as 3.8 dBA for noise emission point #23 (see **Table 4**). A noise shift of 3 dBA or less is generally indistinguishable to the human ear outside a controlled, laboratory-type environment.

At Propagated Noise Location - C (NML-C), the Ldn intruding-operational noise levels from the noise emission points were as follows:

#4 (ID Fan) - 22.3 dBA;

#6 (Transformer) 22.9 dBA;

#10 (Air Cooled Condenser) - 36.9 dBA;

#20 (Log Building) - 35.7 dBA;

#23 (Hog Building) - 35.7 dBA.

With the existing ambient Ldn estimated at 44.2 dBA and after the logarithmic sum with the predicted intruding operational noise levels, the incremental noise increase over ambient conditions was insignificant. The highest incremental increase over ambient noise levels was only 0.7 dBA for noise emission point #10 (see **Table 4**), which would not be perceived by the typical listener.

6.4 CONSTRUCTION NOISE EMISSIONS

Major construction phases will consist of mobilization, foundation construction, equipment installation, facility structure erection and site cleanup. Noise emissions will vary with each phase of the construction depending on the construction activity and equipment. With consideration to the facility equipment sound levels provided by ecoPower Generation, LLC, construction noise emissions are not expected to exceed the respective equipment noise emissions.

6.5 MITIGATION

There are several ways to evaluate noise levels to determine the need for mitigation. First, one can examine the shift in noise levels from ambient, pre-development levels to expected post-development levels. As a 3 dBA increase in noise is usually not noticeable to the listener, any shift of 3 dBA would not require mitigation. Second, one can use the EPA standard of 55 dBA, only utilizing mitigation if the resulting noise levels exceed that standard. Finally, depending on the surrounding environment, a hybrid determination can be used. In that case, if all post development noise levels are predicted to be at or below

EPA's 55 dBA standard, and where the pre development ambient noise levels are above 55 dBA, where the shift is 3 dBA or less, no mitigation is required.

In general, a goal of a 3 dBA increase or less from intruding operational facility noise at property boundaries and/or sensitive receptors is normally acceptable when feasible by equipment configuration and mitigation measures. With the proposed power generating facility noise levels generated from emission points #10 (Air Cooled Condenser), #20 (Hog Building) and #23 (Log Building) being near the east and west property boundaries (close proximity to Noise Measurement Location #1 and Propagated Noise Location - A), it would appear impractical to achieve such a target. The noise impact from these particular noise sources to the west property line reveal a calculated increase to existing ambient noise levels of from 7.7 dBA to 12.9 dBA (NMI-1); to the east property line, the same noise sources reveal a calculated increase to existing ambient noise levels of from 3.7 dBA to 10.8 dBA (NML- A). With the 3 dBA incremental increase or less criteria for acceptable Ldn intruding operational noise levels, mitigation at noise emission points #10, #20 and #23 would be needed in accordance with **Table 5 - Facility Propagated Noise Levels after Mitigation**. However, there are presently no sensitive receptors, such as residences and businesses, in proximity on the adjacent properties to the west. Most of the sensitive receptors are to the east of the site and on the east side of State Route 15, which is greater than 2,500 feet away from the proposed power generating facility (see data for Propagated Noise Location - C). Also, there are intervening areas of heavy woods and underbrush to the north and east of the proposed plant and between the plant and State Route 15. The dense woodlands to the north and east will provide attenuation to the sensitive receptors along State Route 15 although this attenuation is not considered as the propagated noise level points are on the west side of the woods.

If intruding operational noise can not increase the existing ambient condition Ldn noise level above 55 dBA, mitigation at noise emission point #20 would be

required to decrease the source noise from 100 dBA to 96 dBA. With this mitigation, the intruding-operational Ldn for emission point #20 is decreased from 57.6 dBA to 53.6 dBA with a Ldn logarithmic sum with background calculated at 54.2 dBA. Mitigation measures may include rigid enclosure systems to the degree feasible or ventilation silencers for equipment inside of the building or possibly an earthen berm with foliage outside of the building near the west property border.

.ecoPower proposes to use the hybrid approach to mitigation where intruding operational noise levels will be acceptable provided that they do not cause an exceedance of EPA's 55 dBA Ldn guideline or a significant impact to existing ambient condition Ldn's that are already above EPA's 55 dBA Ldn guideline. If these conditions are met, no mitigation measures are required (see **Table 4**).

7.0 CONCLUSION

SMG collected two (2) 24-Hour Ldn noise samples from two (2) locations on the proposed property boundaries at the site of the planned power generation facility. The 24-Hour noise Ldn sample results ranged from 43.4 dBA to 44.9 dBA.

According to the EPA, yearly levels are sufficient to protect public health and welfare if they do not exceed an Ldn of 55 dBA outdoors in sensitive areas such as residences, schools, and hospitals.

No mitigation measures will be required if the proposed facility is intruding operational noise levels do not cause an exceedance of EPA's 55 dBA Ldn guideline or a significant increase over EPA's 55 dBA Ldn guideline. Noise Measurement Location #1 had an intruding noise Ldn of 57.8 dBA from noise emission point #20, while all other propagated noise levels at the other locations were at or beneath the EPA 55 dBA Ldn guideline (see **Table 4 - Power Generation Facility Propagated Noise Levels**).

Data gathered and generated indicates that no sensitive receptors will be impacted by noise levels above the EPA guideline. At this time, absent specific noise regulations or ordinances impacting this project and based upon the site location (an industrial park) and preliminary data generated within this report, there does not appear to be a significant impact from the projected noise sources to adjacent properties (sensitive receptors) as it pertains to the EPA 24-hour Ldn of 55 dBA. Therefore, no mitigation is required at this site.

TABLES

Table 1 - ecoPower Property - Proposed Site Development
Preliminary Ambient Noise Monitoring (24 Hours)
Coalfields Industrial Park, Hazard, Perry County, KY
Sampling Dates: November 19, 2009 to November 20, 2009
Start time: 12:33 PM on November 19, 2009

SLM Serial #	Location (Property Boundary)	Sample Name	Sampling Dates	Parameter	24-Hour Ldn	Sample Duration
030019	Location #1: Southwest Corner of Proposed Development.	Location #1 (NML-1)	11/19/2009 to 11/20/2009	Environmental Noise	44.9 dBA	24-Hours
010026	Location #2: Southeast Corner of Proposed Development Adjacent to Sykes Commercial Facility.	Location #2 (NML-2)	11/19/2009 to 11/20/2009	Environmental Noise	43.4 dBA	24-Hours

SLM - Sound Level Meter

Ldn - 24 hour sound level averaged over day and night with a 10 decible penalty applied to the nighttime sound levels between 10:00 PM and 7:00 AM.

Table 2 - Typical Noise Source Levels

Noise Levels of Common Household Sources	
Noise Source	Noise Level (dBA)
Food blender	76-81 at 3 ft
Microwave Oven	56-58 at 3 ft
Vacuum Cleaner	78-85 at 5 ft
Leaf Blower	87-93 at 5 ft
Power lawn mower - Riding	88-93 at 5 ft
Noise Levels of Common Natural Sound Sources	
Noise Source	Noise Level (dBA)
Rustling leaves in wind	55-58, up to 66
Typical mall fountain	72-74 at 10 ft
Holstein cow	Up to 94 at 10 ft
Summer nighttime insects	50-54 in open field
Noise Levels of Common Aircraft	
Aircraft Model	Noise Level (dBA at 1000 ft)
707, DC-8	113.5
747	102.5
757	97.0
767	96.7
Noise Levels Outside Common Daily Transportation Sources at Full Speed	
Vehicle	Exterior Noise Level (dBA at 30 ft)
Automobile	72-75
Bus	82-87
Freight train	85-88
Subway train	98-103
Truck	82-89
Truck, idling	70-75

TABLE 3
Air Cooled Condenser Noise Data
ecoPower Generation, LLC
Coal Fields Regional Industrial Park
Hazard, Perry County, Kentucky

Air Cooled Condenser Cell Sound Levels Used to Calculate SPLA at 500'											Log Sum
Cell PWL		83.8	88.4	88.2	89.7	88.2	81.7	75.0	59.0	95.3	98.3
SPLA @ 500'		40.9	45.5	45.3	46.8	45.3	38.9	32.1	16.1	52.4	55.4
SPL @ 500'		67.1	61.6	61.6	50.0	45.3	37.7	31.1	17.2	68.5	71.8
Cell PWL	-5 dB	78.8	83.4	83.2	84.7	83.2	76.7	70.0	54.0	90.3	93.3
SPLA @ 500'		35.9	40.5	40.3	41.8	40.3	33.9	27.1	11.1	47.4	50.4
SPL @ 500'		62.1	56.6	56.6	45.0	40.3	32.7	26.1	12.2	63.5	66.8
Cell PWL	-6 dB	77.8	82.4	82.2	83.7	82.2	75.7	69.0	53.0	89.3	92.3
SPLA @ 500'		34.9	39.5	39.3	40.8	39.3	32.9	26.1	10.1	46.4	49.4
SPL @ 500'		61.1	55.6	55.6	44.0	39.3	31.7	25.1	11.2	62.5	65.8
Cell PWL	-9 dB	74.8	79.4	79.2	80.7	79.2	72.7	66.0	50.0	86.3	89.3
SPLA @ 500'		31.9	36.5	36.3	37.8	36.3	29.9	23.1	7.1	43.4	46.4
SPL @ 500'		58.1	52.6	52.6	41.0	36.3	28.7	22.1	8.2	59.5	62.8

Log Sum total is the logarithmic calculated total sound power level for each individual cell (combined) within the Air Cooled Condenser identified as Cell PWL. The total sound pressure level (SPL) or power level (PWL) generated and then the corresponding A-weighted sound pressure level at 500' as well as the non A-weighted SPL are also provided. Highlighted units (-5,-6,-9 decibels) are projected sound levels based upon mitigation of that many decibels.

TABLE 4 - FACILITY PR AGATED NOISE LEVELS

ecoPower Generation, LLC
Coal Fields Regional Industrial Park
Hazard, Perry County, Kentucky

Site No.	Lp 3' Source	Lp 3' - Calculated or Given	Lp (feet)	Lp 500' - Calculated or Given	Total Distance (feet) to Noise Monitoring Location (NML-X) near property border	Ground Atten @ 500'	Atmos Atten @ 500'	A(comb) Atten @ 500'	Ground Atten @ NML - X	Atmos Atten @ NML - X	A(comb) Atten @ NML - X	Intruding Noise at NML - X (calculated)	Ldn Formula (Intruding Operational Noise)	Ldn (Intruding-operational)	Ldn Background - Measured (1-2) or Estimated (A-C)	Log sum Calculated	Incremental increase over bg
NML-1	#4	85	3	41.07	800	1	1	1	2	2	3	35.99	417,140	42.4	44.9	46.8	1.9
NML-1	#6	85	3	41.07	1125	1	1	1	2	2	4	32.03	167,555	38.4	44.9	45.8	0.9
NML-1	#10	99	3	55.00	1200	1	1	1	2	2	4	45.40	3,637,197	51.8	44.9	52.6	7.7
NML-1	#20	100	3	56.07	780	1	1	1	2	2	3	51.21	13,876,265	57.6	44.9	57.8	12.9
NML-1	#23	100	3	56.07	1125	1	1	1	2	2	4	47.03	5,298,547	53.4	44.9	54.0	9.1
NML-2	#4	85	3	41.07	1875	1	1	1	2	4	7	24.59	30,231	31.0	43.4	43.6	0.2
NML-2	#6	85	3	41.07	1650	1	1	1	2	3	6	26.70	49,147	33.1	43.4	43.8	0.4
NML-2	#10	99	3	55.00	1800	1	1	1	2	4	7	38.73	784,467	45.1	43.4	47.4	4.0
NML-2	#20	100	3	56.07	2625	1	1	1	2	5	9	34.67	307,754	41.1	43.4	45.4	2.0
NML-2	#23	100	3	56.07	2775	1	1	1	2	5	9	34.19	275,382	40.6	43.4	45.2	1.8
NML-A	#4	85	3	41.07	1300	1	1	1	2	3	5	29.77	99,672	36.2	44.2	44.8	0.6
NML-A	#6	85	3	41.07	1000	1	1	1	2	2	4	33.05	212,061	39.5	44.2	45.5	1.3
NML-A	#10	99	3	55.00	850	1	1	1	2	2	4	48.25	7,019,104	54.7	44.2	55.0	10.8
NML-A	#20	100	3	56.07	1975	1	1	1	2	4	7	39.14	861,643	45.6	44.2	47.9	3.7
NML-A	#23	100	3	56.07	1675	1	1	1	2	3	6	41.57	1,508,107	48.0	44.2	49.5	5.3
NML-B	#4	85	3	41.07	2100	1	1	1	2	4	7	23.61	24,100	30.0	44.2	44.4	0.2
NML-B	#6	85	3	41.07	1875	1	1	1	2	4	7	24.59	30,231	31.0	44.2	44.4	0.2
NML-B	#10	99	3	55.00	1800	1	1	1	2	4	7	38.73	784,467	45.1	44.2	47.7	3.5
NML-B	#20	100	3	56.07	2400	1	1	1	2	4	8	36.45	463,489	42.9	44.2	46.6	2.4
NML-B	#23	100	3	56.07	1950	1	1	1	2	4	7	39.25	883,879	45.7	44.2	48.0	3.8
NML-C	#4	85	3	41.07	3600	1	1	1	2	5	10	15.93	4,110	22.3	44.2	44.2	0.0
NML-C	#6	85	3	41.07	3375	1	1	1	2	5	10	16.49	4,676	22.9	44.2	44.2	0.0
NML-C	#10	99	3	55.00	3300	1	1	1	2	5	10	30.47	116,975	36.9	44.2	44.9	0.7
NML-C	#20	100	3	56.07	4350	1	1	1	2	5	10	29.28	89,019	35.7	44.2	44.8	0.6
NML-C	#23	100	3	56.07	4350	1	1	1	2	5	10	29.28	89,019	35.7	44.2	44.8	0.6

TABLE 5 - FACILITY PROPAGATED NOISE LEVELS AFTER MITIGATION
ecoPower Generation, LLC
Coal Fields Regional Industrial Park
Hazard, Perry County, Kentucky

Site No.	LP 3' Source	LP 3' - Calculated or Given	LP (feet)	LP 500' - Calculated or Given	Total Distance (feet) to Noise Monitoring Location (NML-X) near property border	Ground Atten @ 500'	Atmos Atten @ 500'	A(comb) @ 500'	Ground Atten @ NML - X	Atmos Atten @ NML - X	A(comb) @ NML - X	Intruding Noise at NML - X (calculated)	Ldn Formula (Intruding Operational Noise)	Ldn (Intruding-operational)	Ldn Background - Measured (1-2) or Estimated (A-C)	Log sum Calculated	Incremental Increase over bg
NML-1	#4	85	3	41.07	800	1	1	2	2	1	3	35.99	417,140	42.4	44.9	46.8	1.9
NML-1	#6	85	3	41.07	1125	1	1	2	2	2	4	32.03	167,555	38.4	44.9	45.8	0.9
NML-1	#10	99	3	55.00	1200	1	1	2	2	2	4	45.40	3,637,197	51.8	44.9	52.6	7.7
NML-1	#20	96	3	52.07	780	1	1	2	2	1	3	47.21	5,524,241	53.6	44.9	54.2	9.3
NML-1	#23	100	3	56.07	1125	1	1	2	2	2	4	47.03	5,298,547	53.4	44.9	54.0	9.1
NML-1	#4	85	3	41.07	800	1	1	2	2	1	3	35.99	417,140	42.4	44.9	46.8	1.9
NML-1	#6	85	3	41.07	1125	1	1	2	2	2	4	32.03	167,555	38.4	44.9	45.8	0.9
NML-1	#10	92	3	48.00	1200	1	1	2	2	2	4	38.40	725,716	44.8	44.9	47.9	3.0
NML-1	#20	88	3	44.07	780	1	1	2	2	1	3	39.21	875,533	45.6	44.9	48.3	3.4
NML-1	#23	92	3	48.07	1125	1	1	2	2	2	4	39.03	839,763	45.4	44.9	48.2	3.3
NML-2	#4	85	3	41.07	1875	1	1	2	4	3	7	24.59	30,231	31.0	43.4	43.6	0.2
NML-2	#6	85	3	41.07	1650	1	1	2	3	3	6	26.70	49,147	33.1	43.4	43.8	0.4
NML-2	#10	98	3	54.00	1800	1	1	2	4	3	7	37.73	623,124	44.1	43.4	46.8	3.4
NML-2	#20	100	3	56.07	2625	1	1	2	5	4	9	34.67	307,754	41.1	43.4	45.4	2.0
NML-2	#23	100	3	56.07	2775	1	1	2	5	4	9	34.19	275,382	40.6	43.4	45.2	1.8
NML-A	#4	85	3	41.07	1300	1	1	2	3	2	5	29.77	99,672	36.2	44.2	44.8	0.6
NML-A	#6	85	3	41.07	1000	1	1	2	2	2	4	33.05	212,061	39.5	44.2	45.5	1.3
NML-A	#10	89	3	45.00	850	1	1	2	2	2	4	38.25	701,910	44.7	44.2	47.4	3.2
NML-A	#20	100	3	56.07	1975	1	1	2	4	3	7	39.14	861,643	45.6	44.2	47.9	3.7
NML-A	#23	97	3	53.07	1675	1	1	2	3	3	6	38.57	755,844	45.0	44.2	47.6	3.4
NML-B	#4	85	3	41.07	2100	1	1	2	4	3	7	23.61	24,100	30.0	44.2	44.4	0.2
NML-B	#6	85	3	41.07	1875	1	1	2	4	3	7	24.59	30,231	31.0	44.2	44.4	0.2
NML-B	#10	99	3	55.00	1800	1	1	2	4	3	7	38.73	784,467	45.1	44.2	47.7	3.5
NML-B	#20	100	3	56.07	2400	1	1	2	4	4	8	36.45	463,489	42.9	44.2	46.6	2.4
NML-B	#23	100	3	56.07	1950	1	1	2	4	3	7	39.25	883,879	45.7	44.2	48.0	3.8
NML-C	#4	85	3	41.07	3600	1	1	2	5	5	10	15.93	4,110	22.3	44.2	44.2	0.0
NML-C	#6	85	3	41.07	3375	1	1	2	5	5	10	16.49	4,676	22.9	44.2	44.2	0.0
NML-C	#10	99	3	55.00	3300	1	1	2	5	5	10	30.47	116,975	36.9	44.2	44.9	0.7
NML-C	#20	100	3	56.07	4350	1	1	2	5	5	10	29.28	89,019	35.7	44.2	44.8	0.6
NML-C	#23	100	3	56.07	4350	1	1	2	5	5	10	29.28	89,019	35.7	44.2	44.8	0.6

APPENDIX A

NOISE DATA SHEETS

RSY163861SL002.sdat

2900 Integrating/Logging Sound Level

FW Version:02.4

Serial NumberCDD030019

Name: Measurement Location #1

Date: 11/19/09 - 11/20/09

Company: Smith Management Group

Work Area: Proposed EcoPower Site - SW Corner Of Property

Description Hazard, Perry Co., KY

Comments: Project Name: EcoPower Site-Environmental Noise Levels at
Ambient Conditions (24-Hour LDN)

Meter Calibration

114.0 dB 009 1:50:52PM

Calibrator Serial

Calibration Date: 11/19/09

Group 1

Group Started: 009 12:32:46PM

Group Ended: 009 12:34:14PM

Run Time: 24:01:27

Group 1 Test 1

Test Start009 12:32:46PM

Test Ended

009 12:34:14PM

Run Time: 24:01:27

Measuring Parameters

Range:40 - 100
ThresholdoffweightinA
Exchange Rat3 dBTime Constanslow
Peak weightinc

Summary

Peak Level 108.4 dB, 11/19/2009 12:33:14PM

Max Level 79.2 dB, 11/19/2009 12:33:12PM

Min Level 31.6 dB, 11/19/2009 12:35:33PM

Overload: 0.00%

LEQ: 41.0 dB
LDN: 44.9 dB
L5: 43.7 dBSEL(3) 90.2 dB
CNEL: 45.1 dB
L10: 41.8 dBTWA: 45.7 dB
Pa2Sec:0.4
L50: 34.1 dBTAKM5: 43.7 dB
L90: 31.6 dB

Comments:

SLM.EcoPower.Location2.rev.txt

RSY163861SL001.sdat

2900 Integrating/Logging Sound Level

FW Version:02.4

Serial Number 010026

Name: Measurement Location # 2 Date: 11/19/09 - 11/20/09

Company: Smith Management Group

Work Area: SE Corner adjacent to Sykes Facility

Descriptio Location: Hazard, Perry Co KY

Comments: Project Name: EcoPower Site-Environmental Noise Levels at
Ambient Conditions (24-Hour LDN).

Meter Calibration

114.0 dB 009 1:57:44PM

Calibrator Serial

Calibration Date: 11/19/09

Group 1

Group Started: 009 1:24:25PM

Group Ended: 009 1:26:10PM

Run Time: 24:01:44

Group 1 Test 1

Test Start009 1:24:25PM

Test Ended

009 1:26:10PM
Run Time: 24:01:44

Measuring Parameters

Range:40 - 100
Threshold:off

Weighting:A
Exchange Rate:3 dB

Time Constant:Slow
Peak Weighting:C

Summary
Peak Level 97.6 dB, 11/19/2009 3:57:49PM
Max Level 64.3 dB, 11/19/2009 5:09:26PM
Min Level 31.6 dB, 11/19/2009 1:37:15PM
Overload: 0.00%

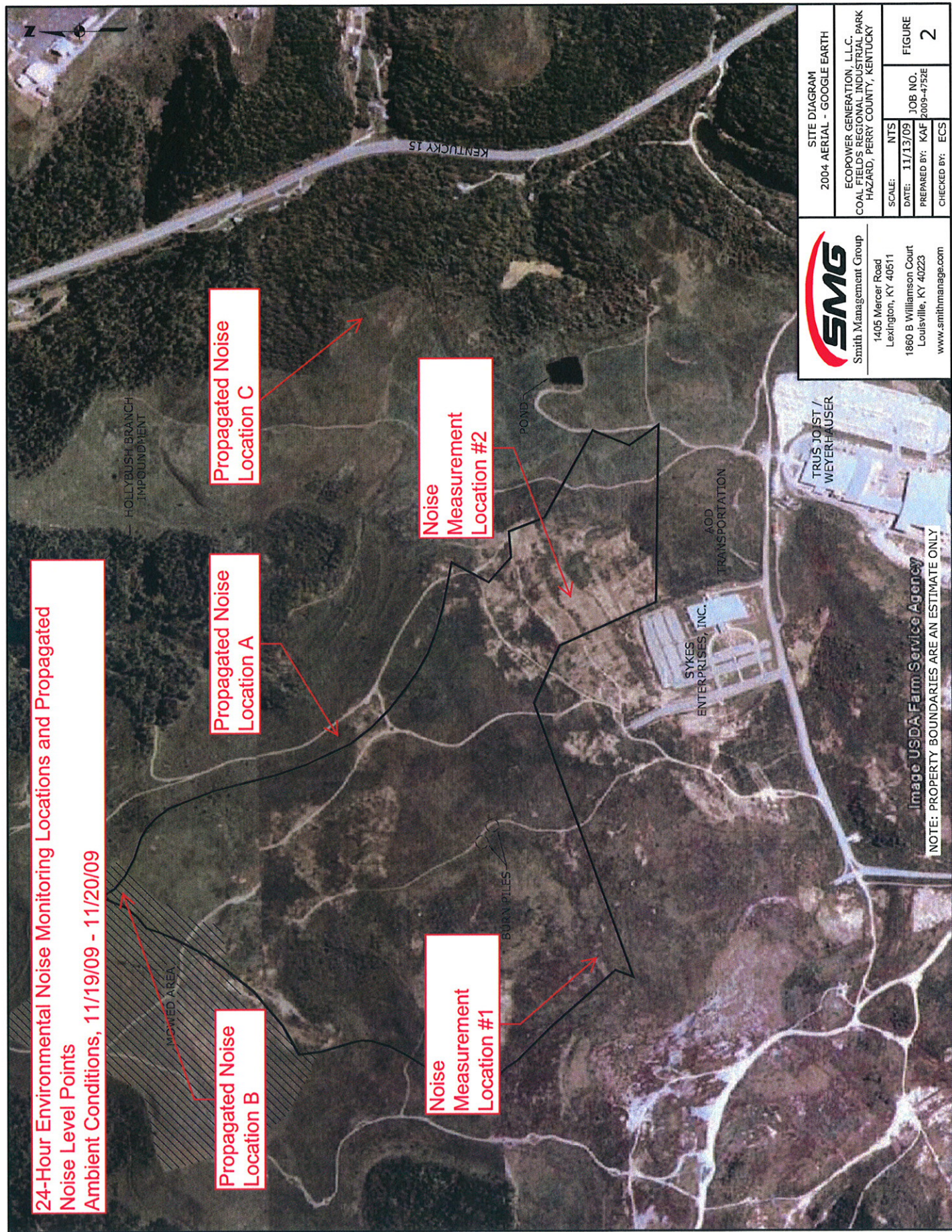
LEQ: 39.0 dB	SEL(3) 88.2 dB	TWA: 43.8 dB	TAKM5: 41.1 dB
LDN: 43.4 dB	CNEL: 43.6 dB	Pa2Sec:0.3	
L5: 43.3 dB	L10: 41.1 dB	L50: 33.9 dB	L90: 31.6 dB

Comments:

APPENDIX B

MONITORING LOCATION MAP

24-Hour Environmental Noise Monitoring Locations and Propagated Noise Level Points
Ambient Conditions, 11/19/09 - 11/20/09



SITE DIAGRAM		2004 AERIAL - GOOGLE EARTH	
ECOPower GENERATION, L.L.C.		COAL FIELDS REGIONAL INDUSTRIAL PARK	
HAZARD, PERRY COUNTY, KENTUCKY		FIGURE 2	
SCALE:	NTS	JOB NO.	2009-4752E
DATE:	11/13/09	PREPARED BY:	KAF
		CHECKED BY:	ECS



Smith Management Group
1405 Mercer Road
Lexington, KY 40511
1860 B Williamson Court
Louisville, KY 40223
www.smithmanage.com

Image USDA Farm Service Agency
NOTE: PROPERTY BOUNDARIES ARE AN ESTIMATE ONLY

APPENDIX C
PHOTOGRAPHS



1) Sampling Location #1 (NML-1) facing west



2) Sampling Location #1 (NML-1) facing west



3) Sampling Location #1 (NML-1) facing east



4) Sampling Location #2 (NML-2) facing southwest toward the noise receptor



5) Sampling Location #2 (NML-2) facing southwest toward the noise receptor



6) Sampling Location #2 (NML-2) facing southwest toward the noise receptor

APPENDIX D

SITE PLAN WITH EQUIPMENT NOISE DATA

For reasons of Homeland Security, this document is not available on-line:

Case Number: 2009-00530

*Description of Document: Appendix D, Site Plan with Equipment Noise Data,
42" x 30"*

Persons requiring access to this document may contact the Public Service Commission in person or in writing at:

Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602
Attn: GIS Coordinator
Phone (502) 564-3940

Written requests must include a signature, name, title of organization (if applicable), mailing address, phone number and optional e-mail address and the following statement: *I understand that since September 11, 2001, location data of critical utility structures is considered sensitive information for security reasons. I will not publish this map or any part of it on the World Wide Web. I will not redistribute this map to others, but shall refer requests by others for such information to the Kentucky Public Service Commission.*

Maps will be sent as pdf files by e-mail or on CD at no cost to the party. If printed "oversized" maps are requested, there will be a charge of \$8 per sheet.

Maps will be available for viewing at the Public Service Commission and at any public hearing.

APPENDIX E

REFERENCES

APPENDIX E – REFERENCES

1. American National Standard Institute (ANSI) / Acoustical Society of America (ASA); Quantities and Procedures for Description and Measurement of Environmental Sound – Part 5: Sound Level Descriptors for Determination of Compatible Land Use (Revision of ANSI S12.9-1998/Part 5).
2. International Standards Organization (ISO); ISO 1996-2, Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels. Reference number ISO 1996-2:2007 (E)
3. Noise and Vibration Control Engineering – Principles and Applications; edited by Leo L. Beranek and Istvan L. Ver; copyright 1992 by John Wiley & Sons, Inc.
4. U.S. Environmental Protection Agency (EPA); Information on Levels of Environmental Noise Requisite to Protect Human Health and Welfare with an Adequate Margin of Safety, March 1974

EXHIBIT J3

Cultural, Historic and Archaeological Studies

Cultural Historic Survey

CULTURAL HISTORIC SURVEY FOR THE PROPOSED ECOPOWER GENERATION BIOMASS FACILITY IN NORTHERN PERRY COUNTY, KENTUCKY



by
Kathryne M. Joseph
&
Ann Marie P. Doyon

Prepared for



Prepared by



Lexington, KY | Hurricane, WV
Berlin Heights, OH | Evansville, IN | Mt. Vernon, IL
Longmont, CO | Sheridan, WY

CULTURAL HISTORIC SURVEY FOR THE PROPOSED ECOPOWER GENERATION BIOMASS FACILITY IN NORTHERN PERRY COUNTY, KENTUCKY

By

Kathryne M. Joseph and Ann Marie P. Doyon

Prepared for

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Prepared by

Cultural Resource Analysts, Inc.
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Fax: (859) 254-3747
E-mail: cmniquette@crai-ky.com
CRAI Project No.: K09S026

Karen E. Hudson
Principal Investigator

November 20, 2009

Lead Agency: Public Service Commission
Kentucky Heritage Council Site Check No. FY10-729

KENTUCKY HERITAGE COUNCIL
300 Washington Street, Frankfort, KY 40601
502-564-7005 • fax: 502-564-7005

*Fill out one form for each project that you are registering.
There are three parts to this form. Incomplete forms may cause a delay in processing.*

Part 1: Project Registration

Date (mm/dd/yyyy): 11/3/2009
County(ies): Perry
Project title/description: Proposed ecoPower Generation Biomass Facility
Firm or Institution: Cultural Resource Analysts, Inc.
Principal Investigator: Karen Hudson
Lead Agency: Public Service Commission Siting Board
Client: Smith Management Group

Part 2: Request for Historic Resource Information

Indicate whether site check will be fulfilled by (check only one):

- ☐ Request for GIS data (shapefiles)
☒ Request for GIS site check (pdf)
☐ Self check in KHC Library (no GIS)

If this is a preliminary site check for planning or proposal purposes only, please indicate here ☐.

If requesting GIS data, fill out the information below and attach appropriate files. Shape files of the project boundary must be projected in State Plane: Kentucky Single Zone, NAD83, feet. The four files (*.shp, *.shx, *.prj, and *.db) depicting the project boundary should be compressed and attached to your request in one *.zip file.

File Name: CH-k09s026-shapefiles.zip

If requesting GIS site check pdf, attach a copy of the topographic mapping showing location of the project area, and list the appropriate USGS Quad name(s).

USGS Quad(s): Krypton and Haddix, KY

Additional Information:

FORM CONTINUED ON NEXT PAGE

Part 3: Confidentiality Agreement

The undersigned acknowledges receipt of Kentucky Heritage Council (KHC) confidential site information for the Project identified above, and is aware of the confidential nature of the information being provided, and takes complete responsibility for this information to avoid unauthorized use or duplication. Confidential Information obtained from the KHC is to be used only for the project identified above, and any other use of the information is a violation of the Non-Disclosure of Confidential Information.

Confidential Information. The term "Confidential Information" shall mean any and all information, data, and maps, technical or non-technical, written or printed or photocopied or stored electronically or on magnetic media provided by or obtained from the Kentucky Heritage Council.

Non-Disclosure of Confidential Information. The individual designated below, with her/his principal place of business designated in Part 1, together with its affiliates (a) shall use reasonable care and discretion to prevent disclosure, publication, or dissemination of the KHC Confidential Information that has been provided to such party; and (b) shall not use, reproduce, distribute, disclose, or otherwise disseminate the Confidential Information that has been provided to such, except (i) to evaluate and perform the Project and (ii) as required to be disclosed by a government agency or by operation of law.

Name: Elizabeth Heavrin

Title: Architectural Historian

KHC Use Only

Completed by: _____

Date: _____

Time used: _____

ABSTRACT

In November 2009, Cultural Resource Analysts, Inc., completed a cultural historic survey of the proposed ecoPower Generation Biomass facility in northern Perry County, Kentucky. The survey was conducted at the request of Sara G. Smith of Smith Management Group on behalf of ecoPower Generation LLC.

Prior to initiating fieldwork, a search of records maintained by the Kentucky Heritage Council (State Historic Preservation Office) was conducted to determine if previously recorded cultural historic sites were located in the area of potential effect. This inquiry indicated that no sites located within the .75-mi area of potential effect had been previously documented. During the field survey, two previously unidentified individual historic sites (Sites 1 and 2) were documented. Neither of these sites appears to be eligible for inclusion in the National Register of Historic Places.

In summary, the proposed project will have no effect on any site eligible for, or listed in, the National Register of Historic Places. Therefore, a no historic properties affected determination is recommended for the proposed project.

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I. PURPOSE OF REPORT

In November 2009, Cultural Resource Analysts, Inc. (CRA), completed a cultural historic survey of the ecoPower Generation Biomass facility in northern Perry County, Kentucky (Figure 1). The survey was conducted at the request of Sara G. Smith of Smith Management Group on behalf of ecoPower Generation LLC.

The purpose of the survey was to:

- 1) identify and document all cultural historic sites (above ground resources 50 years of age or older) located within the area of potential effect (APE);
- 2) evaluate their eligibility for listing in the National Register of Historic Places (NRHP) and recommend boundaries, if eligible; and
- 3) evaluate the effect of the project on any properties included in or eligible for listing in the NRHP.

The APE was defined as a .75-mi radius centered on the proposed project (Figures 2 and 3). EcoPower Generation LLC proposes to build a wood-burning power plant featuring a 300 ft stack located on the grounds of the existing Coal Fields Regional Industrial park. Because the 300-ft stack will be the tallest vertical element associated with the project, the viewshed analysis was based upon standard guidance related to vertical structures of this height. A .75-mi radius surrounding the proposed electric generating facility was utilized as the APE, within which all properties over 50 years of age were assessed for possible NRHP eligibility. The survey was conducted to comply with federal regulations concerning the impact of federal actions on sites and structures listed in, or eligible for nomination to, the NRHP. These regulations include Section 106 of the National Historic Preservation Act of 1966 and the regulations published in the Code of Federal Regulations at 36 CFR Part 800. Federal actions include the use of federal funds or the granting of a federal permit.

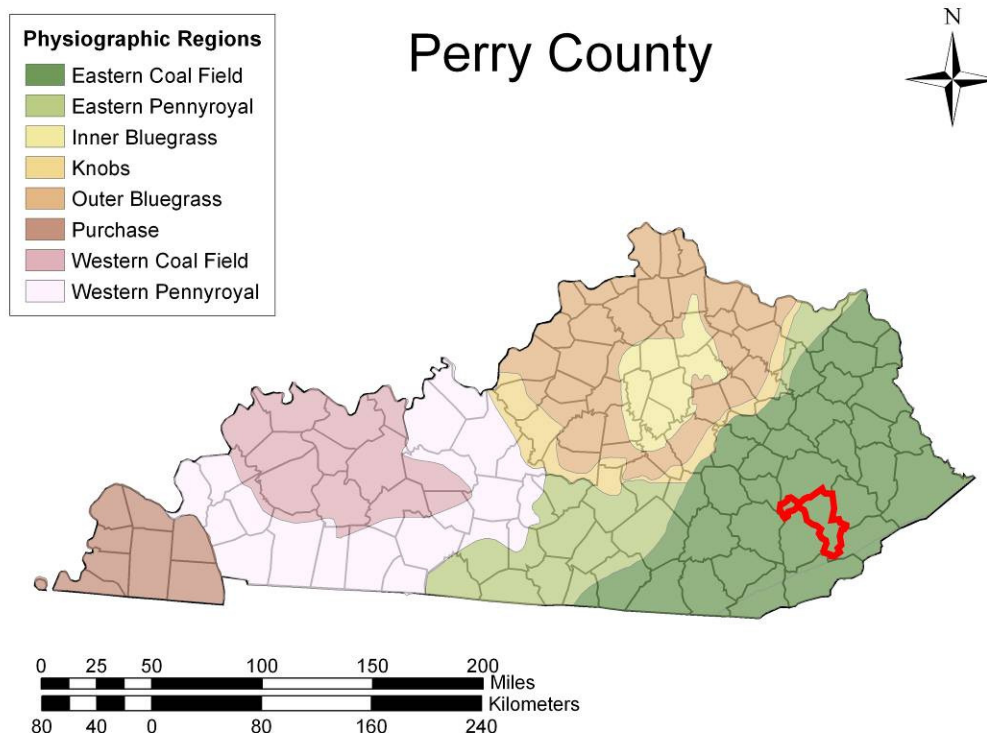


Figure 1. Map of Kentucky showing the location of Perry County.

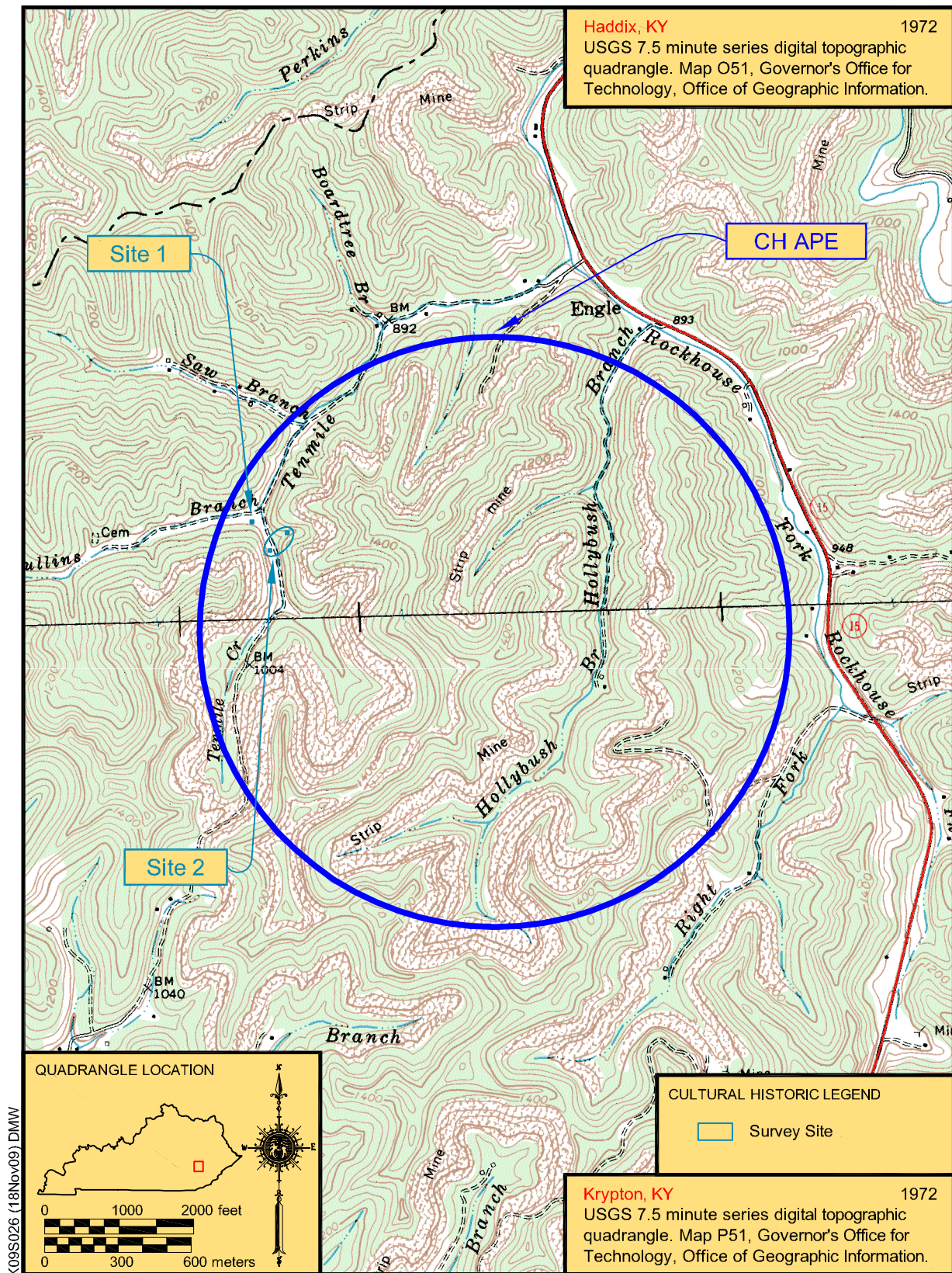


Figure 2. Topographic map showing the APE and cultural historic sites.

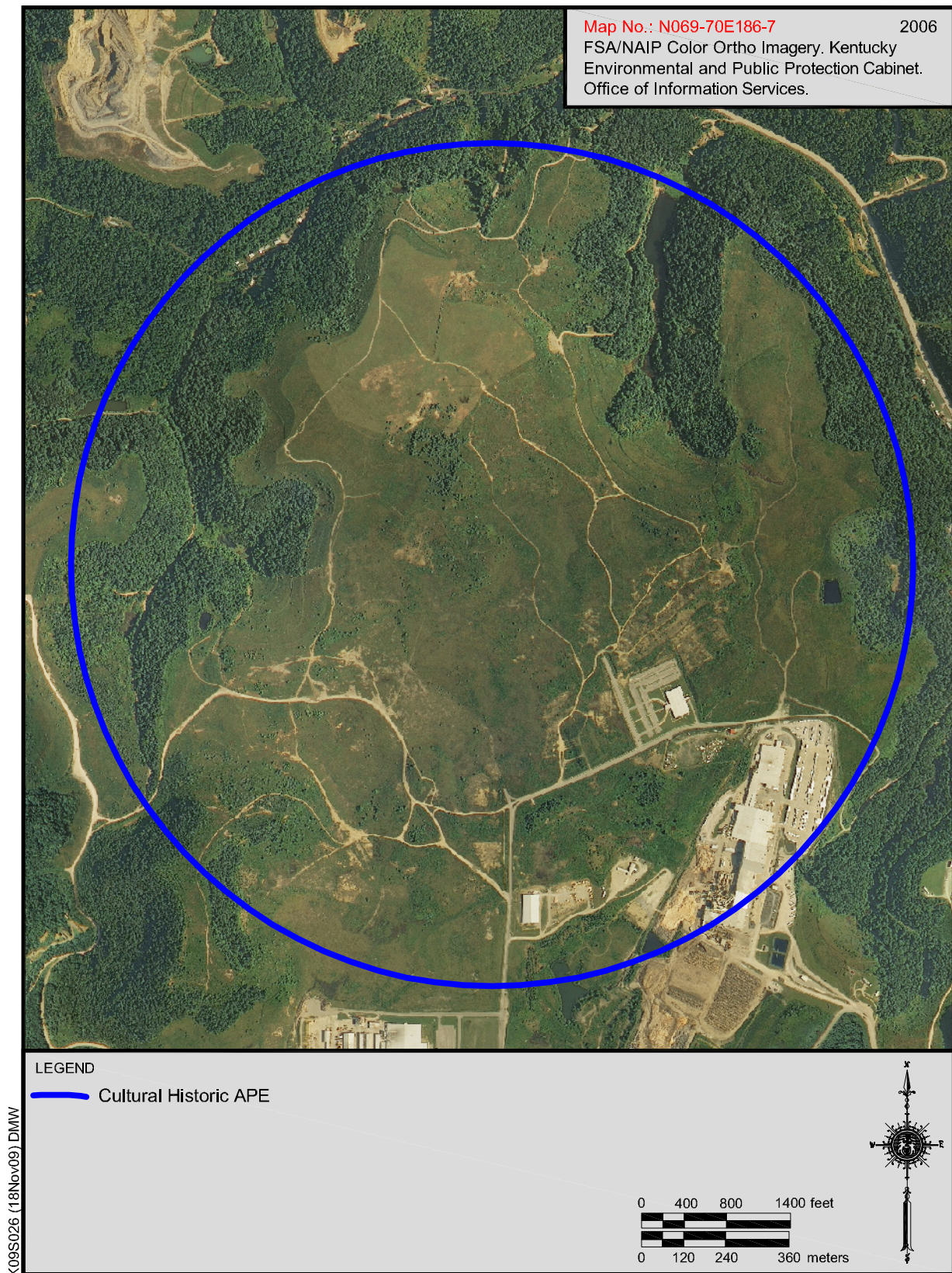


Figure 3. Aerial map showing proposed project APE and location of cultural historic sites.

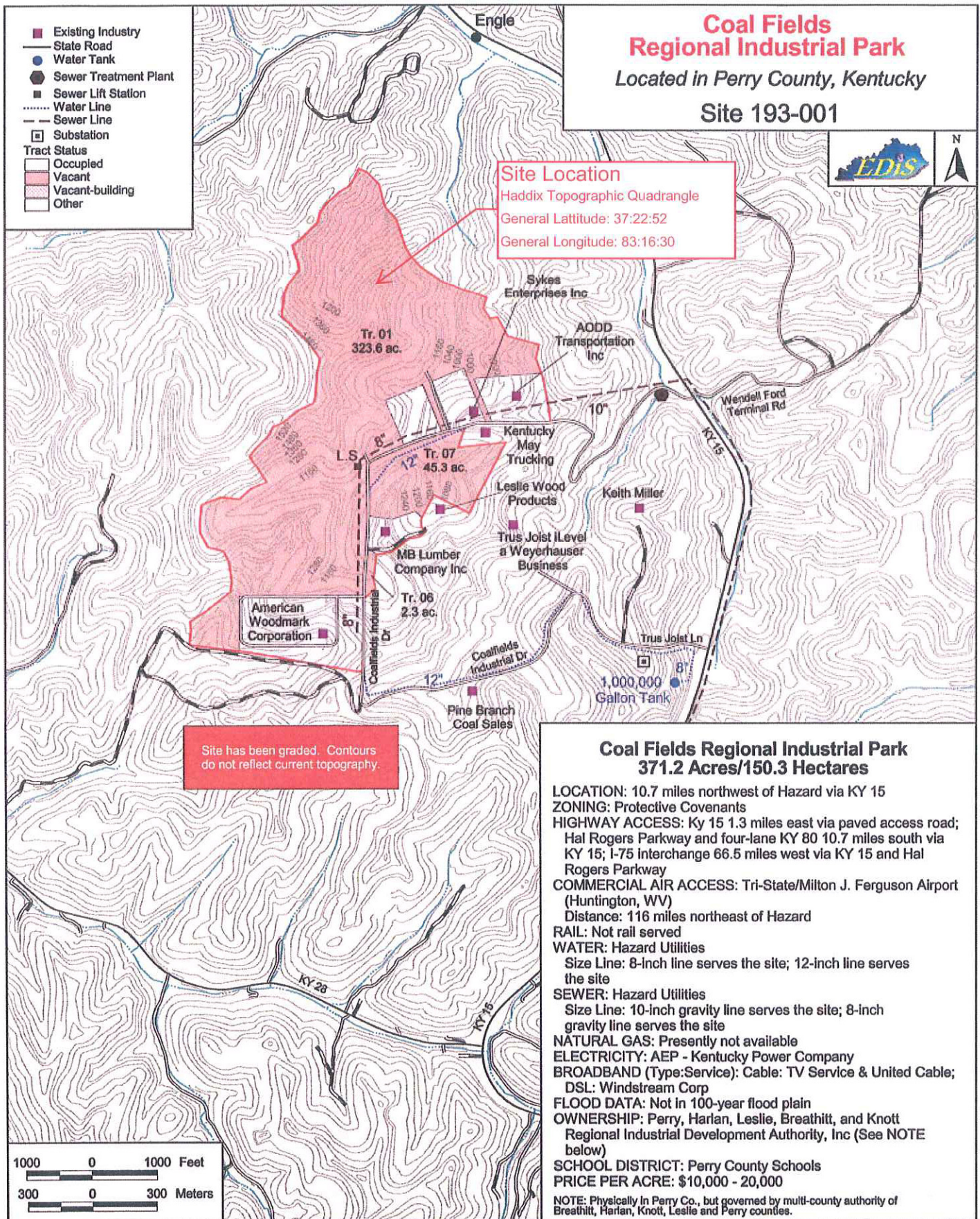
The following report is a summary of the survey findings. Kathryne M. Joseph and Ann Marie P. Doyon of CRA, completed the work described in this report during the week of November 9, 2009. Fieldwork was completed in 16 personnel hours on November 9, 2009, by Kathryne M. Joseph and Ann Marie P. Doyon. Conditions were warm and sunny, and no restrictions or limitations were placed on the survey effort. Two previously unidentified sites (Sites 1 and 2) were surveyed. No sites are listed in the NRHP and neither of the previously undocumented sites (Sites 1 and 2) appears eligible for listing in the NRHP. The proposed project will have a recommendation of no historic properties affected determination.

II. PROJECT DESCRIPTION

The ecoPower Generation Biomass facility project, a wood-burning power plant featuring a 300-ft. stack, is located on the grounds of the existing Coal Fields Regional Industrial park in northern Perry County, Kentucky. The construction of the proposed power plant and stack will be situated approximately .40 mi northwest of the existing structure currently housing Sykes Enterprises Inc. (Figure 4). The proposed facility is located in northern Perry County, between approximately 9 and 10 mi north-northwest of the town of Hazard, and approximately .8 mi south-southwest of the community of Engle, as it is indicated on the topographic quadrangle. The proposed generation facility intends to utilize wood burning methods to generate electrical power.

The proposed project is located in rural northern Perry County. The environmental setting of the location for the proposed project is defined by a terrain that is somewhat austere in comparison to the surrounding landscape, as a result of former strip-mining activities that have left behind an area marked by large plateaus and sunken areas that have been cut out of the rugged terrain. The areas surrounding the location for the proposed

project is largely defined by its rural character, as well as its rugged terrain featuring irregular, winding, ridges and narrow valleys. The central, southerly, and easterly portions of the project area contain the Coal Fields Regional Industrial Park. Figure 5 is a view toward the main entry to the industrial park. Figures 6–7 are overviews toward the southeasterly and southerly boundaries of the APE, located within the industrial park. The site of the proposed ecoPower Generation Biomass facility and stack is a large plateau within the industrial park, in the former location of a strip-mining operation. Small land formations are scattered around the plateau, which itself is accessible via a small but steep access road extending to the north from Coalfields Industrial Drive near the current location of Sykes Enterprises Inc. The plateau is surrounded by irregular ridges, with steep mining highwalls cut into them during the former mining operations. Figure 8 is a northerly view of the access road leading to the plateau. Figures 9–11 are overviews from the top of the small access road of the plateau area, the ridges surrounding it, and the proposed side of the power plant and 300-ft. stack. Figure 12 features a view toward the south from the plateau looking back in toward the facilities within the industrial park. Figures 13–14 are overviews toward the northwest and southwest from the easterly edge of the APE, at its intersection with Coalfields Industrial Drive. The northerly and westerly portions of the project area are located near Tenmile Creek Road, which lies in a narrow valley below a steep, winding ridge. Figure 15 is a view toward the southwest from the north-northwesterly edge of the APE at its intersection with Tenmile Creek Road. Figure 16 is a view toward the southwest at the northerly edge of the APE near its intersection with Tenmile Creek Road and a steep private drive. The topographic map dated 1972 (Figure 2) indicates there was a lane travelling south from the KY-15, along Hollybush Branch. One structure plus an outbuilding were indicated as being located at the end of this lane. Neither the lane nor the structures remain extant.



For more information contact the Kentucky Cabinet for Economic Development, Department for New Business Development
 Old Capitol Annex - 300 West Broadway - Frankfort, KY 40601 - Tel:(502)564-7140 - Fax:(502)564-3256 - <http://www.thinkkentucky.com>
 All information regarding property is from sources deemed reliable, but no warranty or representation is made by the Commonwealth of Kentucky or any of its agencies as to its accuracy. It is subject to errors, omissions, change of price, prior sale, lease, or withdrawal without our knowledge. Further, no warranty or representation is made as to the environmental suitability or condition of the property. Prospective purchasers and/or lessees should perform their own due diligence in determining the suitability of a property for their intended use.

Map Date: 12/04/2008
 Contour Interval: 40 feet

Figure 4. Topographic quadrangle indicating location of the proposed project.



Figure 5. View looking toward the main entry to the Coal Fields Regional Industrial Park from the intersection of KY-15 and Trus Joist Lane.



Figure 6. Overview toward the southeasterly boundary of the APE and the facility currently housing Trus Joist iLevel.



Figure 7. Overview toward the north, from the southerly border of the APE from its intersection with Coalfields Industrial Drive.



Figure 8. Northerly view of the access road leading to the plateau and the proposed site of the power plant and stack.



Figure 9. Overview toward the north-northwest, including the plateau and the site of the proposed power plant and stack, from the top of the access road.



Figure 10. Overview toward the northwest, including the plateau and the surrounding mining highwalls, from the top of the access road.



Figure 11. Overview toward the north, including the site of the proposed power plant and stack, from the top of the access road.



Figure 12. Overview toward the south, including Sykes Enterprises Inc. and Kentucky May Trucking, from the top of the access road.



Figure 13. Overview toward the southwest from the easterly edge of the APE, at its intersection with Coalfields Industrial Drive.



Figure 14. Overview toward the northwest and the proposed location of the power plant and stack, from the easterly edge of the APE at its intersection with Coalfields Industrial Drive.



Figure 15. Overview toward the southwest from the north-northwesterly corner of the APE at its intersection with Tenmile Creek Road.



Figure 16. Overview toward the southwest from the northerly edge of the APE at its intersection with Tenmile Creek Road and a steep private drive.

III. ENVIRONMENTAL SETTING

Perry County is located on the Cumberland Plateau, which is locally a part of the Mountains and Eastern Coal Fields Physiographic Region. The topography is very steep and rugged. The county is drained by the Middle and North Forks of the Kentucky River (McDonald and Blevins 1965; McGrain and Currens 1978).

Perry County is underlain by rock of the Lower and Middle Pennsylvanian system. These formations are composed of interbedded sandstone, siltstone, and shale (Hayes 1982). The area is characterized as highly dissected with irregular, winding, sharp-crested ridges that are severed by deep, narrow valleys (McGrain and Currens 1978). Most flat land in the county is located on narrow strips along the valleys of major streams (McGrain and Currens 1978:14). The terrain is rugged and exhibits great local relief. Ridgetop elevations range between 304.9 and 487.8 m (1,000 and 1,600 ft) AMSL. The lowest elevation in the county, 198.2 m (650 ft) AMSL, is along the Middle and North Forks of the Kentucky River (McGrain and Currens 1978).

The project area is located within the Kentucky River drainage system. The county is dissected by a dendritic pattern of streams, including Frozen Creek, Lost Creek, Quicksand Creek, Troublesome Creek, and the South Fork of Quicksand Creek, that empty into the Kentucky River (Hayes 1998:3). Tenmile and Hollybush Creeks are the major drainages within the project area.

Within the project area the topography exhibits features typical for this area, being marked by crested ridges and narrow valleys, with the exception of the land contained within the Coal Fields Regional Industrial Park. This complex is located within an area formerly strip-mined for coal, leaving behind a somewhat austere landscape when compared to surrounding areas. It exhibits large plateaus and sunken areas that have been cut-out of the rugged terrain, which still exists to some

degree between and surrounding the high and low areas found within the complex.

IV. RESEARCH AND SURVEY METHODOLOGY

The survey was conducted in accordance with the “Archaeology and Historic Preservation: Secretary of the Interior’s Standards and Guidelines” (National Park Service 1983). In addition, guidelines offered in the following documents were followed: Guidelines for Local Surveys: A Basis for Preservation Planning: National Register Bulletin No. 24 (National Park Service 1985), Kentucky Historic Resources Survey Manual (Kentucky Heritage Council), and *Specifications for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports* (Sanders 2001).

Before entering the field, all available surveys, reports, studies, maps, and other data pertinent to the project area were identified and reviewed. This task began with an investigation of the records of the Kentucky Heritage Council (KHC). The KHC files revealed that no properties located in the APE had been previously documented (KHC Survey and National Register files).

A Cultural Resource Survey for KY-15 from South of KY-28 to Haddix in Perry and Breathitt Counties, Kentucky, was completed by Helen C. Powell of H. Powell and Co., Inc., in 1998 for THE Engineers of Lexington, Kentucky. The survey area was located along KY-15, a portion of which is located adjacent to the APE for the current proposed project, and involved three proposed alternates for the road project. The report identified and evaluated seventeen sites, none of which were determined eligible for listing in the NRHP (Powell 1998). The report did not include information relevant to the preparation of the current report.

A Cultural Historic Survey of the Proposed Reconstruction of KY-15 in Perry County, Kentucky (10-269.01) was also identified. It was completed by Fred J. Rogers

of CRA in 2002. No previously surveyed sites were located within the APE for the proposed project. During the field survey, fourteen previously undocumented historic sites were identified. None of the newly identified sites were determined eligible for inclusion in the NRHP (Rogers 2002). The northerly end of the project area is located approximately 1.3 mi south-southeast of the southerly edge of the APE for the current proposed project. The report did not include information relevant to the preparation of the current report.

Additional cultural historic reports for Perry County were located during the records review at the KHC. None of the proposed projects contained in the remaining reports were located in the immediate vicinity of the APE for the current proposed project.

The archival research continued at the University of Kentucky and the Kentucky Department for Libraries and Archives. Sources found in this research include a 1937 highway and transportation map and a 1952 general highway map of Perry County. Additional documents identified during the archival research are listed in the bibliography. The sources identified in this research were utilized for the development of the Historic Context of this report.

Following the preliminary archival research, CRA staff conducted a survey of the APE during which all properties 50 years of age or older were documented. The APE was defined as a .75 mi radius centered on the proposed electric generating plant. The APE was defined on the topographic map and the roads and structures within the APE were determined. The surveyors then visited the project area and surveyed all resources within the project boundary. The area surveyed is depicted on Figures 2 and 3.

During the field survey, two previously unidentified individual historic sites (Sites 1 and 2) were documented. These properties were evaluated to determine their eligibility for listing in the NRHP. The descriptions and evaluations are found in the inventory of historic resources section of this report.

In general, in order for a property to be eligible for listing in the NRHP, it must be at least 50 years old and possess both historic significance and integrity. Significance may be found in four aspects of American history recognized by the National Register Criteria:

- A. association with historic events or activities;
- B. association with important persons; distinctive design or physical characteristics; or
- C. potential to provide important information about prehistory or history.

A property must meet at least one of the criteria for listing. Integrity must also be evident through historic qualities including location, design, setting, materials, workmanship, feeling, and association.

V. HISTORIC CONTEXT

Perry County

Perry County is located in southeastern Kentucky at the headwaters of the Kentucky River and is part of the Eastern Coalfield cultural landscape (Quigley 1992:717). The county's formation can be historically traced to the late eighteenth century, when Kentucky was part of Virginia and named the Kentucky District. This district contained three counties, Fayette, Lincoln, and Jefferson, and eventually became the Commonwealth of Kentucky on June 1, 1792 (Clark 1988:92). These three counties were later divided and subdivided into the 120 counties that presently make up Kentucky.

On November 2, 1820, Perry County became the sixty-eighth county in order of formation in the Commonwealth, having been created from parts of Clay and Floyd Counties (Quigley 1992:717). In 1846, the county contained 445 sq km (172 sq mi) (Collins 1847:496). Today, it contains 886 sq km (342 sq mi) and is bordered by Breathitt, Owsley, Leslie, Harlan, Letcher, Knott, and Clay Counties. The county seat is Hazard, which was established in 1821. Both the county and

the county seat were named after Commodore Oliver Hazard Perry, a naval hero of the War of 1812 (Kleber 1992:420; Simon 1996:245).

Long before Perry County was settled by European and African Americans, the region was traveled in the 1750s by a party of men representing the Ohio Land Company. In 1751, Christopher Gist, the leader of the party, was the first to record his travels through the valley where Hazard is now located (Darlington 1893:88, 133; Quigley 1992:717). In his journals, Gist noted the presence of large coal deposits. Settlement of the county occurred in the 1790s, when John and Nicholas Combs, along with their sons, settled along Carrs Fork and Lothair. Elijah Combs, the son of John Combs, built the first house where Hazard now stands. This house was a log cabin located in the upper end of old Hazard, along Main Street (Quigley 1992:717).

Salt making is reported as being the first industry of Perry County, having been established as early as 1817. Henley Haddix, an early resident of the county, had a salt works on Troublesome Creek, located near the mouth of Lost Fork, in the early 1830s. By 1836, several salt works operated in the Kentucky River valley, two of which were located near the mouth of Lick Branch, one near the mouth of Troublesome Creek, one at the mouth of Leatherwood Creek, and one in Hazard (Hazard Chapter of the Daughters of the American Revolution [HCDAR] 1953:41–43). The inhabitants of Perry County continued to acquire their salt from the competitive local salt works until the turn of the twentieth century, when they began acquiring their salt from the Goose Creek salt works in Clay County (Clark 1988:11). In the early years of the county, a small amount of mining and timbering was also conducted. For the most part, inhabitants only mined coal and harvested timber for private use. Any surplus timber that was sold had to be floated down the Kentucky River on flatboats (Quigley 1992:717).

Due to their relative isolation, the early settlers of the county were very self sufficient,

making their own tools and clothing and building their own cabins. Settlers raised crops and livestock in addition to hunting and trapping. Garden vegetables were the mainstay of the household. The crops included beans, squash, potatoes, and many other vegetables—especially corn (Arnow 1984:231). The settlers also gathered a variety of medical roots and herbs such as yellow root, sassafras, and ginseng (Arnow 1984:265). The livestock found in the county included cattle, sheep, mules, horses, oxen, and hogs (Arnow 1984:213).

Due to the mountainous terrain, a large portion of Perry County proved unsuitable for cultivation but was well adapted for wool production (Collins 1847:496). Another positive aspect of the mountainous land was the coal and natural gas it provided (Quigley 1992:717). Although the mountains precluded cultivation in much of the county, the bottomlands and valleys proved to be fertile and productive, with the principal articles of export being horses, cattle, hogs, salt, coal, ginseng, and wool (Collins 1847:496). Activities such as raising livestock and timbering eventually evolved into some of the first commercial enterprises for the inhabitants of the county.

There are no records of schools in Perry County from 1831 to 1840, and some of the wealthier residents of this county hired in-home tutors for their children. By 1837, a public school system was established but was not free to residents of the county (HCDAR 1953:108). It was not until 1850 that these schools became free to all residents. In 1840, Perry County's educational system ranked eighty-ninth in the state. By 1851, 796 children were listed on the census; however, only 274 of these children were attending school (HCDAR 1953:108).

Census records in 1830 list a total of 3,332 inhabitants in Perry County, including 3,150 whites, 24 free African Americans, and 158 enslaved African Americans (U.S. Bureau of the Census [USBC] 1830). The 1840 census lists 3,089 inhabitants (Collins 1847:496). By 1860, the population of Perry County was

3,950, of which 72 were enslaved African Americans (USBC, Perry County Slave Schedule 1860). The population then increased steadily from 3,092 to 4,274 between 1850 and 1870, and continued to increase between 1870 and 1900, growing from 4,274 to 8,276 (USBC 1850, 1870, 1900).

The Civil War brought devastation and suffering to the county in the form of unattended and neglected farms, roads, and land (Quigley 1992:717). The inhabitants of Perry County found themselves with divided alliances and often on opposite sides. Nevertheless, throughout the mountains of eastern Kentucky, more men sided with the Union than the Confederacy. Approximately 296 men from Perry County served in the Civil War (HCDAR 1953:19).

There were no major battles in Perry County during the Civil War. According to J. D. Cornett, a Confederate camp was reported to have been located on Big Leatherwood with a Major Chineworth in command (Cornett 1900). In addition, the History and Genealogy Record of the Allens-Begleys-Mays of Kentucky (1949) states that Hiram Begley, who took the first census of Perry County, was a veteran of the Thirty-ninth Kentucky Mounted Infantry and helped drive Morgan's Raiders out of Kentucky (Begley 1949). Several men from Perry County were also enlisted in the Fourteenth Kentucky Cavalry (HCDAR 1953:20).

The timber boom in eastern Kentucky began in the last 10 years of the nineteenth century. Northern lumbermen began to purchase land and standing timber in eastern Kentucky around 1885. Their companies were purchasing tracts of 12,140–121,406 ha (30,000– 300,000 acres). Competition for the best timber became intense by 1900 (Eller 1982:93). Saw mill owners from surrounding counties were trekking into Perry County to obtain timber. Cut logs were crafted into rafts and shipped down river to the outside sawmills. In 1875, Elijah Cornett owned what was most likely the earliest saw and grist mill in Perry County. This mill was approximately

5.6 km (3.5 mi) outside of Hazard (HCDAR 1953:46–47). Timber camps, owned by the individual companies, provided short-term housing for male employees. Large timber towns often offered residences for entire families. Timber towns resembled other company towns of this time period; however, the majority of these towns were only occupied for short periods of time. Since these towns were expected to house employees only long enough to extract the surrounding timber, little money was invested into the houses and surrounding facilities (Eller 1982:122–123). In 1900, companies began to combine the coal with the lumber industry, exploiting both the mineral and timber wealth of their properties (Eller 1982:95).

From the mid- to late nineteenth century, the majority of coal workers were hand digging coal and shipping it downriver using boats. The river shipment of coal ceased completely by 1884 when the Louisville and Nashville (L & N) Railroad Company completed its extension connecting Cincinnati, Lexington, and Knoxville, opening up the coal market to Tennessee mines (HCDAR 1953:55).

Coal mining was becoming the major means of employment for the majority of the population of Perry County during the early 1900s, as the county was becoming a major producer of coal for the entire United States (Eller 1982:145). U.S. Senator C. Bascom Sless from Virginia and John C.C. Mayo from Paintsville, Kentucky, insisted upon the expansion of the L & N Railroad from Winchester to McRoberts (HCDAR 1953:57). This expansion contributed to the commercial development of coal mining in Perry County. In 1921, Perry County, along with Harlan and Pike Counties, produced nearly 80 percent of all the coal shipped from the Cumberland Plateau (Eller 1982:147).

Resulting from the development of mining operations, coal towns formed in areas previously unoccupied by non-indigenous peoples. The towns, often isolated by topography, were dominated in all aspects by the owning company. The company owned the

housing, garnishing rent from employees' wages, and operated the only store, holding a monopoly on subsistence goods. Social institutions, such as schools and churches, were also influenced by the company. After the oppression of coal towns attracted national attention, a small number of coal companies began to construct coal towns in a way that was suitable for family life (Perry 1992:222).

Rail mines began to be outnumbered by truck mines in the mid-1900s, as mining became more mechanized and surface mining became more cost effective. This was especially true after the Korean War. By 1947, the number of truck mines in Perry County increased rapidly to 259 (Quigley 1992:717). These improvements in technology and the rise of strip mining practices slowly phased out the coal town.

The development of transportation in Perry County was typical of other eastern Kentucky counties. The first routes were little more than animal trails that were later used by the Native Americans and early settlers of the region. These paths were eventually widened for mule and oxen teams that brought a limited number of supplies to the settlers of the area. Flat boats began to use the North Fork of the Kentucky River and the timber industry followed. The railroad first arrived in Perry County in 1911, when the L & N Railroad (now CSX Transportation) extended into Perry County and opened it to development. The tracks were completed in 1912, and coal began being taken out of the county by the trainload (Quigley 1992:717).

Transportation had a significant impact on the growth of Perry County. In 1900, only 8,276 people were listed on the county census report. However, by 1920, 26,042 people were listed as county residents. This number had nearly doubled to 46,439 by 1950 (USBC 1900, 1920, 1950).

Following the construction of the railroads, highways and county roads were built in Perry County to serve the people as a means of access (Quigley 1992:717). In 1922, J.A. Smith became the judge of Perry County and worked diligently to establish a better road system (HCDAR 1953:179). The first road constructed stretched

only 11.3 km (7 mi). This road was later expanded and became known as KY 15. These early roads led to the eventual construction of a statewide system of highways that was to connect each county seat in the state (Kleber 1992:420) (Figures 17–18).

While major transportation advances occurred in the early twentieth century, two world wars erupted that impacted the county. During World War I, 377 men were inducted from Perry County and there were 26 deaths. During World War II, there were 4,712 men inducted and enlisted into the armed forces with approximately 158 deaths (Harris 1992:969).

In the 1960s, KY 15, the Daniel Boone Parkway, and the new KY 80 intersected just north of Hazard, allowing Perry County to become the commercial center of eastern Kentucky. Also cementing the county's prominence in the region, the East Kentucky Regional Airport was built 24.14 km (15 mi) north of Hazard in 1983 (Quigley 1992:717).

Education in the county also changed significantly in the early decades of the twentieth century. By 1910, only two "reasonably good" school houses were located in Perry County. Other makeshift schools were located in the county, though most were poorly equipped. By the 1950s, 34 one-room schools for whites, 7 one-room schools for blacks, 31 two-room schools, 8 three-room schools, and 32 schools with four or more rooms were located in Perry County (HCDAR 1953:109). Following the Civil Rights movement, Perry County schools became racially integrated. Hazard Community College was founded in 1968. Today, the school is known as the Hazard Community and Technical College and continues to serve college students from surrounding counties (Quigley 1992:717).

Since 1990, the county population has remained virtually the same. In 1990, the population totaled 30,283. By 2000, the population was estimated at 29,390, and in 2005, it was counted at 29,505 (USBC 1990, 2000, 2005).

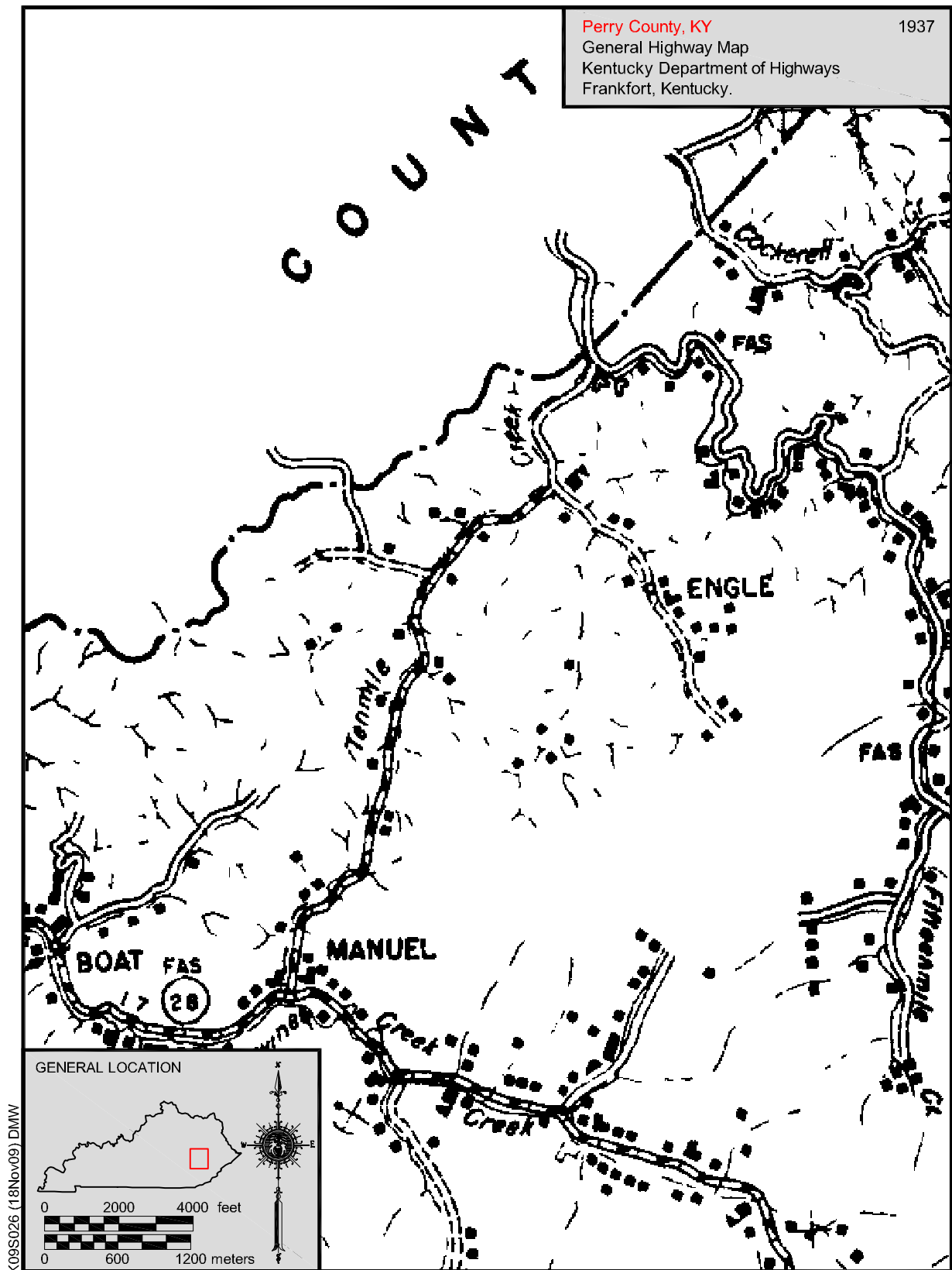


Figure 17. Portion of the 1937 Perry County Highway and Transportation map.

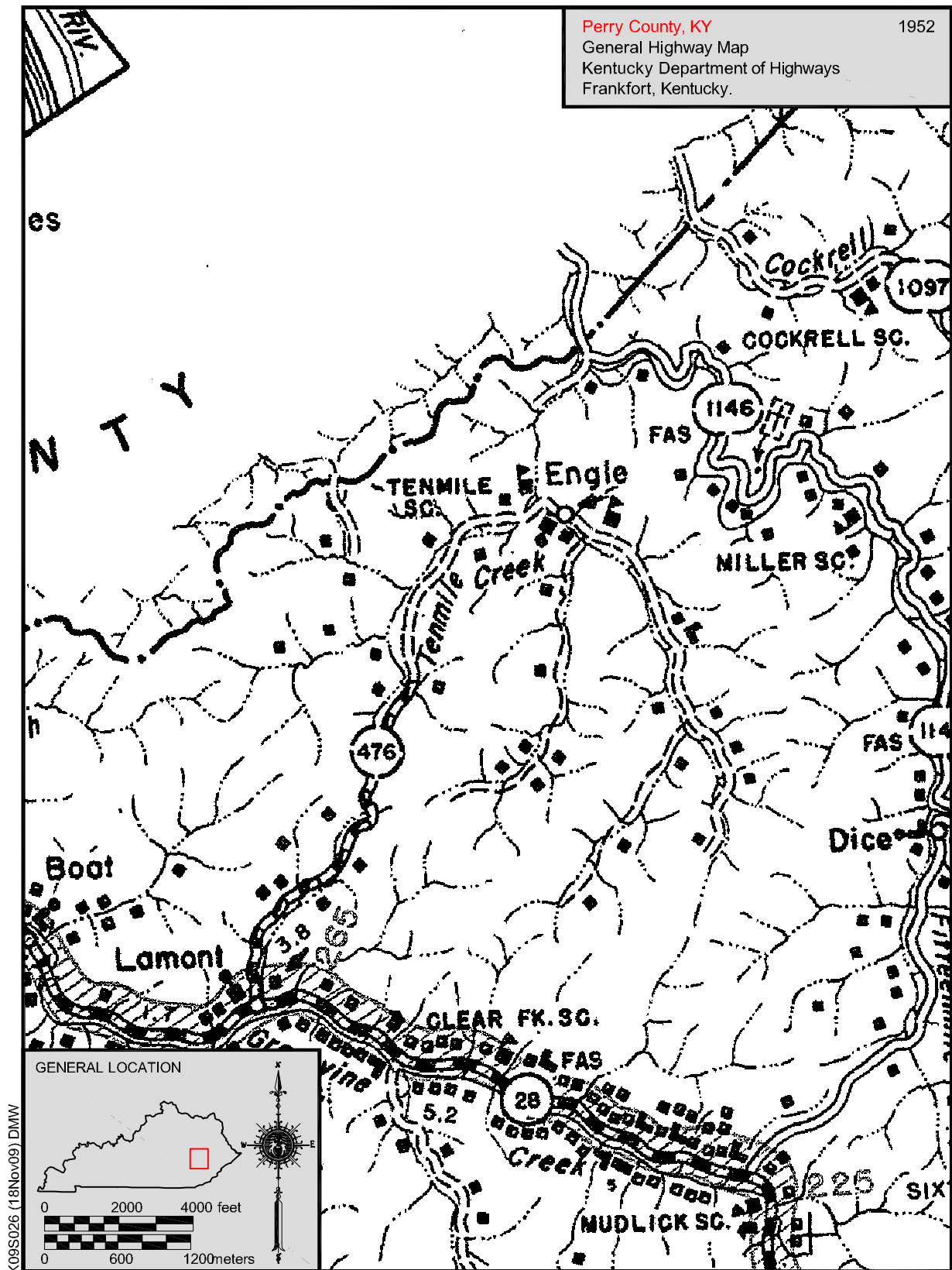


Figure 18. Portion of the 1952 Perry County General Highway map.

VI. INVENTORY OF HISTORIC RESOURCES

The results of the cultural historic survey are presented in Table 1 and mapped on Figure 2. All historic sites (at least 50 years old) are described below. Each site has been assessed to determine if it appears eligible for listing in the NRHP. Evaluations are found after each description. Survey forms with negatives for each site are included with the report.

Site 1

KHC Survey No.: PE 95

Photographs: Figures 19–20

Map: Figure 2

Zone: 16

Quad: Haddix, KY 1972

UTMs: E: 297593 N: 4139702

Description: This frame dwelling, located on the west side of Tenmile Creek Road northeast

of Hazard, is in an advanced state of disrepair (Figures 19–20). The roof and the majority of all of the exterior walls of the house are collapsed. A portion of a stone chimney is standing. It appears that the roof of the frame dwelling was sheathed in V-groove, metal panels and portions of the exterior walls were clad in vertical and horizontal boards. It appears that the foundation was once dressed in a metal skirt to simulate rusticated stone.

NRHP Evaluation: Not Eligible. This site does not appear to be an outstanding example of residential architecture in the area. Due to its deteriorating condition, the site is no longer able to communicate significance and is, therefore, ineligible for listing under Criterion C. Additionally, the site does not appear to be associated with significant persons or events in history, excluding it from eligibility for listing in the NRHP under Criterion A or B.

Determination of Effect: N/A.

Table 1. Cultural historic sites (50 years or older).

CRA Site #	KHC Site #	Building Type	NRHP Eligibility	Effect of Project	Photo Fig. #
1	PE-95	Frame residence	No	N/A	19–20
2	PE-96	One-story, side-gable, frame residence	No	N/A	21–24



Figure 19. Frame dwelling (PE 95).



Figure 20. Frame dwelling.

Site 2

KHC Survey No.: PE 96

Photographs: Figures 21–24

Map: Figure 2

Zone: 16

Quad: Haddix, KY 1972

UTMs: E: 297638 N: 4139619

Description: This dwelling, oriented to the west, is a one-story, side-gable, four-bay, frame residence on a raised basement located on the east side of Tenmile Creek Road northeast of Hazard (Resource A) (Figures 21–22). The roof of the house is sheathed in metal panels and the exterior walls are clad in weatherboard siding. The foundation is dressed in a metal skirt to simulate rusticated stone. A shed-roof porch shelters the façade bays of the dwelling. The porch is supported by wood posts that rest on an enclosed apron clad in horizontal boards. A single-leaf entry is flanked by windows with vertical, one-over-one-light, double-hung, wood sashes on the façade of the house. Windows with the same

sash configuration are found throughout the dwelling. A shed-roof porch shelters a single-leaf entry with a nonhistoric door on the dwelling's north elevation. The roof of the porch is sheathed in metal panels and the porch is supported by wood posts that rest on a wood deck.

A one-story, gable-roof, rectangular-shaped, twentieth-century log outbuilding (Resource B) is located slightly southwest of the dwelling (Resource A) on the west side of Tenmile Creek Road (Figures 23–24). The corners of the round logs are joined by saddle notching. Fixed, two-light, wood sash windows are located on the eave elevations. The roof of the structure is sheathed in metal panels.

NRHP Evaluation: Not Eligible. Site 2 does not embody the distinctive characteristics of a type, period, or method of construction or represent the works of a master, or possess high artistic values; therefore, it does not appear to be eligible under Criterion C. The



Figure 21. One-story, side-gable, frame residence (PE 96) (Resource A).



Figure 22. Façade and north elevation of residence.



Figure 23. Gable-roof, log outbuilding (Resource B).



Figure 24. East and south elevations of outbuilding.

associated outbuilding does not appear to exhibit extraordinary construction methods or appear to be an excellent example of its type. Additionally, the site does not appear to be associated with significant persons or events in history, excluding it from eligibility for listing in the NRHP under Criterion A or B.

Determination of Effect: N/A.

VII. CONCLUSIONS

During November 2009, Cultural Resource Analysts, Inc. (CRA), completed a cultural historic survey of the ecoPower Generation Biomass facility in northern Perry County, Kentucky (Figure 1). The survey was conducted at the request of Sara G. Smith of Smith Management Group on behalf of ecoPower Generation LLC.

The purpose of the survey was to:

- 1) identify and document all cultural historic sites (above ground resources 50 years of age or older) located within the area of potential effect (APE);
- 2) evaluate their eligibility for listing in the National Register of Historic Places (NRHP) and recommend boundaries, if eligible; and
- 3) evaluate the effect of the project on any properties included in or eligible for listing in the NRHP.

The APE was defined as a .75-mi radius centered on the proposed project (Figures 2 and 3). One wood-burning stack measuring approximately 300 ft in height is included in the proposed generation facility's design. Because the stack will be the tallest vertical element associated with the project, the viewshed analysis was based upon standard guidance related to vertical structures of this height. A .75-mi radius surrounding the proposed electric generating facility was utilized as the APE, within which all properties over 50 years of age were assessed for possible NRHP eligibility. The survey was conducted to comply with federal regulations concerning the impact of federal actions on sites and structures listed in, or eligible for

nomination to, the NRHP. These regulations include Section 106 of the National Historic Preservation Act of 1966 and the regulations published in the Code of Federal Regulations at 36 CFR Part 800. Federal actions include the use of federal funds or the granting of a federal permit.

The following report is a summary of the survey findings. Kathyne M. Joseph and Ann Marie P. Doyon of CRA, completed the work described in this report during the week of November 9, 2009. Fieldwork was completed in 16 personnel hours on November 9, 2009, by Kathyne M. Joseph and Ann Marie P. Doyon. Conditions were warm and sunny, and no restrictions or limitations were placed on the survey effort. Two previously unidentified sites were surveyed (Sites 1 and 2). No sites are listed in the NRHP and neither of the previously undocumented sites (Sites 1 and 2) appears eligible for listing in the NRHP. The proposed project will have a recommendation of no historic properties affected determination.

BIBLIOGRAPHY

Arnold, Harriette Simpson

1984 *Flowering of the Cumberland*. University of Kentucky Press, Lexington.

Begley, Jackson Allen

1949 *History and Genealogy Record of the Allens-Begleys-Mays of Kentucky, the Descendants of John Allen from 1750 to the Present Time*. Jackson Allen Begley.

Clark, Thomas D.

1988 *A History Of Kentucky*. Reprinted. Jesse Stuart Foundation, Ashland, Kentucky. Originally published 1937, Prentice-Hall, New York.

Collins, Lewis

1847 *Historical Sketches of Kentucky: Embracing its History, Antiquities, and Natural Curiosities, Geographical, Statistical, and Geological Descriptions; with Anecdotes of Pioneer*

- Life, and More than One Hundred Biographical Sketches of Distinguished Pioneers, Soldiers, Statesmen, Jurists, Lawyers, Divines, Etc.* Lewis Collins, Maysville, Kentucky.
- Cornett, J.D.
1900 *Genealogy of William Cornett (1761–1836)*. Electronic document, <http://billjames.org/Family%20Tree%20-%20Web%20Pages/Cornett%20Genealogy%20pages%201%20to%2013%20of%2044.htm>, accessed June 17, 2008).
- Darlington, William M.
1893 *Christopher Gist's Journals with Historical, Geographical, and Ethnological Notes and Biographies of his Contemporaries*. J. R. Weldin & Co., Pittsburgh, Pennsylvania.
- Eller, Ronald D.
1982 *Miners, Millhands, and Mountaineers: Industrialization of the Appalachian South, 1880–1930*. University of Tennessee Press, Knoxville.
- Harris, James Russell
1992 World War II. In *The Kentucky Encyclopedia*, edited by John E. Kleber, pp. 968–969. University Press of Kentucky, Lexington.
- Hayes, Raymond A.
1982 Soil Survey of Leslie and Perry Counties, Kentucky. United States Soil Conservation Service, Department of Agriculture, Washington D. C.
1988 *Soil Survey of Breathitt County, Kentucky*. United States Soil Conservation Service, Department of Agriculture, Washington, D.C.
- Hazard Chapter of the Daughters of the American Revolution (HCDAR)
1953 *History of Perry County, Kentucky*. Kentucky Chapter of the Daughters of the American Revolution, Hazard, Kentucky.
- Kentucky Department of Highways
1937 Highway and Transportation Map, Perry County, Kentucky. Kentucky Department of Highways, Frankfort, Kentucky.
1952 General Highway Map, Perry County, Kentucky. Kentucky Department of Highways, Frankfort, Kentucky.
- Kleber, John E. (editor)
1992 Hazard. In *The Kentucky Encyclopedia*. The University Press of Kentucky, Lexington.
- McDonald, Herman P., and Robert L. Blevins
1965 *Reconnaissance Soil Survey of Fourteen Counties in Eastern Kentucky*. U.S. Soil Conservation Service, Department of Agriculture, Washington, D.C.
- McGrain, Preston, and James C. Currens
1978 *Topography of Kentucky*. Kentucky Geological Survey, Series X, Special Publication 25. University of Kentucky, Lexington.
- National Park Service
1983 Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. National Park Service, Department of the Interior, Washington, D.C.
1985 Guidelines for Local Surveys: A Basis for Preservation Planning: National Register Bulletin No.24. National Park Service, Department of the Interior, Washington, D.C.
- Perry, L. Martin
1992 Company Towns. In *The Kentucky Encyclopedia*, edited by John E. Kleber, pp. 221–222. University Press of Kentucky, Lexington.
- Powell, Helen C.
1998 *A Cultural Resource Survey for KY_15 from South of KY-28 to Haddix in Perry and Breathitt Counties, Kentucky*. H. Powell and Co., Inc., Lexington, Kentucky.
- Quigley, Martha Hall
1992 Perry County. In *The Kentucky Encyclopedia*, edited by John E. Kleber,

p. 717. University Press of Kentucky,
Lexington.

Rogers, Fred J.

2002 *Cultural Historic Survey of the
Proposed Reconstruction of KY-15 in
Perry County, Kentucky (10-269.01)*.
Cultural Resource Analysts, Lexington,
Kentucky.

Sanders, Thomas

2001 Specifications for
Conducting Fieldwork and Preparing
Cultural Resource Assessment Reports.
Kentucky Heritage Council, Frankfort,
Kentucky.

Simon, F. Kevin (editor)

1996 *The WPA Guide to Kentucky*.
University Press of Kentucky,
Lexington.

United States Geological Survey

1972 Haddix, Kentucky. 15-minute
topographic quadrangle. United States
Geological Survey, Washington, D.C.

1972 Krypton, Kentucky. 15-minute
topographic quadrangle. United States
Geological Survey, Washington, D.C.

**Archaeological Overview
And
Phase I Survey**



STEVEN L. BESHEAR
GOVERNOR

**TOURISM, ARTS AND HERITAGE CABINET
KENTUCKY HERITAGE COUNCIL**

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MARK DENNEN
EXECUTIVE DIRECTOR AND
STATE HISTORIC PRESERVATION OFFICER

February 10, 2010

Ms. Sarah Smith
Smith Management Group
1405 Mercer Road
Lexington, KY 40511-1028

Re: *An Archaeological Overview and Phase I Survey for the Proposed Ecopower Generation Biomass Facility in Northern Perry County, Kentucky* by Matthew D. McMahan with contributions by David J. Stephenson (Cultural Resource Analysts, Inc.).

Dear Ms. Smith:

Thank you for your correspondence regarding the above referenced report for an archaeological survey conducted in Perry County, Kentucky for the proposed Ecopower Generation Biomass Facility. The survey found no evidence of prehistoric or historic archaeological sites within the 17.2 acre transmission line corridor and documented previous disturbance and lack of archaeological sites on the 126 acre parcel that will contain the proposed biomass facility. Therefore, the authors concluded that the project will have no adverse effect on archaeological resources that are potentially eligible for listing on the National Register of Historic Places. I concur with the author's findings. Therefore, in accordance with 36CFR Part 800.4 (d) of the Advisory Council's revised regulations our finding is that there are **No Historic Properties Present** within the undertaking's area of potential impact (both the 17.2 acre transmission line and the 126 acre parcel). Therefore, we have no further comments and responsibility to consult with the Kentucky State Historic Preservation Officer under the Section 106 review process for archaeology on this project is fulfilled.

Should you have any questions, feel free to contact KHC staff member Philip Mink (502) 564-7005, extension 122.

Sincerely,

Mark Dennen,
Executive Director and
State Historic Preservation Officer

MD:pbm

cc: George Crothers
Charles Niquette

AN ARCHAEOLOGICAL OVERVIEW AND PHASE I SURVEY FOR THE PROPOSED ECOPOWER GENERATION BIOMASS FACILITY IN NORTHERN PERRY COUNTY, KENTUCKY



by
Matthew D. McMahan
with contributions by
David J. Stephenson

Prepared for
ecoPower Generation, LLC

Prepared by
 **cra**
cultural resource analysts, inc

Lexington, KY | Hurricane, WV
Berlin Heights, OH | Evansville, IN | Mt. Vernon, IL
Longmont, CO | Sheridan, WY

AN ARCHAEOLOGICAL OVERVIEW AND PHASE I SURVEY FOR THE PROPOSED ECOPOWER GENERATION BIOMASS FACILITY IN NORTHERN PERRY COUNTY, KENTUCKY

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January 26, 2010

Lead Agency: Public Service Commission
OSA Project Registration No.: FY10_6221

ABSTRACT

This report documents the results of an archaeological overview and phase I survey for the proposed ecoPower Generation biomass facility in northern Perry County, Kentucky. The study was conducted at the request of ecoPower Generation, LLC. Initially, an archaeological overview was performed for the proposed biomass facility site, a 50.6-ha (126.0-acre) parcel located approximately .9 km (.6 mi) south-southwest of the intersection of KY 15 and Tenmile Creek Road within a previously strip-mined and reclaimed area. On November 16, 2009, a phase I archaeological survey was conducted for a subsequently proposed transmission line corridor, as portions of the proposed corridor occur outside the previously mined area. The proposed transmission line corridor comprises approximately 7.0 ha (17.2 acres) and would connect the aforementioned 50.6-ha parcel with an existing substation.

A records review conducted at the Office of State Archaeology indicated that neither the 50.6-ha parcel nor the proposed transmission line corridor had been previously surveyed, nor have any archaeological sites been previously recorded within these areas. As confirmed by both aerial photographs and field observations, the 50.6-ha parcel has been thoroughly disturbed by previous surface mining and reclamation efforts, precluding the occurrence of archaeological deposits in this area. The proposed transmission line corridor was investigated in its entirety via intensive pedestrian survey. Because all portions of the proposed corridor were either steeply sloped or previously strip-mined, no subsurface investigations were conducted. No archaeological sites were recorded as a result of the field investigation, and the proposed construction activities will have no effect on archaeological sites listed in, or eligible for, the National Register of Historic Places; therefore, archaeological clearance for the proposed construction activities is recommended.

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I. INTRODUCTION

This report documents the results of an archaeological overview and phase I survey for the proposed ecoPower Generation biomass facility in northern Perry County, Kentucky (Figure 1). The study was conducted at the request of ecoPower Generation, LLC. Initially, an archaeological overview was performed for the proposed biomass facility site, a 50.6-ha (126.0-acre) parcel located approximately .9 km (.6 mi) south-southwest of the intersection of KY 15 and Tenmile Creek Road within a previously strip-mined and reclaimed area (Figure 2). On November 16, 2009, Cultural Resource Analysts, Inc. (CRA), personnel conducted a phase I archaeological survey of a subsequently proposed transmission line corridor, as portions of the proposed corridor occur outside the previously mined area. The proposed transmission line corridor comprises approximately 7.0 ha (17.2 acres) and would connect the aforementioned 50.6-ha parcel with an existing substation.

Fieldwork was conducted by Matthew D. McMahan and required approximately nine

hours to complete. Office of State Archaeology (OSA) Geographic Information Systems (GIS) data requested by CRA on November 3, 2009, was returned on November 5, 2009. The results were researched by Heather Barras of CRA at the OSA on November 9, 2009. The OSA project registration number is FY10_6221. The scope of work is included as Appendix A.

Purpose of Study

This study was conducted voluntarily by the client as a proactive measure for identifying and evaluating cultural resources that may impact project planning and development. For the purposes of this assessment, a site was defined as “any location where human behavior has resulted in the deposition of artifacts, or other evidence of purposive behavior at least 50 years of age” (Sanders 2001:2). Cultural deposits less than 50 years of age were not considered sites in accordance with “Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines” (National Park Service 1983).

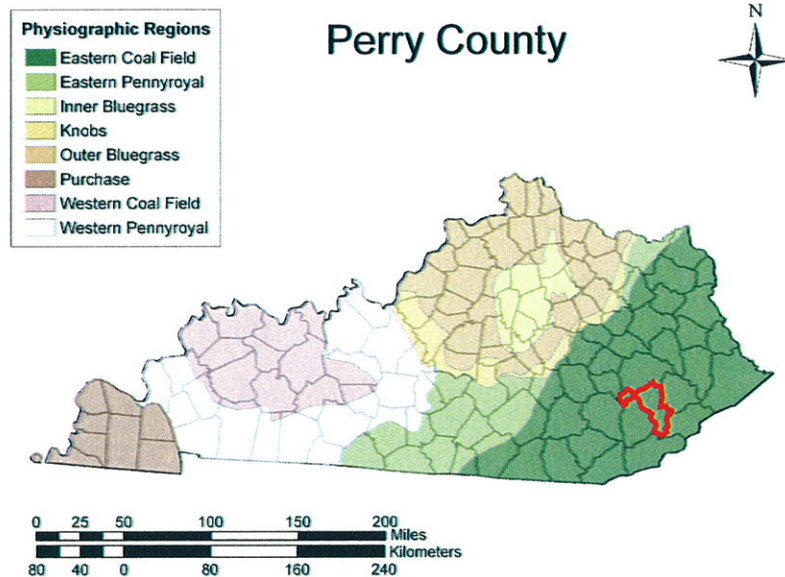


Figure 1. Map of Kentucky showing the location of Perry County.

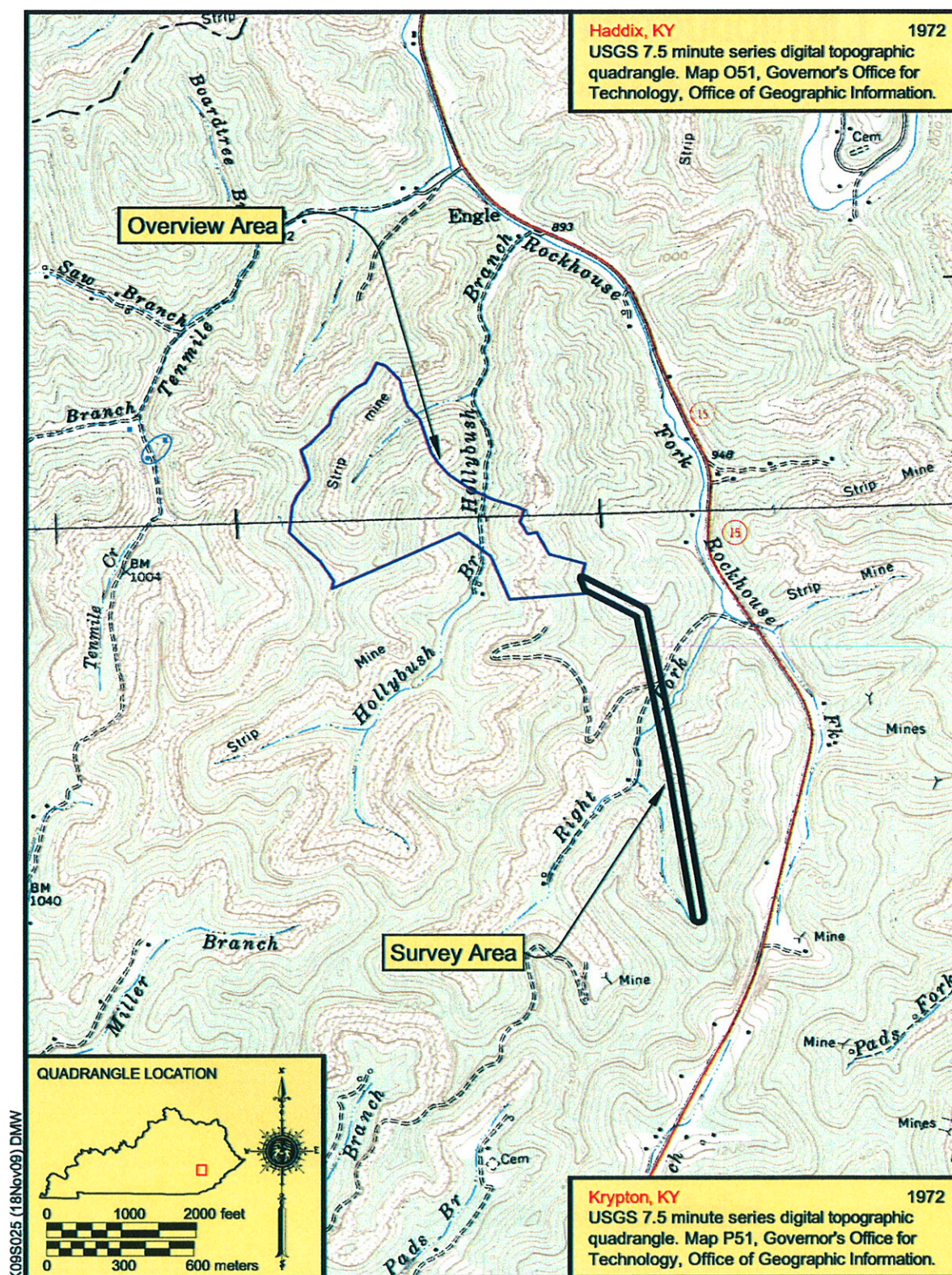


Figure 2. Location of project area on topographic quadrangle.

The following is a description of the project area, the field methods used, and the results of this investigation. It conforms to the *Specifications for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports* (Sanders 2001).

Project Description

EcoPower Generation, LLC, proposes to construct a biomass facility on a previously strip-mined and reclaimed 50.6-ha parcel located approximately .9 km south-southwest of the intersection of KY 15 and Tenmile Creek Road in northern Perry County, Kentucky (Figure 2). Also proposed is a 1,524-x-46-m (5,000-x-150-ft) transmission line corridor linking the aforementioned 50.6-ha parcel with an existing substation. The transmission line corridor includes approximately 7.0 ha of undisturbed and previously strip-mined and reclaimed land.

Summary of Findings

Prior to conducting the field research, a records review was conducted at the OSA. The review indicated that no archaeological sites or investigations had been documented within the previously strip-mined and reclaimed 50.6-ha parcel or the proposed 7.1-ha transmission line corridor.

No archaeological sites were recorded during the field survey. No archaeological sites listed in, or eligible for, the National Register of Historic Places (NRHP) will be affected by the proposed construction activities, and archaeological clearance is recommended.

II. ENVIRONMENTAL SETTING

Physiography

The project area is located in Perry County in the Eastern Kentucky Coalfield physiographic region. Geologically, the county is underlain by rock of the Lower and

Middle Pennsylvanian system. These formations are composed of interbedded sandstone, siltstone, and shale. In general, the topography in the county is very steep and rugged, consisting of a maturely dissected plateau of irregular, winding, sharp-crested ridges severed by deep, narrow valleys. Most flat land is located on narrow strips along the valleys of major streams. Ridgetop elevations range between approximately 305 and 396 m (1,000 and 1,300 ft) AMSL in the northwest portion of the county, and between 427 and 488 m (1,400 and 1,600 ft) AMSL in the southeast portion of the county. The lowest elevation in the county is approximately 198 m (650 ft) AMSL, situated along the Middle and North Forks of the Kentucky River (Hayes 1982; McDonald and Blevins 1965; McGrain and Currens 1978). Perry County is drained by the Kentucky River system.

Soils

The survey area coincides with three soil map units. The Dekalb-Rock-outcrop-Latham association, steep (DLF), consists of moderately deep, well-drained soils; rock outcrops; and moderately deep, moderately well-drained soils occurring on mountain ridges and upper sideslopes. They are also found on ridge spur slopes extending toward valleys. Dekalb soils make up approximately 50 percent of the association and are found on upper sideslopes of steep mountains. Dekalb soils consist of a dark brown channery loam surface layer approximately 5 cm (2 in) thick and yellowish brown channery loam subsoil. Rock outcrops make up approximately 25 percent of the association. They consist of cliffs, chimney rocks, and walls of horizontally bedded sandstone, siltstone, and shale. Latham soils make up 15 percent of the association. They are found on points, benches, and saddles of upper sideslopes of steep mountains. Latham soils exhibit a 7 cm (3 in) thick dark brown silt loam surface layer overlying a yellowish brown or strong brown silty clay loam or silty clay subsoil. Minor

soils make up the other 10 percent of the association (Hayes 1982:6-7).

Fairpoint soils, steep, benched (FaF), are deep, well-drained soils occurring as surface mine spoil on narrow benches, mine outcrops, and in infilled hollows. The surface layer generally consists of approximately 15 cm (6 in) of mixed grayish brown and brownish gray channery silt loam. Subsoil consists of brownish gray and grayish brown mixed with yellowish brown or gray channery loam, silt loam, or silty clay loam (Hayes 1982:8).

Soils of the Shelocta-Cutshin association, steep (SCF), are deep and well-drained. Shelocta soils, found on sideslopes, comprise approximately 60 percent of the association, and Cutshin soils, located in coves and on benches, make up approximately 25 percent. Minor soils account for the remaining 15 percent. Shelocta soils typically exhibit a surface layer consisting of 13 cm (5 in) of brown silt loam. The upper 30 cm (12 in) of the underlying subsoil is dark yellowish brown silt loam, and the lower subsoil is strong brown channery or shaly silty clay loam. The Cutshin surface layer generally consists of approximately 48 cm (19 in) of channery loam—the upper half is dark grayish brown and the lower half is dark brown. Below is approximately 79 cm (31 in) of yellowish brown channery loam atop soft siltstone (Hayes 1982:10).

Climate

The climate of Kentucky is continental in character. As a result, temperature and precipitation levels throughout the state fluctuate widely. The prevailing surface winds originate in the Gulf of Mexico and are southerly and weak, allowing upper-level westerly winds to steer weather systems across the state. These factors result in warm, moist air derived from the south, while cooler and drier air is derived from the north. Mean annual temperatures across the state range from 53 degrees Fahrenheit in the northeast to 59 degrees Fahrenheit in the southwest. Overall, there is significant seasonal variation in temperature, with approximately 20 degree

differences possible during summer and winter months, as well as up to 25 degree shifts in the spring and fall. Average annual precipitation across the state ranges from 107 cm (42 in) in the north to 132 cm (52 in) in the south. Warm, moist tropical air masses derived from the Gulf of Mexico are most common during the summer months and contribute to the high humidity levels experienced in the state. During the spring and fall, storm systems tend to be less severe and less frequent, resulting in less radical climate extremes (Foster and Conner 2008).

Based on records kept between 1962 and 1977 at Hyden, in neighboring Leslie County, Kentucky, the average annual temperature for the area is 54.3 degrees Fahrenheit. The daily average temperature ranges from 74.2 degrees Fahrenheit in July to 31.8 degrees Fahrenheit in January. Leslie County receives approximately 124 cm (48.85 in) of precipitation annually (Hayes 1982).

Vegetation

The Eastern Kentucky Coalfield physiographic region is located in the rugged eastern portion of the Mixed Mesophytic Forest. The forest associations found in this region are the oldest and most complex of the deciduous forests. In the rugged eastern area, sugar maple-bass and wood-buckeye-tulip-poplar segregates occurred mainly on north-facing slopes. Oak-chestnut and oak-hickory communities occupied upper slopes and ridgetops, and pine was dominant on ridgetops where rock outcrops occurred. Beech and white oak were located where shale was the underlying rock. Oak, oak-hickory, and oak-pine communities comprise the modern day eastern Kentucky forest community (Braun 1950:146; Niquette and Henderson 1984).

Description of the Project Area

The 50.6-ha parcel on which the proposed biomass facility is to be constructed has been disturbed in its entirety by previous surface mining and subsequent reclamation efforts. Aerial photographs of the area depict the



Figure 3. Plan map of 7.1-ha survey area.

extent of this disturbance, which is indicated by inconsistencies in the local topography and vegetation (Figure 4). The ground surface within the previously mined area is of relatively low relief compared to the surrounding dissected uplands, and vegetation consists primarily of dense grasses indicative of reclamation efforts (Figure 5). Trees are nearly absent within this area, and those that exist are small and dispersed. Topography within the 7.1-ha survey area was limited to steep sideslopes and reclaimed bench areas with elevations ranging between approximately 293 (960 ft) and 427 m (1,400 ft) AMSL (Figure 3). Ground surface visibility was obscured by leaf litter and tree falls on sideslopes and by dense ground cover in reclaimed areas (Figures 6 and 7). Vegetation within the project area consisted variably of briars, grass, leaves, trees, and weeds. A number of minor rock outcrops were observed on sideslopes within the survey area, though no geologic overhangs, rockshelters, or caves were documented. Small portions of the survey area had been disturbed by previous construction activities associated with existing roads and the aforementioned substation (Figure 8).

III. RESULTS OF THE FILE AND RECORDS SEARCH AND SURVEY PREDICTIONS

Previous Research in Perry County

Prior to initiating fieldwork, a search of records maintained by the NRHP (available online at: <http://www.nps.gov/nrloc1.htm>) and the OSA (FY10_6221) was conducted to: 1) determine if the project area had been previously surveyed for archaeological resources; 2) identify any previously recorded archaeological sites that were situated within the project area; 3) provide information concerning what archaeological resources

could be expected within the project area; and 4) provide a context for any archaeological resources recovered within the project area. The OSA file search was conducted between November 3 and 9, 2009. The work at the OSA consisted of a review of professional survey reports and records of archaeological sites for an area encompassing a 2-km radius of the project footprint. To further characterize the archaeological resources in the general area, the OSA archaeological site database for the county was reviewed and synthesized. The review of professional survey reports and archaeological site data in the county provided basic information on the types of archaeological resources that were likely to occur within the project area and the landforms that were most likely to contain these resources. The results are discussed below.

OSA records revealed that neither the 50.6-ha parcel on which the proposed biomass facility is to be constructed nor the proposed transmission line corridor had been previously surveyed for cultural resources, indicating that the extensive disturbance documented in these areas likely resulted from pre-law surface mining.

Nine previous professional phase I archaeological surveys and one architectural and historic resource analysis have been conducted within a 2-km radius of the project area. However, no previously recorded archaeological sites are located in this area. The 2-km radius included areas within the Haddix and Krypton, Kentucky, quadrangles (United States Geological Survey [USGS] 1972a and 1972b).

Previous Archaeological Investigations

In March 1989, Robert B. Hand of CRA completed a phase I archaeological assessment of a proposed water tank location and two water line easements in Perry County, Kentucky. The survey was conducted at the request of H.A. Spalding Engineers, Inc. The project area measured .4 ha (1.0 acre) and was surveyed in its entirety. Fieldwork consisted of

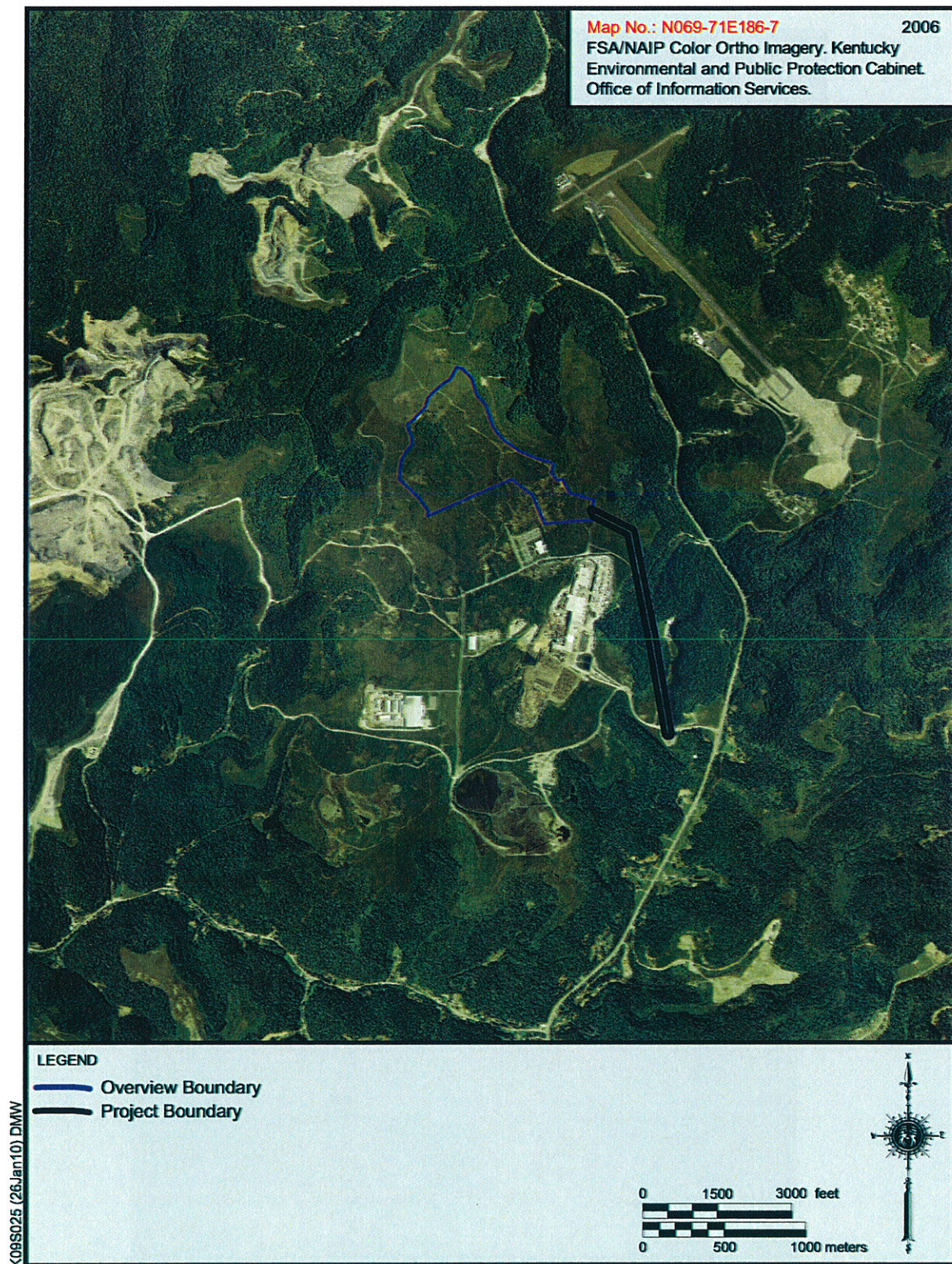


Figure 4. Aerial photograph depicting the extent of previous surface mining.



Figure 5. Southerly perspective of previously strip-mined and reclaimed 50.6-ha parcel subjected to archaeological overview study.



Figure 6. Northerly perspective along sloped and wooded portion of survey area.



Figure 7. Northerly perspective along reclaimed portion of survey area.



Figure 8. Southerly perspective of existing substation located at southern terminus of survey area.

intensive pedestrian survey supplemented with shovel testing. No archaeological sites or historic properties were located as a result of the survey, and cultural resource clearance was recommended (Hand 1989).

Between March 23 and 27, 1992, Hand completed a phase I archeological assessment of a proposed coal mining permit in Perry County, Kentucky. The survey was conducted at the request of Nesbitt Engineering, Inc., on the behalf of Pine Branch Coal Sales, Inc. (Permit Application Number 897-0271, Amendment 1). The project area measured 227.0 ha (560.9 acres), of which 158.5 ha (391.7 acres) were surveyed. Fieldwork consisted of intensive pedestrian survey supplemented with shovel testing. Three prehistoric archaeological sites (15Pe119–15Pe122) were recorded as a result of the survey. However, none of the sites is located within a 2-km radius of the current project area (Hand 1992).

Between March 22 and 24, 1993, M. Craig Hadley and Robert S. Webb of Law Environmental, Inc., conducted a phase I cultural resource assessment along the KY 15 expansion corridor in Perry County, Kentucky (Item No. 10-269.01). Approximately 11 km (7 mi) were investigated by pedestrian survey and shovel testing. No archaeological sites were documented as a result of the survey, and no further work was recommended (Hadley and Webb 1993).

In addition to the aforementioned archaeological investigation, Law Environmental, Inc., personnel conducted an architectural and historic resource analysis for the proposed widening of KY 15 between Hazard and Jackson Road in Perry County, Kentucky. Approximately 11 km were investigated by landscape scanning and surface inspection. No historic resources were documented as a result of the survey, and no further work was recommended (Law Environmental, Inc. 1993).

Between May 9 and 19, 1994, Hand conducted a phase I archeological assessment of a proposed coal mining permit in Breathitt and Perry Counties, Kentucky. The survey

was conducted at the request of Nesbitt Engineering, Inc., on behalf of Pine Branch Coal Company (Permit Application Number 897-0271, Amendment 2). The project area measured 144.6 ha (357.5 acres) and was surveyed in its entirety. Fieldwork consisted of intensive pedestrian survey supplemented with shovel testing. Three historic archaeological sites (15Br177–15Br179) were recorded as a result of the survey, though none of these sites is located within a 2-km radius of the current project area (Hand 1994).

On April 17 and 18, 1994, Hand completed a phase I archeological assessment of a proposed coal mine operation on the Breathitt and Perry County line, Kentucky. The survey was conducted at the request of Kem Coal Company (Permit Application Number 897-0325, Amendment 1). The project area measured 44.3 ha (109.6 acres), and was surveyed in its entirety. Fieldwork consisted of intensive pedestrian survey supplemented with shovel testing. No archaeological sites or historic properties were located as a result of the survey, and cultural resource clearance was recommended (Hand 1995a).

On April 19, 1995, Hand completed a phase I archeological assessment of a proposed coal mine operation in Perry County, Kentucky. The survey was conducted at the request of Kem Coal Company (Permit Number 497-0122 Amendment 2). The project area measured 7.7 ha (19.2 acres), and was surveyed in its entirety. Fieldwork consisted of intensive pedestrian survey supplemented with shovel testing. No archaeological sites or historic properties were located as a result of the survey, and cultural resource clearance was recommended (Hand 1995b).

On July 12, 2000, Alexandra D. Bybee of CRA completed a phase I archaeological survey for a proposed coal mine operation near the community of Chavies in Perry County, Kentucky. The survey was conducted at the request of Robert Spare of Nesbitt Engineering, Inc., on behalf of Pine Branch Coal Sales, Inc. (Permit Application Number 897-0271, Amendment 5). The project area

measured 35.2 ha (88.0 acres), and was surveyed in its entirety. Fieldwork consisted of intensive pedestrian survey supplemented with shovel testing. No archaeological sites or historic properties were located as a result of the survey, and cultural resource clearance was recommended (Bybee 2000).

Between February 25 and March 5, 2002, D. Randall Cooper of CRA conducted a phase I archaeological survey for the proposed reconstruction of KY 15 in Perry County, Kentucky (Item No. 10-269.01). The study was performed at the request of Redwing Ecological Service on behalf of the Kentucky Transportation Cabinet (KYTC). Approximately 96 ha (240 acres) were investigated via pedestrian survey supplemented with screened shovel tests. Two prehistoric archaeological sites (15Pe205 and 15Pe206) and a historic cemetery (15Pe207) were documented as a result of the survey, those none of these sites is located within 2 km of the current project area (Cooper 2002).

Between October 21 and 25, 2002, C. Mathew Saunders and D. Randall Cooper of CRA conducted further survey work for the proposed reconstruction of KY 15 in Perry County, Kentucky (Item No. 10-269.01). An additional 61 ha (150 acres) were investigated via pedestrian survey supplemented with screened shovel tests. One twentieth-century cemetery site (15Pe210) was documented as a result of the survey, though this site is not located within 2 km of the current project area (Saunders and Cooper 2002).

Archaeological Site Data

OSA records show that prior to this survey, 210 archaeological sites have been recorded in Perry County (Table 1). The majority of these archaeological sites consist of historic farm/residences (n = 94; 44.76 percent), followed by rockshelters (n = 70; 33.33 percent), open habitation sites without mounds (n = 31; 14.76 percent), and cemeteries (n = 6; 2.86 percent). The remaining site types include industrial sites (n = 3; 1.43 percent), mound complexes (n = 1; .48 percent), sites classified as "other" (n = 3;

1.43 percent), stone mounds (n = 1; .48 percent), and sites of unspecified type (n = 1; .48 percent).

The landform locations of sites in Perry County were also examined to determine the likelihood of encountering sites on similar landforms within the survey area. The majority of sites in Perry County are located on hillsides (n = 71; 33.81 percent), terraces (n = 51; 24.29 percent), floodplains (n = 42; 20 percent), and dissected uplands (n = 28; 13.33 percent). Site types located on hillsides are predominately rockshelters (n = 56; 78.87 percent) followed by historic farm/residences (n = 10; 14.08 percent), cemeteries (n = 4; 5.63 percent), and open habitation without

Table 1. Summary of Selected Information for Previously Recorded Sites in Perry County. Data Obtained from OSA and May Contain Coding Errors.

Site Type:	N	%
Cemetery	6	2.86
Historic Farm/Residence	94	44.76
Industrial	3	1.43
Mound Complex	1	0.48
Open Habitation Without Mounds	31	14.76
Other	3	1.43
Rockshelter	70	33.33
Stone Mound	1	0.48
Unspecified	1	0.48
Total	210	100
Time Periods Represented:	N	%
Paleoindian	3	1.35
Archaic	10	4.48
Woodland	17	7.62
Late Prehistoric	11	4.93
Indeterminate Prehistoric	62	27.8
Historic	106	47.53
Unspecified	14	6.28
Total	223*	100
Landform:	N	%
Dissected Uplands	28	13.33
Floodplain	42	20
Hillside	71	33.81
Other	10	4.76
Terrace	51	24.29
Unspecified	8	3.81
Total	210	100

* One site may represent more than one time period.

mounds (n = 1; 1.41 percent). Most of the sites situated on dissected uplands are rockshelters (n = 11; 39.29 percent), historic farms (n = 9; 32.14 percent), open habitation sites without mounds (n = 5; 17.86 percent), cemeteries (n = 2; 7.14 percent), and stone mounds (n = 1; 3.57 percent).

Map Data

In addition to the file search, a review of maps in the private collection at CRA was initiated to help identify any historic structures that may have been located within the survey area. The following maps were reviewed.

1913 Buckhorn, Kentucky, 15-minute series topographic quadrangle (USGS);

1915 Troublesome Creek and Its Tributaries (Sellier);

1937 Highway and Transportation Map of Perry County, Kentucky (Kentucky Department of Highways);

1952 General Highway Map of Perry County, Kentucky (Kentucky State Highway Department); and

1954 Krypton, Kentucky, 7.5-minute series topographic quadrangle (USGS).

The maps provided useful information about the general location of former structures and alerted CRA personnel to the possible existence of historic archaeological deposits within the general area. A single structure (Map Structure 1) is depicted in the vicinity of the survey area on the 1913 Buckhorn, Kentucky, 15-minute topographic quadrangle (Figure 9) (USGS 1913). Several other maps depict a structure in approximately the same location; however, the scale of some of these maps made precise placement of the structure difficult. No historic buildings or structures were observed within or near the survey area during the field investigation, nor were any historic archaeological remains encountered.

Survey Predictions

Considering the known distribution of sites in the county, the available information on site types recorded, and the present nature of the survey area, certain predictions were possible regarding the kinds of sites that might be encountered. Rockshelter sites were the primary site type expected due to both the frequency of such sites in the county and the occurrence of sideslopes throughout much of the survey area. Other site types were less likely to be encountered considering the

steepness of these sideslopes and the highly disturbed nature of the remainder of the survey area.

IV. METHODS

The 7.1-ha survey area was subjected to intensive pedestrian survey, which was conducted by walking a single transect along the centerline of the proposed transmission line corridor. Areas of rock outcrop on sideslopes were inspected for geologic overhangs, rockshelters, and caves, as well as culturally derived bedrock mortars, pitted stones, petroglyphs, and pictographs that have been known to be associated with such features; however, none were observed. Because all portions of the proposed transmission line corridor were either steeply sloped or previously strip-mined, no subsurface investigations were conducted.

Aerial photographs (Figure 4) and field observations (Figure 5) confirm that the 50.6-ha parcel on which the proposed biomass facility is to be constructed has been disturbed in its entirety by previous strip-mining and subsequent reclamation activities. This portion of the project area has no potential for archaeological deposits and, therefore, was not subjected to intensive archaeological investigations.

V. RESULTS AND CONCLUSIONS

Note that a principal investigator or field archaeologist cannot grant clearance to a project. Although the decision to grant or withhold clearance is based, at least in part, on the recommendations made by the field investigator, clearance may be obtained only through an administrative decision made by the lead federal agency in consultation with the State Historic Preservation Office (the KHC).

The records search revealed no previously recorded archaeological sites or historic properties within the previously strip-mined and reclaimed 50.6-ha parcel or the 7.1-ha



Figure 9. 1913 topographic quadrangle depicting historic structure (Map Structure 1) in vicinity of survey area.

survey area, and no archaeological sites were identified as a result of the field investigation. Because no sites listed in, or eligible for, the NRHP will be affected by the proposed construction, archaeological clearance for the proposed project is recommended.

If any previously unrecorded archaeological materials are encountered during construction activities, the KHC should be notified immediately at (502) 564-6662. If human skeletal material is discovered, construction activities should cease, and the KHC, the local coroner, and the local law enforcement agency must be notified, as described in KRS 72.020.

REFERENCES CITED

Braun, E. Lucy

1950 *Deciduous Forests of Eastern North America*. Reprinted. Blakiston, Philadelphia. Originally published 1950.

Bybee, Alexandra D.

2000 *An Archaeological Survey of a Proposed Coal Mine Operation near the Community of Chavies in Perry County, Kentucky*. Contract Publication Series 00-87. Cultural Resource Analysts, Inc. Lexington, Kentucky.

Cooper, D. Randall

2002 *An Archaeological Survey of the Proposed KY 15 Reconstruction in Perry County, Kentucky (Item No. 10-269.01)*. Contract Publication Series 02-42. Cultural Resource Analysts, Inc. Lexington, Kentucky.

Foster, Stuart and Glenn Conner

2008 Climate of Kentucky. Electronic document, http://cdo.ncdc.noaa.gov/climatenormals/clim60/states/Clim_KY_01.pdf, accessed April 2008. National Oceanic and Atmospheric Administration, National Climate Data Center.

Hadley, M. Craig and Robert S. Webb

1993 Cultural Resources Assessment, Kentucky Highway 15 Expansion Corridor, Perry County, Kentucky;

Kentucky Transportation Cabinet No. 10-269.01. Manuscript on file, Office of State Archaeology, University of Kentucky, Lexington.

Hand, Robert B.

1989 *An Archaeological Assessment of a Proposed Watertank Location and Two Waterline Easements for the Grapevine/Chavies Waterline Extensions, Perry County, Kentucky*. Contract Publication Series 89-05. Cultural Resource Analysts, Inc. Lexington, Kentucky.

1992 *A Coal Mine Survey Overlooking Haddock Fork in Perry County, Kentucky*. Contract Publication Series 92-36. Cultural Resource Analysts, Inc. Lexington, Kentucky.

1994 *A Coal Mine Survey near Elkbütt Knob in Breathitt and Perry Counties, Kentucky*. Contract Publication Series 94-31. Cultural Resource Analysts, Inc. Lexington, Kentucky.

1995a *A Coal Mine Survey along Perkins Branch and Boardtree Branch near the Community of Ned in Breathitt and Perry Counties, Kentucky*. Contract Publication Series 95-21. Cultural Resource Analysts, Inc. Lexington, Kentucky.

1995b *A Coal Mine Survey along Rockhouse Fork in Perry County, Kentucky*. Contract Publication Series 95-22. Cultural Resource Analysts, Inc. Lexington, Kentucky.

Hayes, Raymond B.

1982 *Soil Survey of Leslie and Perry Counties, Kentucky*. United States Soil Conservation Service, Department of Agriculture, Washington, D. C.

Kentucky Department of Highways

1937 Highway and Transportation Map of Perry County, Kentucky. Prepared in cooperation with the United States Department of Agriculture, Bureau of Public Roads.

Kentucky State Highway Department

- 1952 General Highway Map of Perry County, Kentucky. Prepared in cooperation with the United States Department of Commerce, Bureau of Public Roads.
- Law Environmental, Inc.
1993 Draft Base Report of Architectural and Historic Resource Analysis for Kentucky Highway 15, Hazard-Jackson Road, Perry County, Kentucky. Manuscript on file, Office of State Archaeology, University of Kentucky, Lexington.
- McDonald, Herman P., and Robert L. Blevins
1965 *Reconnaissance Soil Survey of Fourteen Counties in Eastern Kentucky*. United States Department of Agriculture, Soil Conservation Service in cooperation with Kentucky Agricultural Experiment Station.
- McGrain, Preston, and James C. Currens
1978 *Topography of Kentucky*. Kentucky Geological Survey, Series X, Special Publication 25. University of Kentucky, Lexington.
- National Park Service
1983 Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines. *Federal Register* 48(190): 44716-44742. United States Department of the Interior, Washington, D.C.
- Niquette, Charles M., and A. Gwynn Henderson
1984 *Background to the Historic and Prehistoric Resources of Eastern Kentucky*. Cultural Resource Series No. 1. United States Bureau of Land Management, Eastern States Office, Washington, D. C.
- Sanders, Thomas N. (editor)
2001 *Specifications for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports*. Kentucky State Historic Preservation Office, Kentucky Heritage Council, Frankfort.
- Saunders, C. Mathew and D. Randall Cooper
2002 *Addendum to an Archaeological Survey of the Proposed KY 15 Reconstruction in Perry County, Kentucky (Item No. 10-269.01)*. Contract Publication Series 02-42. Cultural Resource Analysts, Inc. Lexington, Kentucky.
- Sellier, L.M.
1915 Troublesome Creek and Its Tributaries. Kentucky Geological Survey, Frankfort.
- United States Geological Survey
1913 Buckhorn, Kentucky 15-minute series topographic quadrangle. United States Department of the Interior, Washington, D. C.
1954 Krypton, Kentucky 7.5-minute series topographic quadrangle. United States Department of the Interior, Washington, D. C.
1972a Haddix, Kentucky 7.5-minute series topographic quadrangle. United States Department of the Interior, Washington, D. C.
1972b Krypton, Kentucky 7.5-minute series topographic quadrangle. United States Department of the Interior, Washington, D. C.

APPENDIX A. SCOPE OF WORK



Proposal for Cultural Resource Survey

November 12, 2009

Submitted to:

Sara G. Smith
President

SMITH MANAGEMENT GROUP

saras@smithmanage.com

859-231-8936 ext. 105

Project Identification

ecoPower Generation Biomass Facility and transmission line
Perry County, Kentucky

Scope of Services

The cultural resource study will be conducted in accordance with current *Specifications for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports* issued by the Kentucky State Historic Preservation Office.

File Search/Archival Research/APE

A review of the archaeological site files at the Kentucky Office of the State Archaeologist (OSA) will be conducted for the proposed property plus a two kilometer buffer. The records review will serve to determine if the project area has been previously surveyed for cultural resources, are there know cultural resources in the project area, and if the area has not been previously surveyed to assess the potential for, and the kinds of, cultural resources that may be located within the project area.

Field Research

An intensive field survey will be completed for the proposed ca. 5,000-ft long power line corridor (150 ft wide easement). The field investigation will consist of an intensive survey following standard archaeological methods (i.e., pedestrian, shovel testing, augering). The portions of the project area that cross terrain with good surface visibility (for example plowed/cultivated fields) or characterized by steep slopes (creek bank) will be subject to pedestrian survey. This entails a walking, visual inspection of the ground surface to identify historic and prehistoric artifacts. Portions of the project that are located on relatively flat terrain with poor surface visibility will have to be shovel tested. This assessment method requires the excavation of screened shovel tests measuring 35 cm in diameter at intervals of 20 m. The phase I investigation will survey only the undisturbed ground within the project area (i.e., areas outside the existing construction rights-of-way).

All archaeological sites and historic structures discovered within the intensive survey area will be recorded following current SHPO specifications.

Task 3: Report



The results of the archival and field research will be documented in a detailed written report. The report will conform to Kentucky SHPO specifications. The report will describe all cultural resources located during the study and make recommendations for their treatment in relation to potential impacts. In addition, site survey forms will be prepared for each archaeological site recorded and submitted to OSA. A historic structure form will be completed for each historic structure documented and submitted to the Kentucky Heritage Council (KHC).

Deliverables

Seven copies of the report will be submitted to Smith for distribution to reviewing agencies. CRA will make any necessary revisions to the report requested by the agencies.

Schedule

CRA can initiate the study within 3 business days of NTP. The report of the study can be submitted to SMG within 10-15 working days of the NTP.

**KY State Historic Preservation
Response**



STEVEN L. BESHEAR
GOVERNOR

**TOURISM, ARTS AND HERITAGE CABINET
KENTUCKY HERITAGE COUNCIL**

MARCHETA SPARROW
SECRETARY

THE STATE HISTORIC PRESERVATION OFFICE
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PHONE (502) 564-7005
FAX (502) 564-5820
www.heritage.ky.gov

MARK DENNEN
EXECUTIVE DIRECTOR AND
STATE HISTORIC PRESERVATION OFFICER

December 14, 2009

Sara Smith
Smith Management Group
1405 Mercer Rd.
Lexington, KY 40511



**Re: Cultural Historic Survey for the Proposed ecoPower Generation Biomass Facility in Perry County, Kentucky
CRAI Job No. K09S026**

Dear Ms. Smith,

The State Historic Preservation Office has received the above referenced request for review and comment. According to a report by Cultural Resource Analysts, Inc., received on Nov. 23, 2009, this project consists of new construction of a wood-burning power plant in the existing Coal Field Regional Industrial Park in northern Perry County.

An area of potential effect (APE) of 0.75 mile was established and confirmed through subsequent communication with this office. Two previously unidentified historic sites were documented within the APE during a field survey: PE-95 and PE-96. We concur that neither of these sites is eligible for listing in the National Register of Historic Places.

It is the determination of our office that this project will have **No Effect** on Historic Properties, and work may proceed as planned.

No further consultation with our office is required. If you have questions regarding these comments, please contact Jill McNutt of my staff at (502) 564-7005, extension 121.

Sincerely,

Mark Dennen
Executive Director and
State Historic Preservation Officer

Cc: Liz Heavrin, CRAI
MD:jm

EXHIBIT J4

Threatened & Endangered Species Consultation

EcoSource, Inc.

104 Boston Square
Georgetown, Kentucky 40324

Telephone (502) 868-5200
Fax (502) 868-5282

December 18, 2009

Mr. Clay Whitney
Smith Management Group
1405 Mercer Road
Lexington, KY 40511

RE: ecoPower Generation LLC
 Environmental Assessment

Clay:

Per your instruction, EcoSource has conducted a preliminary assessment of the proposed EcoPower biomass power plant located in the Coal Fields Industrial Park in northern Perry County, Kentucky. The assessment was performed to identify the presence of jurisdictional waters (wetlands and streams) and any potential issues related to federally threatened and endangered (T&E) species. However, Smith Management Group (SMG) served as the contact to the Kentucky Department of Fish and Wildlife Resources and the U.S. Fish and Wildlife Service to determine the potential for any T&E species to be present within the proposed project area.

Field visits were performed, with your attendance, on October 22, 2009 and November 10, 2009. The first visit was performed to evaluate regulated resources within the proposed plant footprint, while the second visit targeted transmission line placement alternatives. These visits consisted of periodic observations made while traversing the proposed project area by vehicle, where roads were present. As necessary, any areas requiring more in-depth scrutiny were negotiated on foot for a more accurate determination. SMG provided proposed site maps for the field visits that are included with this letter.

The plant footprint will occupy a portion of a reclaimed mountain top coal removal (MTR) project. An actively used industrial park currently occupies part of the MTR area. The proposed project would be incorporated into the existing industrial park. Where buildings or other paved surfaces do not currently exist, the MTR area is vegetated mostly in grasses. Some small areas of scrubby tree and shrub growth have become established in the undeveloped areas.

The transmission line corridors that were investigated are proposed to be located across the developed and undeveloped MTR area, and the adjacent forested areas along stream channels and on top of an unmined ridge near the AEP Engel substation. The majority of the western route will cross through the MTR area, with approximately 400' of the line passing through intact forest. This forested area is located on the aforementioned ridge above an unreclaimed highwall. The eastern route also has the majority of its line passing through the MTR area, but approximately 1,200' will cross through intact forest. This forested area is located below the lowest coal seam that was mined and includes the Right Fork of Rockhouse Fork, a perennially flowing stream.

Regarding regulated or jurisdictional "waters of the U.S.," no wetlands or streams were documented within the proposed plant footprint. The western transmission route also contained no wetlands or streams within its proposed corridor. However, the eastern transmission route crosses the Right Fork of Rockhouse Fork, which would be considered "waters of the U.S." Physical impacts (excavation or fill) to this stream would be regulated by the Clean Water Act (CWA). Any crossing that would directly impact the stream channel or any adjacent wetlands would require a federal Section 404 (Army Corps of Engineers permit) and state Section 401 (Kentucky Division of Water permit) authorizations. If the transmission line would follow the eastern route and span the stream, thereby causing no physical impact, then no CWA notification to or authorization from any federal or state agency would be required.

Based upon the information provided by the Kentucky Department of Fish and Wildlife Resources (letter attached dated November 12, 2009) and the U.S. Fish and Wildlife Service (letter attached dated November 25, 2009), the only federally listed species considered to have the potential to occur within the proposed project area is the endangered Indiana bat (*Myotis sodalis*). Regarding potential Indiana bat winter habitat, no rockshelters, caves, or abandoned mine portals were documented or observed within the proposed footprint of the plant or the proposed transmission routes. Concerning potential summer habitat, the proposed plant footprint is completely within the MTR area, and thus does not provide suitable summer habitat. On the other hand, all of the transmission line corridors intersect older forested areas that may potentially provide Indiana bat summer habitat.

Any impacts to the potential summer roosting habitat, relates to a decision as to the timing of the tree removal prior to any construction activity. If the trees can be cleared between October 15 through March 31, then summer roosting habitat can be removed without impacting any roosting Indiana bats. However, if the trees must be removed outside of this timeframe, then the applicant has two choices. The first choice is to perform a site specific survey to determine presence or absence of the Indiana bat. If the species is found to not be present, tree clearing can proceed outside of the designated timeframe. The second choice is to enter into a Conservation Memorandum of Agreement (MOA) with the USFWS. Implementation of an MOA would allow tree removal outside of the specified timeframe, but concessions would be required regarding minimization and mitigation measures within the project area. If this option is made to pursue the MOA, then further consultation with the USFWS would be performed based upon the final project footprint. Until this consultation is undertaken, the minimization and mitigation measures can not be specified.

If you should require further information regarding this assessment, please feel free to contact me at your convenience.

Sincerely,



Debbie Collinsworth
Principal Scientist

Enc.



**KENTUCKY DEPARTMENT OF FISH & WILDLIFE RESOURCES
TOURISM, ARTS, AND HERITAGE CABINET**

Steven L. Beshear
Governor

#1 Sportsman's Lane
Frankfort, Kentucky 40601
Phone (502) 564-3400
1-800-858-1549
Fax (502) 564-0506
fw.ky.gov

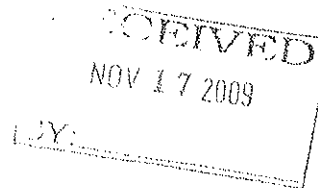
Marcheta Sparrow
Secretary

Dr. Jonathan W. Gassett
Commissioner

November 12, 2009

Clayton T. Whitney
Smith Management Group
1405 Mercer Rd.
Lexington, KY 40511

RE: Proposed Power Generating Facility
Perry County, KY



Dear Mr. Whitney:

The Kentucky Department of Fish and Wildlife Resources (KDFWR) have received your request for the above-referenced information. The Kentucky Fish and Wildlife Information System (KFWIS) indicate that state/federal threatened and endangered species are known to occur within close proximity of the proposed project area. However, the KDFWR does not expect impacts to listed species due to the location and nature of the project. Please be aware that our database system is a dynamic one that only represents our current knowledge of the various species distributions.

KDFWR recommends that erosion control measures be developed and utilized during any construction to minimize siltation into nearby waterways. Such erosion control measures may include, but are not limited to silt fences, staked straw bales, brush barriers, sediment basins, and diversion ditches. Erosion control measures will need to be installed prior to construction and should be inspected and repaired regularly as needed.

I hope this information proves helpful to you. If you have any questions or require additional information, please call me at (800) 852-0942 Extension 4473.

Sincerely,

Courtney C. Hunt
Fisheries Biologist II

Cc: Environmental Section File



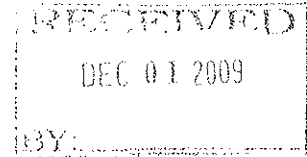
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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Kentucky Ecological Services Field Office
330 West Broadway, Suite 265
Frankfort, Kentucky 40601
(502) 695-0468



November 25, 2009

Mr. Clayton T. Whitney
Vice President
Smith Management Group
1405 Mercer Road
Lexington, Kentucky 40511

Re: FWS 2010-B-0051; Smith Management Group, Proposed Power Generating Facility,
located in Perry County, Kentucky

Dear Mr. Whitney:

Thank you for the correspondence dated October 23, 2009 regarding the above-referenced project. The U.S. Fish and Wildlife Service (Service) has reviewed the proposed project and offers the following comments in accordance with the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). This is not a concurrence letter. Please read carefully, as further consultation with the Service may be required.

According to your correspondence, construction of a biomass fired power generating facility is being planned on a 371-acre site, which is located on a reclaimed surface mine within the Coal Fields Regional Industrial Park, approximately 10.7 miles northwest of the City of Hazard, Perry County. A specific site layout has not yet been confirmed.

In order to assist you in determining if the proposed project has the potential to impact protected species we have searched our records for occurrences of listed species within the vicinity of the proposed project. Based upon the information provided to us and according to our databases, we believe that one federally listed species has the potential to occur within the project vicinity. The listed species is:

Common Name
Indiana bat

Scientific Name
Myotis sodalis

Federal Status
endangered

We must advise you that collection records available to the Service may not be all-inclusive. Our database is a compilation of collection records made available by various individuals and resource agencies. This information is seldom based on comprehensive surveys of all potential habitats and thus does not necessarily provide conclusive evidence that protected species are present or absent at a specific locality.

Indiana bat

Summer roost and/or winter habitat for the endangered Indiana bat may exist within the proposed project site. Based on this information, we believe that: (1) forested areas in the vicinity of and on the project area may provide potentially suitable summer roosting and foraging habitat for the Indiana bat; and (2) caves, rockshelters, and abandoned underground mines in the vicinity of and on the project area may provide potentially suitable wintering habitat for the Indiana bat. Our belief that potentially suitable habitat may be present is based on the information provided in your correspondence, the fact that much of the project site and/or surrounding areas contain forested habitats that are within the natural range of this species, and our knowledge of the life history characteristics of the species.

The Indiana bat utilizes a wide array of forested habitats, including riparian forests, bottomlands, and uplands for both summer foraging and roosting habitat. Indiana bats typically roost under exfoliating bark, in cavities of dead and live trees, and in snags (*i.e.*, dead trees or dead portions of live trees). Trees in excess of 16 inches diameter at breast height (DBH) are considered optimal for maternity colony roosts, but trees in excess of 9 inches DBH appear to provide suitable maternity roosting habitat. Male Indiana bats have been observed roosting in trees as small as 5 inches DBH.

Prior to hibernation, Indiana bats utilize the forest habitat around the hibernacula, where they feed and roost until temperatures drop to a point that forces them into hibernation. This "swarming" period is dependent upon weather conditions and may last from about September 15 to about November 15. This is a critical time for Indiana bats, since they are acquiring additional fat reserves and mating prior to hibernation. Research has shown that bats exhibiting this "swarming" behavior will range up to five miles from chosen hibernacula during this time. For hibernation, the Indiana bat prefers limestone caves, sandstone rockshelters, and abandoned underground mines with stable temperatures of 39 to 46 degrees F and humidity above 74 percent but below saturation.

Because we have concerns relating to the Indiana bat on this project and due to the lack of occurrence information available on this species relative to the proposed project area, we would have the following recommendations relative to Indiana bats.

1. Based on the presence of numerous caves, rock shelters, and underground mines in Kentucky, we believe that it is reasonable to assume that other caves, rock shelters, and/or abandoned underground mines may occur within the project area, and, if they occur, they could provide winter habitat for Indiana bats. Therefore, we would recommend that the project proponent survey the project area for caves, rock shelters, and underground mines, identify any such habitats that may exist on-site, and avoid impacts to those sites pending an analysis of their suitability as Indiana bat habitat by this office.
2. We would also recommend that the project proponent only remove trees within the project area between October 15 and March 31 in order to avoid impacting summer roosting Indiana bats. However, if any Indiana bat hibernacula are identified on the

project area, we recommend the project proponent only remove trees between November 15 and March 31 in order to avoid impacting Indiana bat "swarming" behavior.

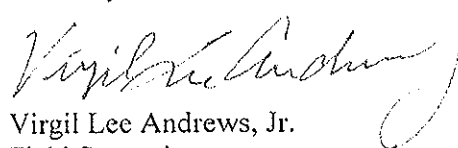
However, if these recommendations cannot be incorporated as project conditions, then the project area may be surveyed to determine the presence or absence of this species within the project area in an effort to determine if potential impacts to the Indiana bat are likely. A qualified biologist who holds the appropriate collection permits for the Indiana bat must undertake such surveys, and we would appreciate the opportunity to approve the biologist's survey plan prior to the survey being undertaken and to review all survey results, both positive and negative. If any Indiana bats are identified, we would request written notification of such occurrence(s) and further coordination and consultation.

If your project schedule requires the clearing of potential Indiana bat habitat (*i.e.*, trees) during the period of April 1 to October 14, you have two primary options for addressing impacts to Indiana bats. First, you can survey the project site as described previously, or you can enter into a Conservation Memorandum of Agreement (MOA) with the Service. By entering into a Conservation MOA with the Service, Cooperators gain flexibility in project timing with regard to the removal of suitable Indiana bat habitat. In exchange for this flexibility, the Cooperator provides recovery-focused conservation benefits to the Indiana bat through the implementation of minimization and mitigation measures as set forth in the Indiana Bat Mitigation Guidance for the Commonwealth of Kentucky. For additional information about this option, please notify our office.

Surveys for the Indiana bat would not be necessary if sufficient site-specific information was available that showed that: (1) there is no potentially suitable habitat within the project area or its vicinity or (2) the species would not be present within the project area or its vicinity due to site-specific factors. A survey for Indiana bats would also not be necessary if trees were removed from the site between October 15 and March 31, and/or the project proponent enters into a Conservation MOA with the Service.

Thank you again for your request. Your concern for the protection of endangered and threatened species is greatly appreciated. If you have any questions regarding the information that we have provided, please contact James Gruhala at (502) 695-0468 extension 116.

Sincerely,


Virgil Lee Andrews, Jr.
Field Supervisor

For reasons of Homeland Security, this document is not available on-line:

Case Number: 2009-00530

*Description of Document: Exhibit J4 Threatened & Endangered Species
Consultation, Site Location Map, 42" x 30"*

Persons requiring access to this document may contact the Public Service Commission in person or in writing at:

Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602
Attn: GIS Coordinator
Phone (502) 564-3940

Written requests must include a signature, name, title of organization (if applicable), mailing address, phone number and optional e-mail address and the following statement: *I understand that since September 11, 2001, location data of critical utility structures is considered sensitive information for security reasons. I will not publish this map or any part of it on the World Wide Web. I will not redistribute this map to others, but shall refer requests by others for such information to the Kentucky Public Service Commission.*

Maps will be sent as pdf files by e-mail or on CD at no cost to the party. If printed "oversized" maps are requested, there will be a charge of \$8 per sheet.

Maps will be available for viewing at the Public Service Commission and at any public hearing.

EXHIBIT J5

Residential View Shed Photographs



View from Residence #1 looking north-northwest to the Project



View from Residence #1 looking north to undeveloped lands



View from Residence #1 looking west to MB Lumber Company



View of Residence #1 from west



View from Residence #1 looking east toward Truss Joist Plant



View from Residence #1 looking south to Pine Branch Coal Sales

Photographs of existing Viewshed from Residence #1
located 3,000 south of ecoPower Project site



View from Residence #2 looking north-northwest to the Project



View from Residence #2 looking north to industrial park



View from Residence #2 looking west to the Trus Joist Plant



View of Residence #2 from the southeast



View from Residence #2 looking east toward hillside



View from Residence #2 looking south to the Ind. Park Access Road

Photographs of existing Viewshed from Residence #2
located 1 mile south-southeast of ecoPower Project site



View from Residences #3-4 looking north-northwest to the Project



View from Residences #3-4 looking north to industrial park



View from Residences #3-4 looking east to hillside



View of Residences #3-4 from north



View from Residences #3-4 looking west toward American Woodmark



View from Residences #3-4 looking south to hillside

Photographs of existing Viewshed from Residences #3 and #4 located 1 mile South-Southeast of ecoPower Project site



View from Residence #5 looking north to industrial park



View from Residence #5 looking north-northeast to Project Site



View from Residence #5 looking east Pine to Branch Coal Sales



View of Residence #5 from northeast



View from Residence #5 looking west toward undeveloped land



View from Residence #5 looking south

Photographs of existing Viewshed from Residence #5 located 1.5 mile southwest of ecoPower Project site



View from "Residential Neighborhood" looking northwest to Project Site



View from "Res. Neighborhood" (south of airport) looking north to airport



View from "Residential Neighborhood" (south of airport) looking west



View of "Residential Neighborhood" (south of airport) from north



View from "Res. Neighborhood" (south of airport) looking east



View from "Residential Neighborhood" (south of airport) looking north

Photographs of existing Viewshed from "Residential Neighborhood" (south of airport) located 1.25-mile southeast of ecoPower Project site

EXHIBIT J6

Conceptional View Sheds



Conceptual Site View of Project from Residence #1



Conceptual Site View of Project from Neighborhood #6 (South of Airport)



Conceptual Site View of Project from Airport

EXHIBIT J7

Real Property Appraisal Consulting Report

PART 1- INTRODUCTION

I

**REAL PROPERTY
APPRAISAL
CONSULTING REPORT**

OF

EcoPower Generation Property
Approximately 126 acres
Located in the
Coal Fields Regional Industrial Park,
Chavies, Kentucky

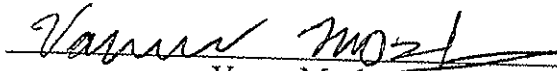
FOR

EcoPower Generation
Mr. Gary Crawford
1256 Manchester St.
Lexington, Ky 40504

**APPRAISAL/CONSULTING
REPORT BY**

Kentucky Field Service Realty, Inc.
Vance Mosley, KY Lic. No. 0832 CA-G
PO Box 921
Hyden, KY 41749
Phone 606-672-3856
Fax 606-672-4093

The potential changes in property values resulting from the siting, construction, and operation of the proposed facility for property owners adjacent to the facility, either neutral or positive as discussed in the report. An analysis of the proposed facility's economic impact on the affected region and the state; Is discussed further in the report as of December 21, 2009.


Vance Mosley, ~~CA-G~~ Lic. No. 0832
Appraiser

THIS IS AN REAL PROPERTY APPRAISAL CONSULTING REPORT IN
SUMMARY FORM

Kentucky Field Service Realty, Inc

PO Box 921, Hyden KY 41749 ~ Phone: (606) 672-3856 ~ Fax: (606) 672-4093 ~ Email: kfsr@tds.net

EcoPower Generation
Mr. Gary Crawford
1256 Manchester St.
Lexington, Ky 40504

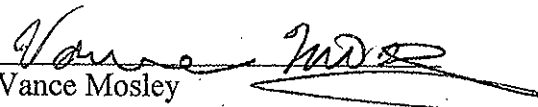
Dear Mr Crawford:

In accordance with your request, I have made a summary real property appraisal consulting report of the EcoPower Generation Property located at the Coal Fields Regional Industrial Park of Perry County, Kentucky.

The potential changes in property values resulting from the siting, construction, and operation of the proposed facility for property owners adjacent to the facility, either neutral or positive as discussed in the report. An analysis of the proposed facility's economic impact on the affected region and the state; Is discussed further in the report as of December 21, 2009.

If you have any questions, please feel free to contact me.

Sincerely,


Vance Mosley
CA-G Lic. No. 0832
Appraiser

PART 1 – INTRODUCTION

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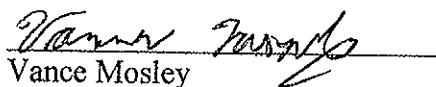
PART-5 ADDENDA

ecoPower Adjacent Property Owners	
Photographs of the Subject Property	
Maps and Related Exhibits	
Subject Site Plan, Survey, Plat Map and Architectural Plans	
Deeds	


Certificate of Value

I certify that, to the best of my knowledge and belief:

- The statements of fact contained in this report are true and correct.
- The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and is my personal, impartial, and unbiased professional analyses, opinions, and conclusions.
- I have no present or prospective interest with respect to the parties involved.
- My compensation is not contingent on an action or event resulting from the analyses, opinions, or conclusions in, or the use of, this report.
- My analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the *Uniform Standards of Professional Appraisal Practice*.
- The date of inspection was December 21, 2009.
- Associate appraiser Coby Mosley had significant input on this Real Property Appraisal Consulting Report.
- My analysis and conclusions were made on a tract by tract basis as to the effects on each individual parcel that joins the subject project and considered was the positive, negative or neutral effect on market value of the project.
- The potential changes in property values resulting from the siting, construction, and operation of the proposed facility for property owners adjacent to the facility, either neutral or positive as discussed in the report. An analysis of the proposed facility's economic impact on the affected region and the state; Is discussed further in the report as of December 21, 2009.


Vance Mosley

KY Certified General Appraiser/Consultant #0832


Coby Mosley
KY Associate Appraiser Lic #04286

PART 2 – IDENTIFICATION OF THE CONSULTING PROBLEM AND SCOPE OF WORK

Summary of Facts and Conclusions

Owner of Record:

Perry, Harlan, Leslie,
Breathitt Regional Industrial
Authority Inc. Land owners
tracts # 1-9

Option to purchase:

EcoPower Generation

- | | |
|---------------------------------|--|
| 1. Acreage: | 126 acres |
| 2. Highest and Best Use: | Industrial |
| 3. Improvements: | None |
| 4. Date of Inspection: | December 21, 2009 |
| 5. Date of Report: | January 4, 2009 |
| 6. Value of Appraised Property: | No Market Value conclusion
was necessary. |

References

1. HARLAN, LESLIE, LETCHER AND BELL COUNTY RECORDS.
2. MR. GRANT CURRY
3. MR. GARY CRAWFORD

Identification of Subject Property-Existing Use-Intended Use

The property is a 126 acre site located in the Coal Fields Industrial Park in Perry County, Kentucky. This site is located on the North and East end of a 500 acre Industrial Park that was established in October 1998. This Industrial Park was established for Industrial use only (See attached Deeds Addenda).

The existing use is vacant industrial property and the intended use is to use the property for a electric generating power plant.

Consulting Client

EcoPower Generation Inc.

Intended Use and Users of Real Property Appraisal Consulting Report

The intended use of the property is for a electric generating powerplant. The users of this report will be the Kentucky State Board on electric generation and transmission siting and Ecopower.

Type and Definition of Value Considered in The Real Property Appraisal Consulting Report***Definition of Market Value***

Market Value is defined as the amount in cash, or on terms reasonable equivalent to cash, for which, in all probability, the property would be sold by a knowledgeable owner, willing but not obligated to sell to a knowledgeable purchaser who desires but is not obligated to buy.

Property Interests and Rights Considered

The fee simple estate subject to the restrictions and reservations in the attached deeds in the addenda

Effective Date of Consulting Assignment Results and Completion Date of Report

The Effective Date is December 21, 2009 and the Completion Date is January 5, 2009

Competency Statement Pertaining to this Consulting Assignment

I have been appraising property of this type in this vicinity since 1970 and am very familiar with the market area.

Extraordinary Assumptions

No Extraordinary Assumption was used in this assignment

Hypothetical Condition

This appraisal consulting report was done using a hypothetical condition that the power plant Generator is on the site.

Jurisdictional Exception Conditions Necessary In This Consulting Assignment

Not applicable to this assignment.

Statement of Limiting Conditions

This real property consulting report is made subject to the following assumptions and limiting conditions:

That title is assumed to be merchantable and marketable. That no responsibility is assumed by the appraiser for legal matters, especially those affecting title to the properties. That the legal description furnished the appraiser is correct.

That certain opinions, estimates, or other data furnished the appraiser by others are correct. That the property has been surveyed and the acreage is taken from the landowners' maps. The appraiser reserves the right to alter his opinion value on the basis of information that would not be uncovered during the normal course of investigation.

The appraisal consulting report is to be used as a whole and not in part.

Existing Ownership of Subject Property

Perry, Harlan, Leslie, Breathitt Regional Industrial Authority Inc

Analysis, Recommendations and Opinions Developed in this Consulting Report..

Each property owner is discussed as to its highest and best use and land classes. The properties were analyzed to see what affect this purposed power plant will have on it, if any. The tracts will be shown on an attached map and identified by number from 1-9 and also described in the attached deeds.

Scope of Work of this Consulting Report

Is to examine the adjoining property owners that surrounds the 126 acre site to determine the effects of the use of the subject site for the specified use and its effect, if any, where it be positive, negative, or neutral on the adjoining properties. Each property owner is discussed as follows as to its highest and best use and land classes. The tracts will be shown on an attached map and identified by number from 1-9 and also described in the attached deeds.

The appraiser searched the market area of the subject for similar sales by obtaining information from other appraisal firms, PVA, County Court Clerk, and City Offices in other Kentucky counties. The market area of the subject was expanded to Eastern Kentucky due to the nature of the property and to arrive at the positive, negative or no effect on property values adjoining the subject site. Also to analyze the proposed facilities on the economic impact on the affected region and the state. The Real Property Appraisal Consultant lacks the knowledge and experience with respect to the detection and measurement of hazardous substances affecting the property. A complete physical inspection of the subject was conducted.

PART 3- PRESENTATION OF DATA.

Market Area, Location and Neighborhood Data

Perry County is located in the Eastern Kentucky coal field regions. Coal mining is a major industry and is one of the largest employers in Eastern Kentucky.

Perry County has a population of 29,906 (according to recent 2007 statistics).

The area (workforce located within a 60 mile driving range of Perry County) has a population of 202,351 (also according to the most recent 2007 statistics). In the year 2010, however, the population is projected to be 29,930 for Perry County and 201,855 for the labor market area. The workforce area consists of 713,823 acres, some of which extend into the western part Virginia and the northeastern part of Tennessee.

In 2005 there were 11,534 households in Perry County with an average 2.5 persons in each household. The median household income was 23,414, in 2005. The unemployment rate of Perry County is 6.9 and a median family income of \$34,400 with an average hourly wage of \$16.53.

As aforementioned, the coal mining industry accounts for most of the gainful employment in Perry County (for the surrounding counties as well). Some of the other major industries attributing to the employment of Perry County is: American Woodmark Corporation, MB Lumber Co., Inc., Trus Joist A Weyerhaeuser Business, AAA Mine Service, Home Lumber Co. Inc., Perry Manufacturing and Wayne Supply.

Labor market counties are composed of counties which significantly exist within the sixty (60) minute drive range of the originating county's county seat. A county will be included within the radius if the centroid point of a county (a point representing the center of the geographic area of a county) falls within the drive zone. Additionally, all contiguous counties will be classified as part of the labor market with the exception of non-Kentucky contiguous counties which have been excluded by the above mentioned 60-minute drive range and have a border with the Mississippi and/or Ohio Rivers.

	Available Labor, 2008			Future Labor: Becoming 18 Years of Age (2009-2012)
	Total	Unemployed	Potential Labor Supply	
Labor Market Area	19,613	8,197	11,416	14,738
Eastern Kentucky Renewal	2,886	968	1,918	1,971

Source: U.S. Department of Labor, Bureau of Labor Statistics; Kentucky Cabinet for Economic Development (KCED); U.S. Department of Commerce, Bureau of the Census.

Note: Total Available Labor = Unemployed + Potential Labor Supply.

Unemployed - people currently not employed, but actively seeking work.

Potential Labor Supply: Determined by the national labor force participation rate minus each county's labor force participation rate. Labor force participation rates are calculated by dividing the labor force by the population. NA (Not Applicable) applies to counties with a labor force participation rate greater than the national average.

Future Labor - people becoming 18 years of age (not part of the total available labor statistics).

Civilian Labor Force

	Eastern Kentucky Renewal		Labor Market Area	
	2008	Oct. 2009	2008	Oct. 2009
Civilian Labor Force	12,173	12,181	103,320	105,614
Employed	11,205	10,727	95,123	91,538
Unemployed	968	1,454	8,197	14,076
Unemployment Rate (%)	8.0	11.9	7.9	13.3

Unemployment Rate (%)

Year	Eastern Kentucky Renewal	Labor Market Area	Kentucky	U.S.
2004	8.0	7.3	5.5	5.5
2005	8.1	7.5	6	5.1
2006	8.0	7.3	5.7	4.6
2007	8.0	7.3	5.5	4.6
2008	8.0	7.9	6.4	5.8

Source: U.S. Department of Labor, Bureau of Labor Statistics

Commuting Patterns

Residents of Eastern Kentucky Renewal	2000	Percent
Working and Residing In County	7,198	68.6
Commuting Out of County	3,295	31.4
Total Residents	10,493	100.0
Employees in Eastern Kentucky Renewal		
Working and Residing In County	7,198	87.0
Commuting Into County	1,078	13.0
Total Employees	8,276	100

History of the Subject Property

The property has been used since 1998 for an Industrial site. Before that it was stripped mined.

State and Local Property Taxes

The Kentucky Constitution requires the state to tax all classes of taxable property, and state statutes allow local jurisdictions to tax only a few classes. All locally taxed property is subject to county taxes and school district taxes (either a county school district or an independent school district). Property located inside

The city limits may also be subject to city property taxes. Property assessments in Kentucky are 100% fair cash value. Accounts receivable are taxed at 85% of face value. Special local taxing jurisdictions (fire protection districts, watershed districts, and sanitation districts) levy taxes within their operating areas (usually a small portion of community or county).

Land Description

See attached Deeds

Property Data

The property data will include first the description of the property on which the merchant electric generating facility is purposed to be built. This purposed facility is to be constructed on a 126 acre site located in the Coal Fields Industrial Park in Perry County, Kentucky. This site is located on the North and East end of a 500 acre Industrial Park that was established in October 1998. This Industrial Park was established for Industrial use only (See attached Deeds Addenda).

This Electric Generating Facility (purposed) located upon this 126 acre site will be about 538 x 765 feet at its widest point. Two log storage yards will occupy an area 850 x 600 feet and store about 80,000 tons of weight wood. This wood burning facility will furnish fuel for a 50 Megawatt Unit or an estimated 30,000 households.

Zoning and Land Use Regulations

There is no zoning in Perry County.

Improvement Description Including Attached Fixtures and Personal Property

No Improvements, Fixtures or Personal Property on said property

Environmental Disclaimer

This Real Property Appraisal Consulting report is based on the assumption that the property is not negatively affected by the existence of hazardous substances or detrimental environmental conditions. The appraisers routine inspection of and inquires about the subject property did not develop any information that indicated any apparent significant hazardous substances or detrimental environmental conditions which would affect the property negatively unless otherwise stated in this report. It is possible that tests and inspections made by a qualified hazardous substance and environmental expert would reveal the existence of hazardous substances or detrimental environmental conditions on or around the property that would negatively affect its value. There is a possibility of dust and noise but this is beyond the scope of this report and the appraiser is making the assumption that the adjoining properties would not be negativity effected.

Verification of Inspection

This is to certify that the appraiser consultant did personally inspect the subject property on December 21, 2009. The optionees representative Mr. Grant Curry did accompany the appraiser on the examination of the property.

Purpose of Real Property Appraisal Consulting Report

This Real Property Appraisal Consulting report is made to determine the potential changes, if any, in property values resulting from the siting, construction, and operation of the proposed Electric Generating Facility for property owners adjacent to the facility. Also an analysis of the proposed facility's economic impact on the affected region and the state.

Highest and Best Use

Definition of Highest and Best Use when appraising real property is the reasonably probable and legal use of the property that is physically possible, appropriately supposed, and financially feasible, and that results in the highest value.

Analysis of Highest and Best Use: The subject property is situated in a rural section of Perry County with utilities. Typical properties, like the subject, are used for Commercial/Industrial. The property has been used in the past for Industrial use.

It is Physically possible, financially feasible and legal permissible for such uses and would be the Highest and Best Use.

This means that the subject can benefit from these uses and would result in the highest and best use.

Adjoining Landowners and an Analysis of the purposed Facility Economic Impact on the Affected Region and the State.

Parcel #1- John Napier (Contacted 12-29-09)

This tract consist of 40 acres more or less and is located on the East end of the subject 126 acre tract. The access to this property is via a 2 lane paved road off Rt. 15 then along a dirt road about 1000 feet to the property. The topography is a flat usable strip mine area that is being used for hay production. The property is located in a low area below the subject site and will not be affected by the project as the facility would be located about 50 feet on a higher elevation. The effect on this parcel would be neutral or have no effect.

Parcel #2- Payne Napier

This tract consists of 40 acres, more or less, and is located just South of tract #1. Mr. John Napier represented Payne Napier as the owner could not come to the site due to his health condition. The tract has direct access to a paved 2 lane road from Rt. 15. This site is flat usable strip mine area used for pasture. The tract is in a low area about 50 feet below the project and as in tract #1 will not be effected, the effect would be neutral on market value.

Parcel #3- AODD Transport Inc. (Contacts 1-5-2010)

Owned by Mr. Clay Campbell of 416 Mahogany Hill Dr. located in the Industrial Park on a 14.5 acre tract located on the Southeastern end of the subject site and being a part of the said Industrial Park. This business is located below the subject site about 50 feet in elevation. This parcel is being used to transport and repair all types of commercial vehicles. This property should receive a positive effect on its Market value as it should be influenced in its business relationship in the repair of equipment used directly and indirectly from the operation of the subject electric generating facility.

Parcel #4- Sykes Inc. c/o Chris Melton, Manager, (Contacted 1-5-2010)

Of 101 Sykes Blvd. Chavies KY 41727 located on two tracts, 101 and 102 containing 11.01 and 11.01 respectively, for a total acreage of 22.2. Only tract #101 joins the subject site on the West side and adjacent to AODD Transportation (parcel #3). This parcel is parcel #1,2 and 3 are located below the subject site in elevation. This site will not be effected as it's use is in a large facility enclosed for data processing. Sykes main access is through the industrial Park and a County road leading East to Rt. 15. The building of this Electricity Generating Facility will have a neutral effect on parcel #4.

Parcel # 5- is a part of the Perry, Harlan, Leslie, Breathitt Regional industrial Authority Inc. c/o Mrs. Anette Napier (Contacted 1-5-2010)

Perry County Courthouse Hazard, Kentucky. This is an L shaped Parcel Containing 46.8 acres and is part of the industrial park that is vacant and not yet been developed. This parcel is located directly south of the proposed electric generating facility. The highest and best use of this vacant parcel is for industrial purposes in which the parcel is to be used by the Perry county Industrial Authority The proposed Electric Generating will not have any effect on the Development of the said site and would have a neutral effect on parcel #5's market value.

Parcel #6 – is owned by Mountain properties, Inc. (Contacted 12-29-09)

Mr. Greg Wells owner of 122 Ray Campbell drive Hazard, Kentucky 41701. this parcel consist of 150 acres more or less and is located on the west side of the subject proposed Electric Generating Facility. This parcel is adjacent to the original 500 acres industrial site purchased in October 1998. all of the parcel #6 has been striped mined and the topography is mostly flat to rolling. At one time the county of Perry considered this site for a golf course, but gave up the idea after the use of adjoining property was for industrial due to the tract being adjacent to the proposed facility its use is still industrial and the proposed electric generating facility will have a neutral effect on Value.

Parcel #7- Is owned by The Floyd Mullins Estate c/o (Contacted 1-1--2010)

Goldie Noble of 3108 Kentucky Highway of Hazard, Kentucky. This tract consist of 50 acres more or less and is shaped irregular like a Birds beak corner where its joining the electric transmitting facility on the northwest side. Only about 25 acres is usable with the remainder bin Timberland. This is the most remote parcel and will most likely benefit from being located adjacent to the plant as it may be used for a future expansion. Being next to the subject site will be positive and will make the market value to be positive.

Parcel #8- is owned by VG Combs etal. (Contacted 1-1-2010)

Of 376 Ky highway 28 Hazard Kentucky 41701. Mr. Ben Combs was the Representative for this family and accompanied the appraiser-consultant to examine the property. The parcel contains 132 acres more or less and has about 66 acres flat and usable and the remainder, steep timberland. This parcel is directly north west of the subject and could be used for industrial purposes. There is a positive effect on the parcel as it seems ready for use as a supporting facility such as some type of sawmill or wood use facility. The electric generating plant would benefit this parcel and change the present use as pasture land to industrial use.

Parcel #9 – Is owned by ACIN, LLC. c/o Paul Sebastian (Contacted 1-5-2010)

P.O. Box 1267 Hazard, Kentucky 41702. according to the attached deed in the addenda thousands of acres are owned by this company with many acres being mined within visual contact directly to the north of the subject property only. The property adjacent to and just north of the subject property will be considered in this report. This parcel joins the subject site about 4000 feet on the north. Most of this boundary follows along a steep drop off and has been mined extensively. This property includes a water source that may be needed for the operation of the generating facility. There is a neutral effect on parcel #9 as it would still have a use as industrial use with no change in market value.

An analysis of the proposed facility economic impact on the affected region and the state.

According to community focus the following information was obtained:

Creating Jobs

During construction of the Perry county project, and estimated 400 workers will be employed. Once operational, the plant will employ 40 to 50 skilled workers. By purchasing tons of wood by-product materials from eastern Kentucky to fuel the plant, ecoPower will also create additional, sustainable jobs for Kentucky's timber harvesting and transportation industries. ecoPower plans to develop additional plants throughout eastern Ky and Appalachia in the next five years with the potential to create thousands of additional jobs.

Promoting Energy Independence

To help our nation break its dependence on foreign oil, America must develop domestic resources and diversify its energy portfolio.

The U.S. Department of Energy (DOE) estimates that bioenergy currently provides nearly 45 billion kilowatt hours of electricity, or almost 2 percent of the nation's electricity. DOE projects that by 2020, biomass could supply as much as 15 percent of the nation's power needs. As one of the most heavily forested states in the country, Kentucky will play an increasingly important role in meeting this growing demand.

It is important to note that Kentucky lacks sustainable access to other leading sources of commercial scale renewable energy such as wind and solar. Given our state's extensive forest resource, our strength is wood.

Improving Forest Health

ecoPower will help eastern Kentucky landowners grow healthier and more productive forests. For far too long, eastern Kentucky landowners have been unable to market the low quality, fire-damaged logs that prevent the regrowth of vigorous stands of high quality trees whose hardwood lumber products will be prized by future generations.

A primary provider of materials for the Perry County plant will be Pine Mountain Lumber, LLC, a sister company of ecoPower. Pine Mountain Lumber produces Forest Stewardship Council (FSC) certified hardwood lumber and is active in promoting responsible forest management.

Environmentally Friendly

EcoPower's conversion of wood by-products to create electricity is clean, safe and environmentally friendly. Bioenergy comes from converting recently grown organic materials into useful energy. When trees grow, they use the sun's energy to convert carbon dioxide into wood. When wood is used to make bioenergy, it is converted back into carbon dioxide. After a tree is harvested, new trees come up naturally or are replanted.

An analysis of the purposed facility's economic impact on the affected region and the state is estimated as follows.

This project will affect directly or indirectly a 60 mile radius or about 7,238,000 acres. About 75% of the forest in the total acres is about 75% or 5,429,000 acres. In this area the project will demand about 100 truck loads a day or about 200 tons of low grade timber which would be valued at the log yard at \$20 to \$25 per ton. One 1000 bd ft is equivalent to about 8.5 to 9.0 tons according to the moisture content and species. The income to the landowners and loggers would be about \$50,000 per day. The processing of the wood from the forest to the mill would create about 300 jobs and provide the landowners with about \$5000 per day.

The cost to log is \$150 per thousand board feet, therefore is broke down and calculates at 9 ton (1000 board feet) / \$150 per thousand board feet = \$16.66 per ton direct cost or expense from the woods to the plant

In eastern, Kentucky the wage scale for industrial workers is on the average about \$16.00/hr. There is estimated it will take 400 workers about 1.5 years (390 working days) x \$128/day = \$49,920 x 400 workers = \$19,968,000 wages to be paid over this period.

Additionally, there will be 50 permanent workers hired after the plant is built. Based on \$16/hr x 8 hr day = \$128/day x 260 working days x 50 workers = a yearly wage income of \$1,664,000 per year. This would impact the region and the state to create about 350 jobs as long as the plant continues to operate and by assuming that \$16/hr jobs has to compete with coal mining in the future, this would put an estimated 350 jobs x \$128/a day = \$44,800 x 260 days \$11,648,000 income into the state and local economy.

Assignment Report

Real Property Appraisal Consulting Report in Summary form.

KENTUCKY FIELD SERVICE REALTY, INC.

P.O. Box 921 Hyden KY 41749

QUALIFICATIONS OF APPRAISER/BROKER, VANCE MOSLEY

EDUCATION:

- University of Kentucky Forestry and Wood Technician School, 1965.
- Real Estate Appraisal I, University of Virginia, 1970.
- Certified timber marker and tree measurement, US Forest Service, 1971, DBNF, Winchester KY
- Real Estate Appraisal III, Rural Appraisal AIREA, Charlottesville, VA.
- Bachelor of General Studies with Real Estate Certification; includes Real Estate Appraisal Principles, Finance, Law, and House Construction. University of Nebraska at Omaha, 1975.
- Right of Way negotiations, International R/W Association, 1976.
- Income Property Appraising 201, Society of Real Estate Appraisers, EKV, Richmond, KY.
- Appraisal Report Writing, Society of Real Estate Appraisers, Knoxville, TN, 1977.
- Photogrammetry, Remote Sensing, and Ecology, University of Kentucky, 1984.
- International Right of Way Association – Legal Aspects (Title Abstracts), Louisville, KY, 1987.
- WEG-155, Principles of Farm Appraisals/Income Approach, Bowling Green KY, 1991.
- Completed course in home construction and environmental issues, WV, May 1993.
- Completed 11 hours training with Appraisal Institute (Americans with Disabilities Act, Appraisal Practices for Litigation), Louisville, KY 1995.
- Completed 8 hours on Minerals Appraisal Seminar for American Society of Farm Managers and Rural Appraisers on February 26-27, 1997.
- Completed course in Appraising Agricultural Chattels, February 27, 2003, Lexington, KY.
- Completed a course of attendance with the American Society of Farm Managers and Rural Appraisers, (course 6 hours), May 11, 2006, Elizabethtown, KY.
- Completed course "KREAB Day With the Board", March 10, 2006 (course 7 hours) Louisville, KY.
- Completed Appraisal Standard for Federal Land Acquisition February 2007, 16.
- Appraiser & Associate training course 7 hours. March, 2009
- Administrative Appraisal Review February 2009 ASFMRA, Lexington KY.

EXPERIENCE:

- Scaled logs, Georgia Pacific Corporation, scaling 7MMBF, 1965, Evarts, KY>
 - March 1968 to February 1986 – US Government – Appraising, negotiation, timber estimation, R/W acquisitions, military leasing, land acquisitions, condemnation and review appraiser; also supervised other appraiser and surveyors in office.
 - Met XZ-118 Civil Service qualifications for professional forester, GS-12, 1985.
 - Qualified expert witness, Clay County Circuit Court, 1986, and Harlan County Circuit Court, February 1987; Residential Property. Federal Court; London, KY Case #88-294, Case #89-271.
 - Appraised residential, income and timberland properties, US Park Service, 1987 to 1998 in New River at Oak hill WV.
 - Approved HUD< VA FHA appraiser, Louisville, KY, 1987.
 - Appraised 12,000 acres Fee Land (Coal Lands) in New River Gorge in September 1987, using Before and After Method, for US Park Service, Oak hill WV.
 - Approved numerous parcels of land for Kentucky Transportation Cabinet, Frankfort KY – 1987 to present.
 - Broker – Appraiser April 1, 1986 to present. Kentucky Field Service Realty, Inc., P.O. Box 921, Hyden, KY 41749; and Timberland Appraisals, established April 1, 2004.
 - Appraised properties, using Before and After Method for James S. Green, Atty, Hyden KY; and Hollen & Hollen, Atty's, Hazard, KY.
 - Appraised 17,000 acres of Coal Only Property in Nicholas, Green briar and Webster counties, WV, July 1989, for Trust for Public Lands.
 - Contract Appraiser for US Forest Service from 1986 to present.
 - Appraised property for Harlan County Independent Schools, Harlan KY.
- Commonwealth of KY, 34th Judicial Circuit Court, Whitley County Court. Timber Trespass KRS 364.130. Boyd Litrell, et al. VS Luther Tucker, et al.
- Appraised large coal and timber property for James River Coal in May 2002 – Leslie, Clay, and Perry counties.
 - Contract appraiser for State of Kentucky Facilities Management Statewide from 1990 to present.

PROFESSIONAL DESIGNATIONS:

- Certified General Real Property Appraiser – Kentucky Lic. No. 0832. Expires June 30, 2010

Coby Wade Mosley
P.O. Box 921, Hyden KY 41749
Office Phone: (606) 672-3856
Cell Phone: (606) 275-9921
Fax: (606) 672-4093

QUALIFICATIONS OF ASSOCIATE APPRAISER, COBY WADE MOSLEY

OBJECTIVE:

To obtain a Certified General Real estate Appraisers License and become a specialist in Appraising timberland as well as a variety of properties.

EDUCATION:

- Graduated from Leslie County High School, May 2007.
- Completed surveying technician 1/Mapping course including a Certificate at Hazard Community and Technical College, 2007.
- Completed 6 hours of Drafting Fundamentals and Parametric Modeling at Hazard Community and Technical College, 2007.
- 3 hour Micro-Economics class Hazard Community and Technical College (for appraiser education criteria), 2007-2008.
- Currently attending Hazard Community and Technical College, 2007-2009.
- Completed Appraisal Institute 30 hour Basic Appraisal Principals Course, Indianapolis, IN 2008
- Completed The Appraisal Institutes 30 hour Basic Appraisal Procedures Course Indianapolis IN 2008.
- Completed Dennis Badger & Associates 15 hour Basic Income Capitalization A & B course Louisville, KY 2008.
- Completed The Kentucky Real Estate Appraisers Board's 7 hour Supervisor/Associate training course Corbin, KY 2009
- Completed The Wilson Educational Group 15 hour USPAP course Harrodsburg KY, 2009.

EXPERIENCE:

- Operated a lawn service from 2002 to present
- Greenspace Hydro seeding Inc. machine operator, 2005-2006.
- Hoskins & Wolfe Construction Company, Carpenter 2006-2007.
- Paul Hoskins Construction company, Carpenter 2007.
- Worked in sales and inventory at Advance Auto Parts 2007.
- Worked as a Surveying Technician for a Civil Engineer. 2005-2008.
- Kentucky Field Service Realty Inc. Mapping Technician, Deeds and Records Researcher, plotting and calculating timber values, secretary and Associate appraiser training with Residential, Commercial and Timberland Appraisals. 2007 to present
- Kentucky Field Service Realty Inc. Currently pursuing Certified General Appraisers license as an Associate/trainee appraiser.

PROFESSIONAL DESIGNATIONS:

Associate Real-estate Appraiser.
Cert. # 04286

Kentucky Real Estate Appraisers Board

2009 - 10

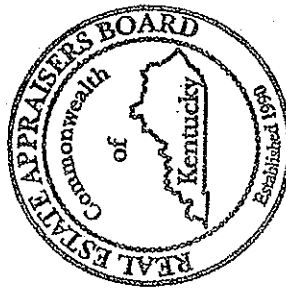
Hereby grants a

Certified General Real Property Appraiser
Certificate

License No 000832

To
Vance Mosley
Kentucky Field Ser. Rty., Inc.
P.O. Box 921, Rt. 421
Hyden, KY 41749

who has complied with the provisions of Chapter 324A of the Kentucky Revised Statutes IN WITNESS
WHEREOF, we have caused the official seal to be affixed and attested for the year shown above.



Dorsey Hall, Chair
Paul E. Moore, Vice Chair
Loren Huff
Sam E. Blackburn
G. Herbert Pritchett

Control No 30595

THIS CERTIFICATE EXPIRES

June 30, 2010

Kentucky Real Estate Appraisers Board

2009 - 10

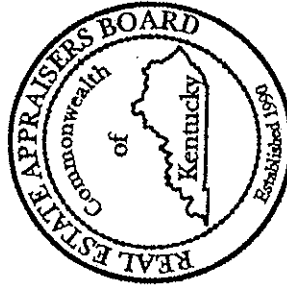
Hereby grants a

Associate Real Property Appraiser
Certificate

License No 004286

To Coby W. Mosley
Kentucky Field Service Realty
P.O. Box 921
Hyden, KY 41749

who has complied with the provisions of Chapter 324A of the Kentucky Revised Statutes IN WITNESS
WHEREOF, we have caused the official seal to be affixed and attested for the year shown above.



Dorsey Hall, Chair
Paul E. Moore, Vice Chair
Loren Huff
Sam E. Blackburn
G. Herbert Pritchett

Control No 30593

THIS CERTIFICATE EXPIRES

June 30, 2010

ecoPower Adjacent Property Owners

1. ✓ John Napier 606-436-2684
45 Grist Mill Loop
Chavies, KY 41727
2. ✓ Payne & Connie Napier 606-436-6108
97 Engle Br Rd
Hazard, KY 41701
3. ✓ *Clay*
~~Gary~~ Campbell
AOD Transport, Inc.
416 Mahogany Hill Drive
Hazard, KY 41701
4. ✓ Sykes Realty Inc Chris Melton, Mgr. 606-487-2277, 813-507-9290
Attn: Escrow Acct Sykes
400 N Ashley Drive, Suite 2800 101 Sykes Blvd
Tampa, FL 33602 Chavies, KY 41727
5. ✓ Annette Napier 606-436-3158
Perry, Harlan, Leslie, Breathitt
Regional Industrial Authority Inc
Perry County Courthouse
Hazard, KY 41701
6. ✓ Doug Baker, Manager 606-487-8830, 606-436-8829
Mountain Properties
122 Roy Campbell Drive
Hazard, KY 41701
Greg Wells, Owner
7. ✓ Floyd Mullins Estate 606-436-5433, 606-439-2438
C/o Golden Noble *Phone call said to let Ben*
3108 KY Hwy 28 *show the boundary line.*
Hazard, KY 41701
8. ✓ V G Combs *Ben's* 606-436-5398 - met 10:00 on 1-1-10
376 KY Hwy 28
Hazard, KY 41701
439-4110
438-9116
9. ✓ Paul Sebastian 606-436-3231
A C I N, LLC
PO Box 1267
Hazard, KY 41702



Parcel #9 ACIN Coal Company Tract looking North. Photo by: Vance Mosley

Date: 12/21/09



Parcel #5 C.F. Industrial Park Tract looking North. Photo by: Vance Mosley

Date: 12/21/09



Parcel #4 C.F Industrial Park and Sykes entrance road looking North. Photo by: Vance Mosley

Date: 12/21/09



Entrance to the Coal Fields Industrial Park looking East. Photo by: Vance Mosley

Date: 12/21/09



Parcel #7 Floyd Mullins tract looking northeast. Photograph by: Vance Mosley

Date: 12/21/09



Parcel #1 John Napier tract looking Northeast. Photograph by: Vance Mosley

Date: 12/21/09



Parcel #6 Mountain Properties Inc. tract looking Northeast. Photograph by: Vance Mosley

Date: 12/21/09



Parcel #2 Payne Napier and part of Parcel #3 AODD tract looking Northeast from property. Photo by:
Vance Mosley

Date: 12/21/09



Powerline rout, Miller Construction Inc. looking Northeast. Photo by: Vance Mosley
Date: 12/21/09



Subject property looking North. Photo by: Vance Mosley
Date: 12/21/09



Parcel #4 Sykes looking East. Photo by: Vance Mosley

Date: 12/21/09



Parcel #8 V.G. Combs tract looking North. Photo by: Vance Mosley

Date: 12/21/09



Parcel #5 Industrial Park looking North. Photo by: Vance Mosley
Date: 1/5/10



Subject property looking Northeast. Photo by: Vance Mosley
Date: 1/5/10

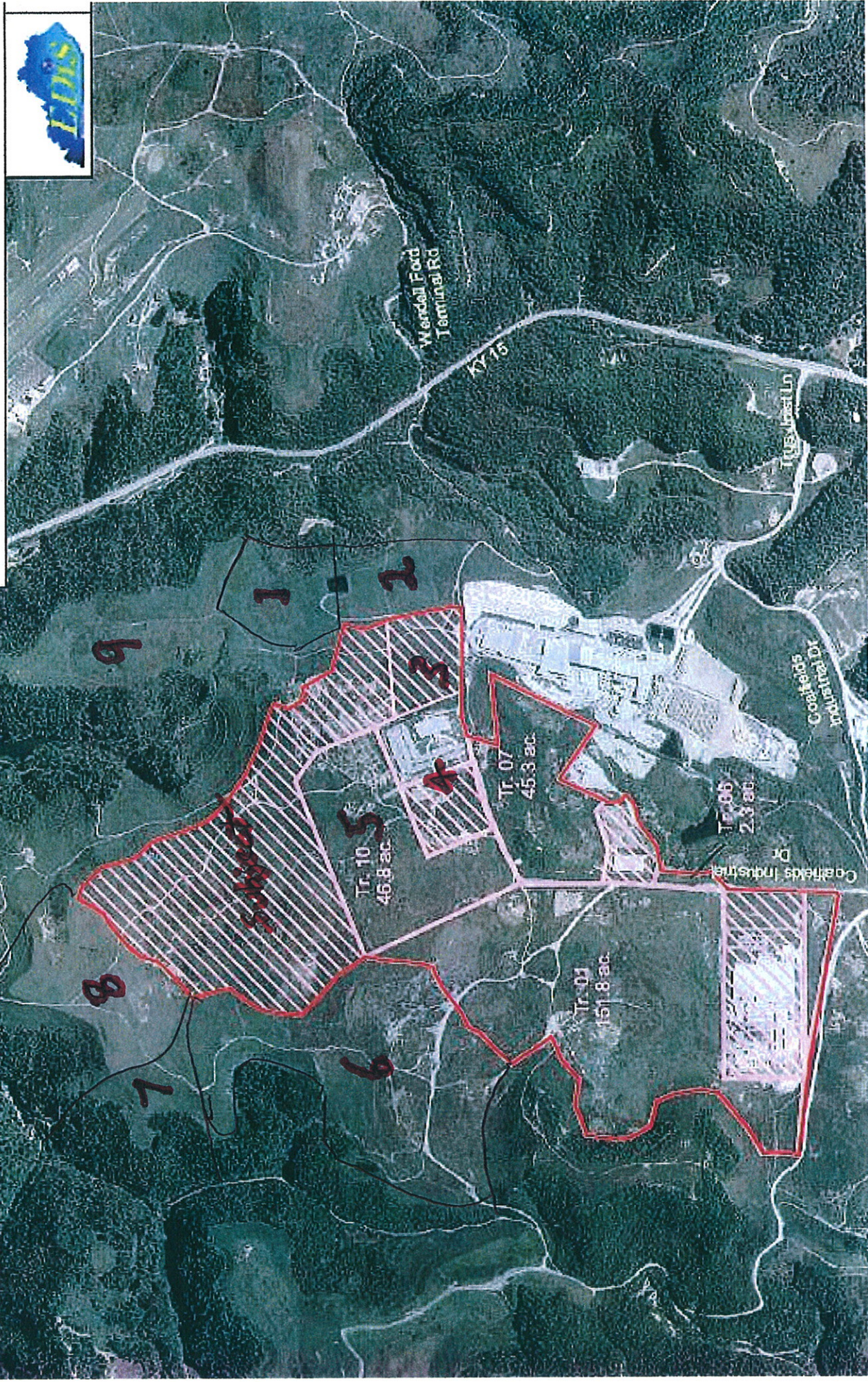


V.G. Combs looking Northwest. Photo by: Vance Mosley
Date: 1/5/10

Regional Industrial Park

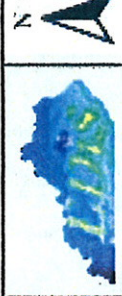
Located in Perry County, Kentucky

Site 193-001

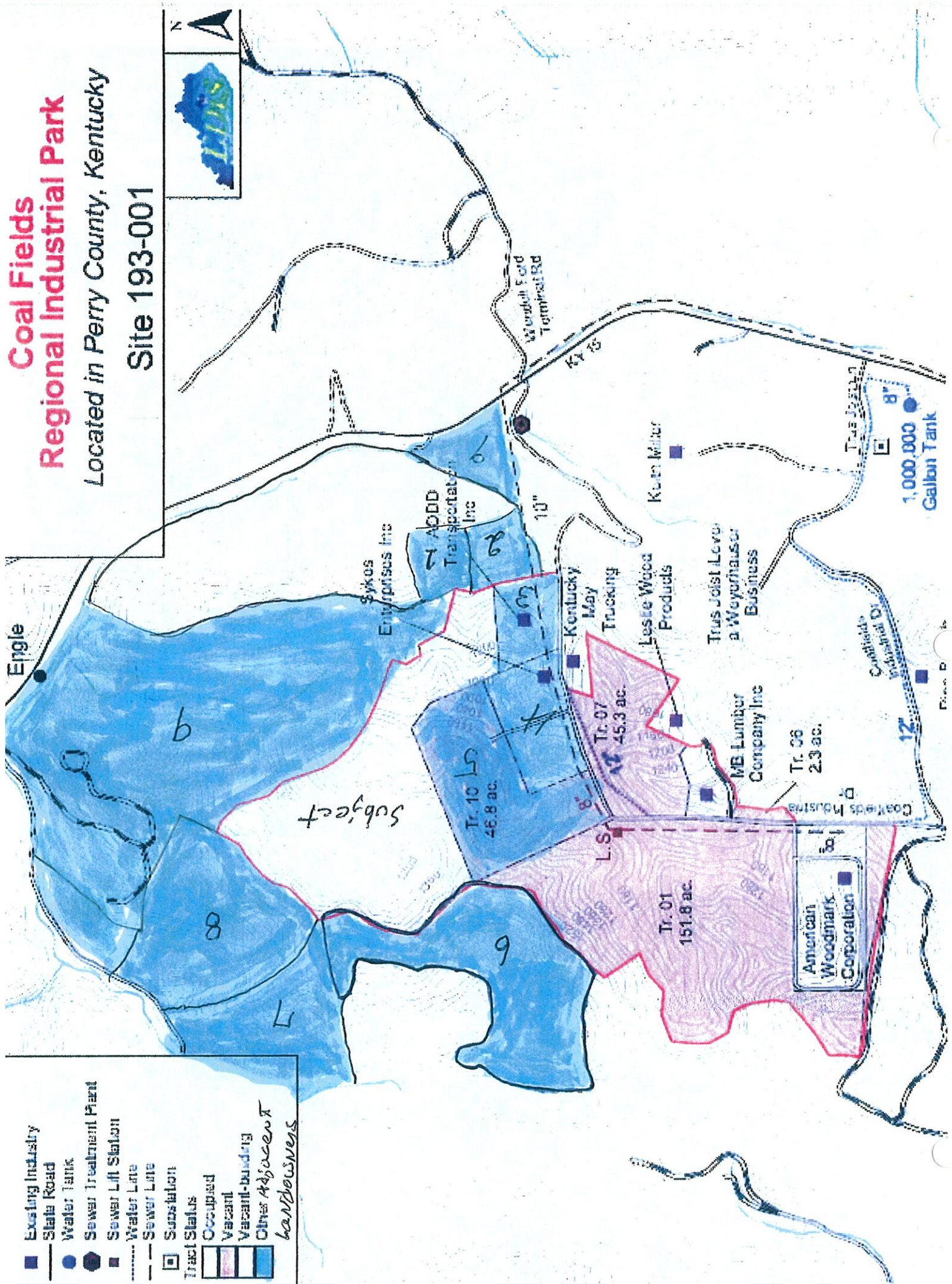


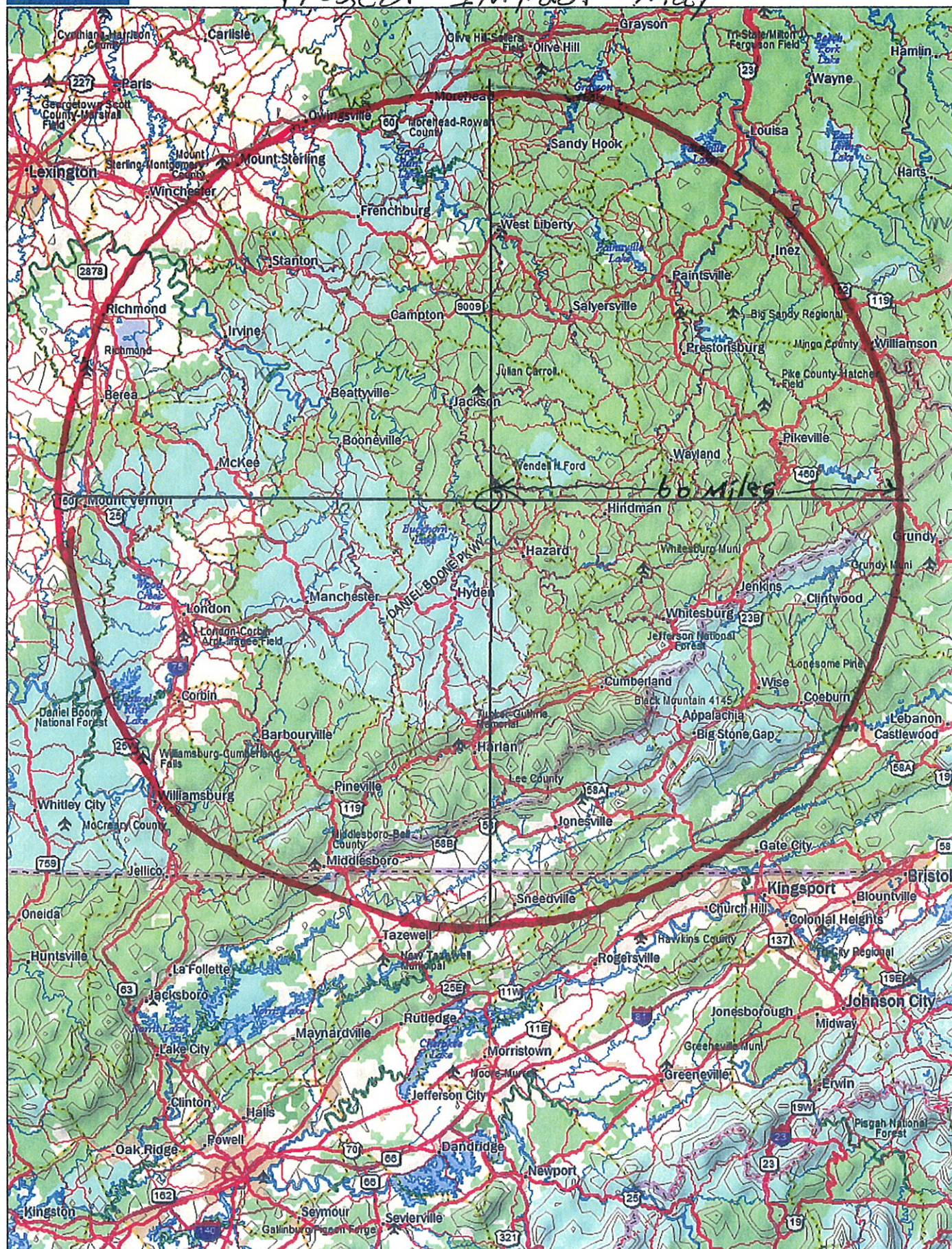
Coal Fields Regional Industrial Park

Located in Perry County, Kentucky
Site 193-001



- Existing Industry
- State Road
- Water Tank
- Sewer Treatment Plant
- Sewer Lift Station
- Water Line
- Sewer Line
- Substation
- Tract Status
- Occupied
- Vacant
- Vacant-building
- Other Adjacent





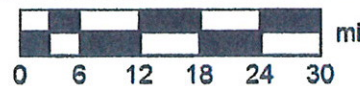
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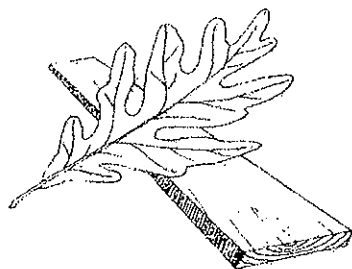


MAP OF 09 MAY



Data from 7-4

KENTUCKY'S



GROWING GOLD

A PUBLICATION OF:
KENTUCKY DIVISION OF FORESTRY
FRANKFORT, KENTUCKY 40601

A SERVICE TO KENTUCKY'S FOREST PRODUCTS INDUSTRY AND TIMBERLAND OWNERS

VOL. XLIX, NO. 3

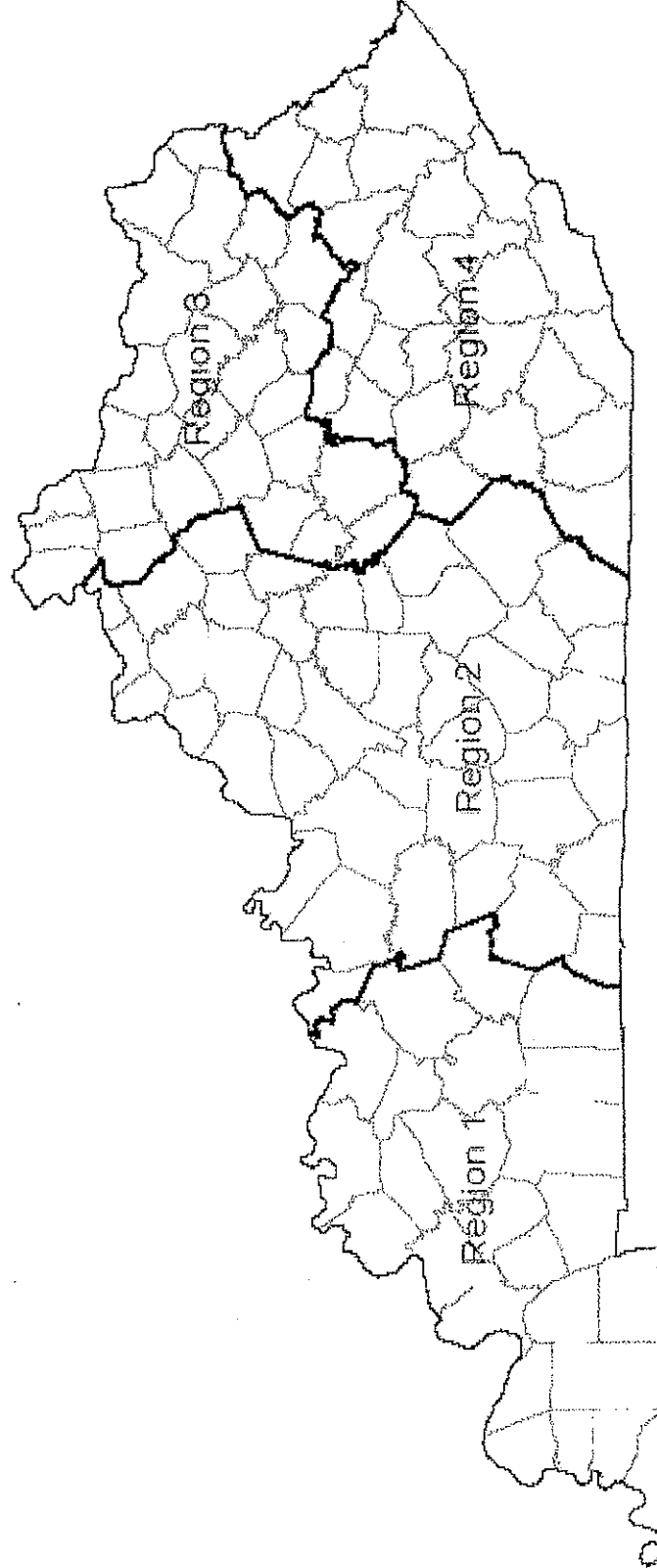
UPDATED: 10/05/2009
EDITOR: CHRISTOPHER G. NEVINS

AUTUMN 2009

THE FOLLOWING MARKED TIMBER FOR SALE IS A LISTING OF TIMBER MARKED BY THE KENTUCKY DIVISION OF FORESTRY FOR PRIVATE WOODLAND OWNERS. THE LIST WAS CURRENT AS OF DATE OF SUBMISSION TO THE PRINTERS. IF YOU WANT FURTHER INFORMATION ON MARKED TIMBER, PLEASE REFER TO THE "COUNTY GUIDE TO DISTRICT FORESTERS' OFFICES" INSIDE THE BACK COVER AND CALL THE APPROPRIATE DISTRICT FORESTER.

MARKED TIMBER FOR SALE

<u>LOCATION</u>	<u>SPECIES AND VOLUME</u>			<u>CONTACT</u>
CENTRAL DISTRICT				
<u>NELSON CO.</u>	WHITE OAK	67327	MISC. RED OAK	19503
LOCATED NORTH OF	CHESTNUT OAK	38404	MISCELLANEOUS	4357
HWY 62, APPROX. 4.5 MIS.	HICKORY	20492	TOTAL BF (DOYLE)	150083
EAST OF BOSTON.				2237 BONNYCASTLE AVE.
75 ACRES				LOUISVILLE, KY 40205
1002 TREES MARKED				502-459-4651
				DATE MARKED: 10-23-08
SOUTH CENTRAL DISTRICT				
<u>CLINTON CO.</u>	WILLOW OAK	72443	WHITE OAK	20648
LOCATED ON SOUTH SIDE	BEECH	54143	RED OAK	4513
OF HWY 90, ACROSS FROM	YELLOW POPLAR	42553	HICKORY	534
CHICKEN PLANT.	SOFT MAPLE	41654	CHERRY	193
40 ACRES	SWEET/BLACK GUM	33620	TOTAL BF (DOYLE)	270301
1558 TREES MARKED				DATE MARKED: 7-1-09
<u>GREEN CO.</u>	ASH	13421	WALNUT	1101
FROM GREENSBURG, LEFT	YELLOW POPLAR	9624	HACKBERRY	1090
ON W. HODGENVILLE AVE,	CHERRY	3831	HICKORY	672
LEFT ON LEWIS CT,	MISCELLANEOUS	2797	TOTAL BF (DOYLE)	32536
PROPERTY ON LEFT SIDE.				239-826-6835
14 ACRES				DATE MARKED: 6-2-09
151 TREES MARKED				





Forest Inventory & Analysis Factsheet

Kentucky 2004

Forestland Area

Kentucky's forests cover 12.0 million acres or 47 percent of the State. This is a decrease of 729,000 acres since the previous forest inventory in 1988. Ninety-seven percent of the forestland is considered available for timber production. The remaining forestland area is unproductive forestland and reserved forestland where timber removals are prohibited by law.

Area by land class (million acres)

Land class	1949	1963	1975	1988	2004
Timberland	11.4	11.7	11.9	12.3	11.6
Other/reserved	0.1	0.1	0.3	0.4	0.3
Total forestland	11.5	11.9	12.2	12.7	12.0
Nonforestland	14.0	13.7	13.3	12.7	13.5
Total land area	25.5	25.5	25.5	25.4	25.4
Percent forested	45%	46%	48%	50%	47%

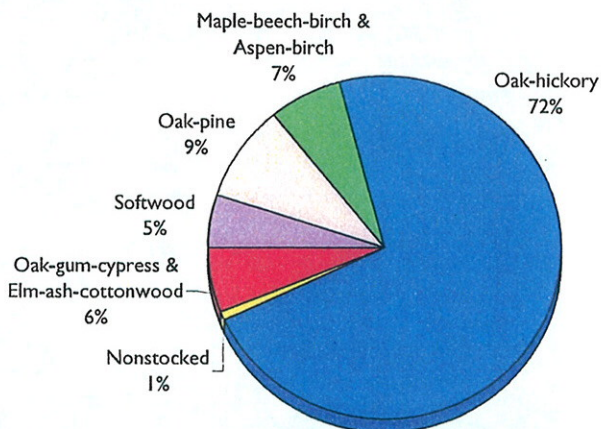
Totals may not sum due to rounding.

Total land area estimates changed slightly over time due to improvements in measurement techniques and refinements in classification of small bodies of water and streams.

Forest-Type Composition

Oak-hickory is the predominant forest type in the State, covering 8.4 million acres (72 percent of the timberland).

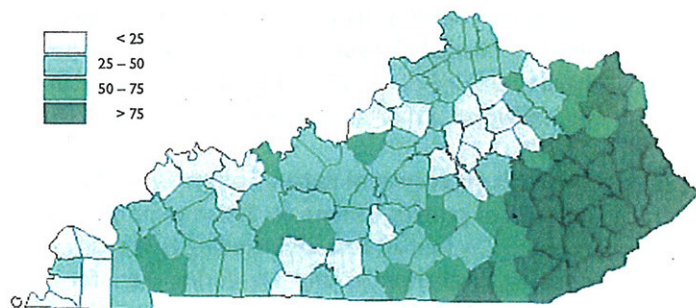
Area of timberland by forest-type group



Forest Distribution

The Cumberland Plateau and the Appalachians in the eastern portion of the State are the most heavily forested. The central and western portions of the State, although less densely forested, account for 50 percent of the total forestland area.

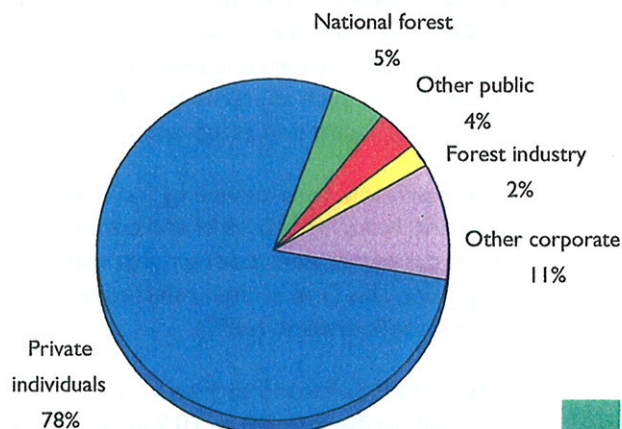
Percentage of land in forest by county



Ownership of the Forest

Private individuals own 78 percent of the timberland in Kentucky. Nine percent is public land administered by local, State, or federal agencies. Slightly more than one-half of the public timberland is managed by the U.S. Forest Service. Forest industry owns 2 percent of the timberland and other corporations account for the remaining 11 percent.

Ownership of timberland



D.b.h. Tree diameter in inches (outside bark) at breast height (4.5 feet above ground level).

Forestland. Land at least 10 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. The minimum area considered for classification is 1 acre. Forested strips must be at least 120 feet wide.

Forest industry. Companies or individuals operating primary wood-using plants.

Forest type. A classification of forestland based on the species forming a plurality of live tree stocking.

Growing-stock trees. Live trees that contain at least one 12-foot or two 8-foot logs in the saw-log portion, either currently or potentially if too small to qualify as a saw log. The log(s) must meet dimension and merchantability standards to qualify. Trees must have one-third of the gross board foot volume in sound wood, either currently or potentially.

Growth to removal ratio. Comparison of the amount of growth volume to the amount of volume removed by human activity, including harvesting, land clearing, or changes in land use during the inter-survey period. The growth to removal ratio is equal to the average net annual growth divided by average net annual removals. If the ratio is >1 , then wood volume is being added to the inventory. If it is <1 , then the inventory is decreasing.

Hardwoods. Dicotyledonous trees, usually broadleaf and deciduous.

Nonforestland. Land that either has never supported forests or land formerly forested that has been developed for other uses, including cultural, agricultural, etc.

Other forestland. Forestland that is incapable of producing 20 cubic feet of wood volume per acre annually under natural conditions due to adverse site conditions such as sterile soils, dry climate, poor drainage, high elevation, steepness, or rockiness.

Other private. Land owned by individuals and corporations, including individual and corporate farms, where the owner does not own a primary wood-using plant. This land is often referred to as nonindustrial private forestland (NIPF).

Poletimber. Softwood species 5.0 to 8.9 inches d.b.h. and hardwoods 5.0 to 10.9 inches d.b.h.

Reserved forestland. Public forestland capable of producing 20 cubic feet of wood volume per acre annually, but is withdrawn from timber utilization through statute or administrative regulation.

Saplings. Trees 1.0 to 4.9 inches d.b.h.

Sawtimber. Softwood species 9.0 inches d.b.h. and larger and hardwoods 11.0 inches d.b.h. and larger.

Seedlings. Trees <1.0 inch d.b.h. and >1 foot tall for hardwoods, >6 inches tall for softwoods.

Softwoods. Coniferous trees, usually evergreen, having leaves that are needles or scalelike.

Stand-size class. A classification of forestland based on the diameter class distribution of live trees in the stand.

Timberland. Forestland capable of producing 20 cubic feet of wood volume per acre annually and not withdrawn from timber utilization.

Tree. Woody plants having one erect perennial stem or trunk at least 3 inches d.b.h., a more or less definitely formed crown of foliage, and a height of at least 13 feet at maturity.

Tree grade. A classification of the saw-log portion of sawtimber trees based on the grade of the butt log or the ability to produce at least one 12-foot log or two 8-foot logs in the upper section of the saw-log portion. Tree grade is an indicator of quality; grade 1 is the best quality.

Volume. The amount of sound wood in live trees at least 5.0 inches d.b.h. from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem.

For more information contact:

Forest Inventory and Analysis
Southern Research Station, USDA Forest Service
4700 Old Kingston Pike, Knoxville, TN 37919
Phone: (865) 862-2000 Fax: (865) 862-0262
Southern FIA: <http://srsfia2.fs.fed.us>
National FIA: <http://fia.fs.fed.us>

Kentucky Division of Forestry
627 Comanche Trail, Frankfort, KY 40601
Phone: (502) 564-4496 Fax: (502) 564-6553
<http://www.forestry.ky.gov>

Statistical Reliability—Kentucky 2004 Data

A measure of reliability of inventory statistics is provided by sampling errors. These sampling errors mean that the chances are two out of three that the true population value is within the limits indicated by a confidence interval. Sampling errors (in percent) and associated confidence intervals around the sample estimates for timberland area and inventory volumes are presented in the following table.

Item	Sample estimate and confidence interval		Sampling error percent
Timberland (<i>thousand acres</i>)	11,647.9	± 46.1	0.40
All live (<i>million cubic feet</i>)			
Inventory	21,187.9	± 304.9	1.44
Net annual growth	565.0	± 13.3	2.35
Annual removals	319.5	± 25.4	7.96
Annual mortality	204.1	± 13.9	6.80
Growing stock (<i>million cubic feet</i>)			
Inventory	18,217.4	± 294.2	1.61
Net annual growth	470.0	± 13.8	2.93
Annual removals	311.8	± 25.1	8.04
Annual mortality	182.7	± 12.0	6.58
Sawtimber (<i>million board feet</i>)			
Inventory	60,382.8	± 1,358.8	2.25
Net annual growth	2,181.4	± 81.4	3.73
Annual removals	1,166.3	± 103.2	8.85
Annual mortality	478.2	± 55.0	11.50

FIA inventories supported by the full complement of sample plots are designed to achieve reliable statistics at the survey unit and State levels. Sampling error increases as the area or volume considered decreases in magnitude. Sampling errors and associated confidence intervals are often unacceptably high for small components of the total resource. Statistical confidence may be computed for any subdivision of State totals using the following formula.

$$SE_s = SE_t \frac{\sqrt{X_t}}{\sqrt{X_s}},$$

where

SE_s = sampling error for subdivision of State total,

SE_t = sampling error for State total,

X_s = sum of values for the variable of interest (area or volume) for subdivision of State,

X_t = total area or volume for State.

For example, the number of acres of timberland owned by forestry industry is estimated at 278.8 thousand acres. The estimate of sampling error for this example is computed as:

$$SE_s = 0.40 \frac{\sqrt{11,647.9}}{\sqrt{278.8}} = 2.59$$

Thus, the sampling error is 2.59 percent, and the resulting confidence interval of one standard error (two times out of three) for area of timberland owned by forest industry is 278.8 ± 7.2 thousand acres. To achieve the 95 percent confidence interval, the standard error is multiplied by 1.96 or 278.8 ± 14.1 thousand acres.

Sampling errors obtained from this method are only approximations of reliability because this process assumes constant variance across all subdivisions of totals.

Precautions

Traditional users of FIA data are accustomed to the highly variable accuracy of small subsets of population totals. All FIA published reports devote a chapter that explains sampling errors and provide cautions about the reliability of sub-populations such as county-level statistics. Therefore, when summarizing statistics, it is strongly recommended that users beware of any subdivision below the survey unit level. Users should familiarize themselves with the procedures to compute sampling error as outlined above.

Definition of Terms

Average annual gross growth. Average annual increase in volume of trees 5.0 inches d.b.h. and larger in the absence of cutting and mortality. Gross growth includes survivor growth, ingrowth, growth on ingrowth, growth on removals before removal, and growth on mortality before death.

Average annual mortality. Average annual volume of trees 5.0 inches d.b.h. and larger that died from natural causes during the intersurvey period.

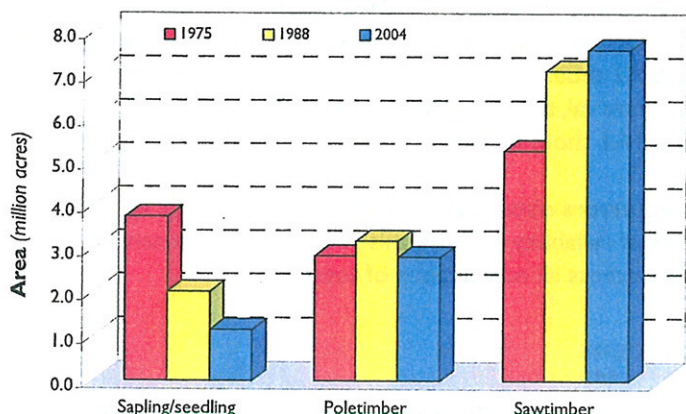
Average annual net growth. Average annual net change in volume of trees 5.0 inches d.b.h. and larger in the absence of removals during the intersurvey period. Average annual net growth is equal to average annual gross growth minus average annual mortality.

Average annual removals. Average annual volume of trees 5.0 inches d.b.h. and larger removed from the inventory by harvesting, cultural operations, (such as timber-stand improvement), land clearing, or changes in land use during the intersurvey period.

Stand-Size Distribution

There has been a 7-percent increase in the number of acres in sawtimber-size stands on Kentucky's timberland since 1988. Sawtimber stands cover 7.6 million acres, or 66 percent of the timberland in the State. The number of acres of poletimber stands declined by 12 percent, while the acres of sapling-seedling stands declined by almost one-half.

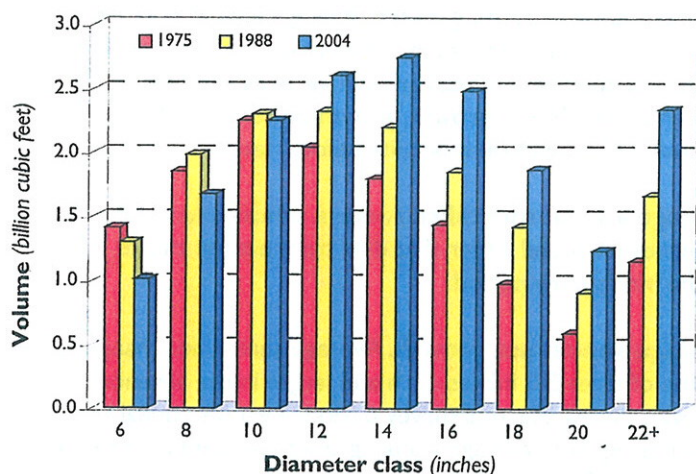
Area of timberland by stand size



Tree Volume

In spite of the reduction in forest area, growing-stock volume on timberland has increased from 16.0 billion cubic feet in 1988 to 18.2 billion cubic feet in 2004. The volume in sawtimber-size trees increased from 45.8 to 60.4 billion board feet. The overall increase in volume is due to an increase in the volume of trees 12-inches and greater in diameter.

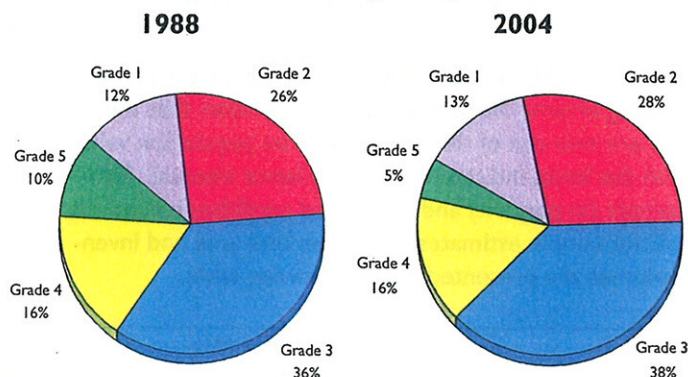
Growing-stock volume on timberland by diameter class



Hardwood Tree Grade Volume Distribution

The percentage of hardwood board-foot volume in tree grades 1 and 2 increased by 3 percent since 1988. The percentage of board foot volume in the lower quality grades 4 and 5 declined from 26 to 21 percent.

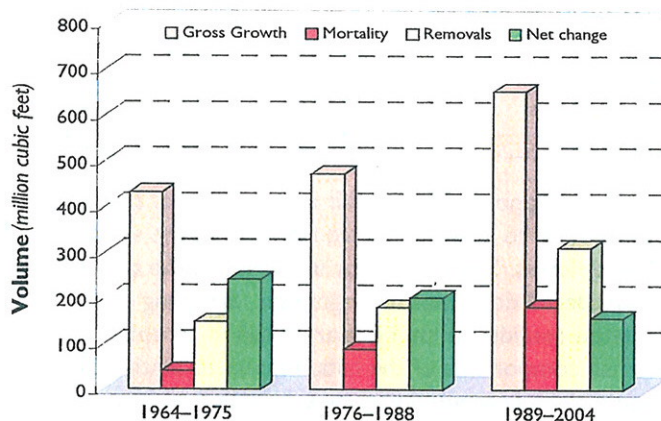
Hardwood sawtimber board foot volume on timberland by tree grade



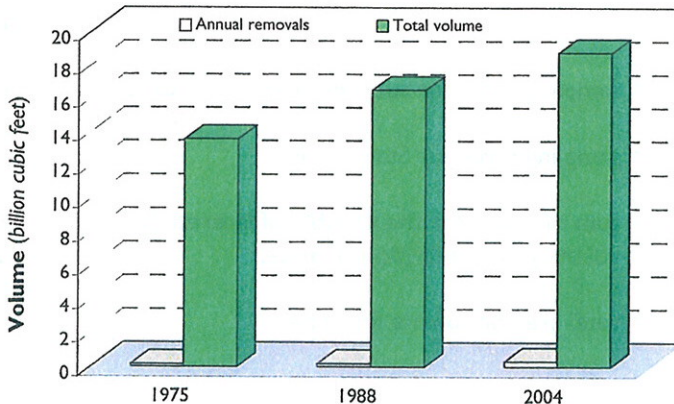
Annual Growth, Removals, and Mortality

The total growth of growing-stock volume averaged 652.7 million cubic feet annually. Mortality averaged 182.7 million cubic feet. Therefore, net growth averaged 470.0 million cubic feet. Timber removals averaged 311.8 million cubic feet, which is <2 percent of the current inventory. This results in a net average gain of 158.2 million cubic feet of growing-stock volume each year since 1988.

Average annual gross growth, removals, mortality, and net change of growing-stock trees on timberland



Average annual removals of growing stock vs. total growing-stock volume on timberland



December 16, 2009

Kentucky Field Service Realty Inc.
P.O. Box 921
Hyden, KY 41749
Office Phone: 606-672-3856
Cell: 606-2750252
Email: kfsr@tds.net

EcoPower Generation
Mr. Gary Crawford
1256 Manchester St.
Lexington, Ky 40504

Dear Mr. Crawford:

I met with Grant Curry today and he gave me some good information for the project.

We came up with 9 to 10 landowners (parcels) that touch the property.

My part of the project will be to address item 3C and (J economic impact of the project)

Each parcel that joins the subject property will be discussed as to the projects effect on the parcels.

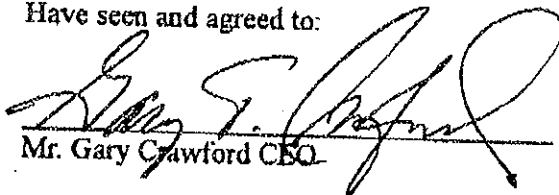
I can complete the project by January 6, 2010. I will furnish you an original and 4 copies of the consulting report.

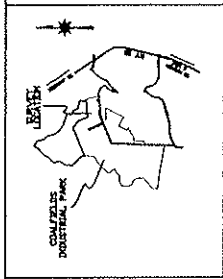
My fee to complete this project is \$10,000.

Vance Mosley

If you agree please sign below

Have seen and agreed to:


Mr. Gary Crawford CEO



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THE NEW YORK TIMES

FLUOR POLYMER CERTIFICATION

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DATE 07-18-2009 BY 60322 UCBAW/SJS

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RESEARCH DESIGN

[illegible]

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LEO MILLER AND ASSOCIATES, INC.
 PROFESSIONAL ENGINEERS AND LAND SURVEYORS
 10000 WILSON BLVD. STE. 1000
 WILSON, TEXAS 75070-1000
 TEL: 214-351-1000 FAX: 214-351-1002

PERRY, HARLAN, LESLIE, BREATHITT
 REGIONAL INDUSTRIAL AUTHORITY INC.
 deed option
 Eco Power Inc.
 LOT #109 OF THE
 CDA/FIELDS INDUSTRIAL PARK

DATE: 01-27-04
 DOW: 01-27-04
 SIGNED BY: [Signature]
 CL: [Signature]
 SIGNED BY: [Signature]
 DOW: 01-27-04
 DATE: 01-27-04
 SIGNED BY: [Signature]
 DATE: 01-27-04
 SIGNED BY: [Signature]

For reasons of Homeland Security, this document is not available on-line:

Case Number: 2009-00530

Description of Document: Exhibit K, Air Permit, Site Arrangement with Dimensions, 2 pages each 8 1/2" x 11"

Persons requiring access to this document may contact the Public Service Commission in person or in writing at:

Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602
Attn: GIS Coordinator
Phone (502) 564-3940

Written requests must include a signature, name, title of organization (if applicable), mailing address, phone number and optional e-mail address and the following statement: *I understand that since September 11, 2001, location data of critical utility structures is considered sensitive information for security reasons. I will not publish this map or any part of it on the World Wide Web. I will not redistribute this map to others, but shall refer requests by others for such information to the Kentucky Public Service Commission.*

Maps will be sent as pdf files by e-mail or on CD at no cost to the party. If printed "oversized" maps are requested, there will be a charge of \$8 per sheet.

Maps will be available for viewing at the Public Service Commission and at any public hearing.

DEED OF CONVEYANCE

THIS DEED OF CONVEYANCE, made and entered into as of the 30th day of September, 1998, by and between MOUNTAIN PROPERTIES, INC., a Kentucky corporation, of 655 Main Street, Hazard, Kentucky 41701, party of the first part, hereinafter called "Grantor," and PERRY, HARLAN, LESLIE, BREATHITT REGIONAL INDUSTRIAL AUTHORITY, INC., a nonprofit Kentucky corporation, Perry County Courthouse, Main Street, Hazard, Kentucky 41701, party of the second part, hereinafter called "Grantee."

WITNESSETH:

That for and in consideration of the sum of Six Hundred Twenty-Four Thousand Seven Hundred Thirty-Eight and 40/100 Dollars (\$624,738.40), cash in hand paid, the receipt of which is hereby acknowledged, Grantor does hereby bargain, grant, sell, and convey unto Grantee, its successors and assigns, all of its right, title and interest in and to that certain tract or parcel of land lying and being on Hollybush Branch of Rockhouse Fork of Lost Creek of the North Fork of the Kentucky River in Perry County, Kentucky, and being more particularly described as follows:

A certain tract of land located on Hollybush Branch of Rockhouse Fork of Lost Creek of the North Fork of the Kentucky River, Perry County, Kentucky, more particularly described as follows:

Unless stated otherwise, monuments referred to as iron pin w/cap is a set 5/8" x 24" epoxy coated rebar with orange plastic cap stamped Forrester Hamilton RLS 2736, typically projecting 2" above the ground. Monuments referred to as a 3" aluminum cap set in a concrete monument is a 3" aluminum cap embedded in a 4" x 24" concrete monument stamped "Leo Miller & Assoc., Leo Miller PLS 1904, Do Not Destroy, Boundary Corner," typically projecting approximately 2" above ground. All bearings and coordinates stated herein are based on the Kentucky State Plane Coordinate System South Zone, Datum 1927 as established by Enterprise Coal Co.

Beginning on an iron pin w/1" aluminum disk marked "Interstate Coal," found on the north side of the road leading to the subject property and the Ky May Inc. Property (D.B. 257, pg. 210). Said point is the southeast corner of the subject property and corner #00 of ANR Coal Company, LLC. (D.B. 208, pg. 266; M.B. 28, pg. 337) Tract #PE157 and in the west line of the Napier Heirs (D.B. 174, pg. 742 & 747). Thence with said road and ANR Coal Company, LLC. Tract #PE157 S 84° 19' 49" W 1019.42' to an iron pin w/cap #2736, set; thence S 86° 51' 31" E 190.90' to an iron pin w/cap #2736, set; thence S 64° 44' 43" W 131.78' to an iron pin w/cap #2736, set; thence leaving the road and continuing with ANR Coal Company, LLC. Tract #PE255 N 53° 08' 29" W 329.46' to an iron pin w/cap #2736, set; thence N 69° 20' 11" W 182.66' to an iron pin w/cap #2736, set; thence N 58° 08' 59" W 219.62' to an iron pin w/cap #2736, set; thence N 74° 10' 43" W 269.49' to an iron pin w/cap #2736, set; thence N 50° 38' 15" W 98.84' to an iron pin w/cap #2736, set; thence N 71° 40' 26" W 98.82' to an iron pin w/cap #2736, set; thence S 78° 46' 12" W 131.76' to an iron pin w/cap #2736, set;

thence N 83° 11' 45" W 98.81' to an iron pin w/cap #2736, set; thence S 18° 41' 36" W 131.94' to an iron pin w/cap #2736, set; thence S 35° 42' 21" W 197.80' to an iron pin w/cap #2736, set; thence S 03° 11' 24" W 46.20' to an iron pin w/cap #2736, set; thence N 65° 14' 44" W 273.51' to an iron pin w/cap #2736, set; thence N 73° 20' 38" W 137.74' to an iron pin w/cap #2736, set; thence N 77° 01' 03" W 140.03' to an iron pin w/cap #2736, set; thence N 78° 21' 12" W 230.06' to an iron pin w/cap #2736, set; thence N 73° 35' 39" W 103.31' to an iron pin w/cap #2736, set; corner #8 of Tract #PE255 and in the east line of another Mountain Properties, Inc. Tract (D.B. 257, PG. 210); thence with Mountain Properties east line N 05° 10' 42" E 399.92' to an iron pin w/cap #2736, set; thence N 11° 30' 01" E 181.96' to an iron pin w/cap #2736, set; corner #20 of Tract #PE165; thence leaving Mountain Properties, Inc. line and with ANR Coal Company, LLC. Tract #PE165 N 79° 55' 01" E 141.51' to an iron pin w/cap #2736, set; thence N 83° 45' 00" E 156.06' to an iron w/cap #2736, set; thence N 66° 05' 11" E 352.91' to an iron pin w/cap #2736, set; thence N 57° 50' 22" E 241.60' to an iron pin w/cap #2736, set; thence N 59° 45' 19" E 98.04' to an iron pin w/cap #2736, set; thence S 68° 54' 43" E 132.55' to an iron pin w/cap #2736, set; thence S 63° 37' 32" E 235.69' to an iron pin w/cap #2736, set; thence N 87° 02' 41" E 169.35' to an iron pin w/cap #2736, set; thence S 88° 17' 24" E 132.03' to an iron pin w/cap #2736, set; thence N 64° 13' 15" E 115.56' to an iron pin w/cap #2736, set; thence N 71° 43' 01" E 165.07' to an iron pin w/cap #2736, set; thence S 88° 47' 23" E 66.02' to an iron pin w/cap #2736, set; thence N 75° 42' 55" E 66.03' to an iron pin w/cap #2736, set; thence N 82° 12' 46" E 82.53' to an iron pin w/cap #2736, set; thence N 00° 15' 45" E 95.56' to an iron pin w/cap #2736, set; thence S 64° 47' 32" E 197.99' to an iron pin w/cap #2736, set; thence S 50° 47' 26" E 139.97' to an iron pin w/cap #2736, set; thence N 82° 12' 46" E 171.66' to an iron pin w/cap #2736, set; thence S 71° 17' 32" E 132.01' to an iron pin w/cap #2736, set; thence S 73° 37' 32" E 256.82' to an iron pin w/cap #2736, set; thence S 62° 17' 32" E 372.57' to an iron pin w/cap #2736, set; thence S 88° 13' 16" E 129.52' to an iron pin w/1" aluminum cap stamped "Interstate Coal", found in the west line of the Napier Heirs property; thence with said Napier property S 21° 13' 52" E 304.94' to an iron pin w/1" aluminum cap stamped "Interstate Coal", found; thence S 10° 39' 49" E 459.63' to an iron pin w/1" aluminum cap stamped "Interstate Coal" found; thence S 13° 44' 47" E 135.47' to the point of beginning and containing 3401701.3 sq. ft. or 78.0923 acres by survey.

Being the same property described as the "Cleveland Combs Tract" in that certain deed from Interstate Coal Company, Inc. et al to Lecco, Inc. dated July 25, 1995 and recorded in Deed Book 253, at Page 229, records of the Perry County Clerk. Also being a portion of the same property described in that certain deed from Lecco, Inc. to Leslie Resources, Inc. dated December 20, 1995 and recorded in Deed Book 255, at Page 415, records of the Perry County Clerk, and a portion of the same property described in that certain deed from Leslie Resources, Inc. to Mountain Properties, Inc. dated December 21, 1995 and recorded in Deed Book 257, at Page 210, records of the Perry County Clerk.

EXCEPTION NO. 1

There is hereby excepted those residual rights with respect to reclamation obligations that survived the expiration or termination of the Indianhead Mining, Inc. and River Coal Company, Inc. Consolidated and Amended Lease Agreement dated November 11, 1977, which was assigned to Pro-Land, Inc. on January 25, 1983.

EXCEPTION NO. 2

This conveyance is expressly made subject to all conveyances, liens, or encumbrances, whether recorded or unrecorded, affecting the property herein conveyed made by or asserted against Grantor's predecessors in title, including but not limited to those public rights of way previously conveyed from Cleveland Combs to Perry County by deed dated March 6, 1968 and recorded in Deed Book 135, at Page 478, records of the Perry County Clerk.

EXCEPTION NO. 3

There is hereby excepted all existing conditions, covenants, easements, exceptions, reservations, restrictions and right-of-way of whatever nature, if any, whether or not of record in the Perry County Clerk's Office or otherwise, and to any state of facts that an accurate survey may reveal, and is expressly subject to all city, county, municipal and state zoning laws and other ordinances, regulations, and restrictions, including statutes and other laws of municipal, county or other governmental authorities applicable, to and enforceable against, the property described herein.

MISCELLANEOUS PROVISIONS

1. Grantor agrees to pay all real estate and/or ad valorem taxes assessed against the land herein conveyed for the current tax year assessed as of January 1, 1998.
2. Grantor expressly reserves to itself, its lessees, licensees, successors and assigns, the perpetual right to utilize any relocated or alternate rights-of-way and easements which may in the future be constructed by Grantee as well as the right to utilize any state or county roads or public roads later constructed by Grantee, its successors and assigns, or by any governmental entity within the tract or parcel conveyed by this Deed of Conveyance, for purposes of ingress and egress to and from properties now owned or hereafter acquired by Grantor, its successors and assigns outside the boundaries of this Deed of Conveyance.
3. Grantor also expressly reserves for itself and Coastal Coal Company, LLC, Mountain Properties, Inc., and the lessees, licensees, successors and assigns of each, the right to access and use any utilities, including but not limited to those for water, electric, sewer, natural gas, and/or telephone in, on, over, or through the above described rights-of-way and easements, or any relocated rights-of-way and easements for utilities which may in the future be constructed

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by or on behalf of Grantee, its successors and assigns, shall grant reasonable easements or rights-of-way in the future to permit connection to such utilities at the nearest practicable location at Grantor's or Coastal Coal Company, LLC's expense.

4. Grantee, its successors and assigns, shall indemnify, defend, and hold Grantor, its successors and assigns, harmless from any and all claims and damages, including but not limited to, all liability from injury to person or property as well as related reasonable attorney fees and costs arising from Grantee's, or its successors and assigns, use of the above described rights-of-way and easements, or from any activity, work, or thing done, permitted, or suffered by Grantee in or about the above described rights-of-way and easements.

5. Grantor, its successors and assigns, shall indemnify, defend, and hold Grantee, its successors and assigns, harmless from any and all claims and damages, including but not limited to, all liability from injury to person or property as well as related reasonable attorney fees and costs arising from Grantor's, or its successors and assigns, use of the above described rights-of-way and easements, or from any activity, work, or thing done, permitted, or suffered by Grantor in or about the above described rights-of-way and easements.

CERTIFICATE

The parties hereto hereby certify, pursuant to KRS Chapter 382, that the above stated consideration is the full consideration paid by Grantee to the Grantor for the property herein conveyed. We understand that falsification of the stated consideration is a Class D Felony, subject to one to five years imprisonment and fines up to \$10,000.00. The Grantee joins in this conveyance for the sole purpose of certifying the consideration pursuant to KRS Chapter 382.

TO HAVE AND TO HOLD THE SAME, together with all appurtenances thereunto belonging unto the Grantee, its successors and assigns forever, with covenants of Special Warranty.

IN TESTIMONY WHEREOF, Grantor and Grantee have executed and delivered this deed on the date first above written by and through their authorized officers or representatives.

GRANTOR:

MOUNTAIN PROPERTIES, INC.

BY: Mitchell BentleyITS: Secretary

GRANTEE:

PERRY, HARLAN, LESLIE, BREATHITT
REGIONAL INDUSTRIAL AUTHORITY, INC.BY: Ed HarrisITS: Chairman

STATE OF KENTUCKY

COUNTY OF PERRY

The foregoing instrument was acknowledged before me, and the foregoing Certificate was subscribed and sworn to before me on this the 7th day of October, 1998 by Mitchell Bentley, known to me to be the Secretary of Mountain Properties, Inc., a Kentucky corporation, on behalf of said entity.

My Commission Expires: 11-29-98Jeffrey A. Zolner
NOTARY PUBLIC

STATE OF KENTUCKY

COUNTY OF PERRY

The foregoing Certificate was subscribed and sworn to before me on this the 7th day of October, 1998 by Ed Harris, known to me to be the Chairman of Perry, Harlan, Leslie, Breathitt Regional Industrial Authority, Inc., a Kentucky corporation, on behalf of said entity.

My Commission Expires: 11-29-98Jeffrey A. Zolner
NOTARY PUBLIC

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STATE OF KENTUCKY

COUNTY OF PERRY

I, HAVEN KING, County Clerk in and for the County and State aforesaid, do certify that the foregoing Deed was this day lodged in my office for record, whereupon it, the foregoing, and this my certificate, have been duly recorded in Deed Book 271, Page 419.

Given under my hand this the 8th day of October, 1998.

HAVEN KING, CLERK
PERRY COUNTY COURT

BY: Barbara Sue Franks D.C.

The foregoing instrument was
prepared by the undersigned
attorney of Hazard, Kentucky:

GULLETT, COMBS, REED & BOWLING

Ronald G. Combs
RONALD G. COMBS
P. O. Box 1039
Hazard, Kentucky 41702-5039
Telephone: (606) 439-1373

C:\WORD\RG2330\MTNPROP.RGC

Deed Tax
\$625.00

DEED OF CONVEYANCE

This DEED OF CONVEYANCE, made and entered into this 30th day of September, 1998, by and between COASTAL COAL COMPANY, LLC, a Delaware limited liability company, of P.O. Box 1871, Roanoke, Virginia 24008, party of the first part, hereinafter called "Grantor," and PERRY, HARLAN, LESLIE, BREATHITT REGIONAL INDUSTRIAL AUTHORITY, INC., a nonprofit Kentucky corporation, Perry County Courthouse, Main Street, Hazard, Kentucky 41701, party of the second part, hereinafter called "Grantee."

WITNESSETH:

That for and in consideration of the sum of Three Million Forty Nine Thousand Five Hundred Ninety and 40/100 Dollars (\$3,049,590.40), cash in hand paid, the receipt of which is hereby acknowledged, Grantor does hereby bargain, grant, sell and convey unto Grantee, its successors and assigns, all of its right, title and interest, including both the surface and certain mineral rights (excluding oil and gas and appurtenant rights hereinafter described) on Parcel #'s 1 and 2 and all of its mineral rights only (excluding oil and gas and appurtenant rights hereinafter described) on Parcel # 3, all located on the Hollybush Branch and the Right Fork of the Rockhouse Fork of Tennile Creek of Lost Creek of Troublesome Creek and Wiley Miller Branch of Grapevine Creek of the North Fork of the Kentucky River in Perry County, Kentucky and being more particularly bounded and described as follows:

Unless stated otherwise, monuments referred to as iron pin w/cap is a set 5/8" x 24" epoxy coated rebar with orange plastic cap stamped "Forrester Hamilton RLS 2736," typically projecting 2" above the ground. Monuments referred to as a 3" aluminum cap set in a concrete monument is a 3" aluminum cap embedded in a 4" x 24" concrete monument stamped "Leo Miller & Assoc., Leo Miller PLS 1904, Do Not Destroy, Boundary Corner," typically projecting approximately 2" above ground. All bearings and coordinates stated herein are based on the Kentucky State Plane Coordinate System South Zone, Datum 1927 as established by Grantor.

PARCEL #1

Beginning on an iron pin w/cap #239, found on the south edge of the road leading to the subject property, said point is a common corner to Grantor (D.B. 208, pg. 266; M.B. 28, pg. 337), Ky May Inc. (D.B. 255, pg. 563) and Trus Joist MacMillan (D.B. 243, pg. 726); thence with said road and the north line of Ky May Inc. S 83°49'33" W 483.81' to an iron pin w/cap #2419, found; thence S 86°48'34" W 182.28' to an iron pin w/cap #2419, found; thence S 64°46'09" W 151.99' to an iron pin w/cap #2419, found; thence leaving the road and continuing with the Ky May Inc. property S 17°47'27" W 264.43' to an iron pin w/cap #2419, found; thence N 84°41'45" E 725.58' to an iron pin w/cap #2419, found in the east line of Trus Joist MacMillan; thence with said Trus Joist MacMillan property S 27°00'22" W 1221.38' to an iron pin w/cap #2419, found, the south east corner of Leslie Wood Products (D.B. 254, pg. 784); thence with Leslie Wood Products property N 62°58'26" W 613.42' to an iron pin w/cap #2736, set; thence S 27°02'07" W 425.33' to an iron pin

w/cap #2419, found; thence S 01°58'18" E 111.43' to an iron pin w/cap #2419, found; thence S 51°59'49" E 96.59' to an iron pin w/cap #2736, set in the west line of Trus Joist MacMillan; thence, severing the land of the Grantor, S 50°31'13" W, 140.99' to an iron pin w/cap #2736; set on the edge of a fill; thence, with the edge of said fill S 78°33'02" W 161.96' to an iron pin w/cap #2736, set thence; S 53°32'52" W 334.21' to an iron pin w/cap #2736 set; thence, S 81°25'08" W 232.96' to an iron pin w/cap #2736 set; thence S 06°24'13" W 376.66' to an iron pin w/cap #2736 set; thence S 10°56'05" E 149.77' to an iron pin w/cap #2736 set; thence S 48°29'31" W 237.17' to an iron pin w/cap #2736 set; thence, S 00°55'39" W 561.60' to an iron pin w/cap #2736 set in the line between Grantor's tracts #PE157 and #PE94; thence with the line between tracts #PE157 and #PE94, thence S 52°09'06" W 45.62' to an iron pin w/cap #2736, set; thence severing tract #PE94 N 79°42'13" W 1704.62' to an iron pin w/cap #2736, set; thence N 83°10'53" W 948.64' to an iron pin w/cap #2736, set in the west line of tract #PE94 and the east line of Mountain Properties Inc. (D.B. 257, pg. 210); thence with Mountain Properties Inc. east line N 06°51'34" E 208.18' to an iron pin w/cap #2736, set; thence N 02°18'53" W 151.75' to an iron pin w/cap #2736, set at the base of a backfill slope; thence leaving the Mountain Properties Inc. property and severing the lands of the Grantor along the base of said backfill slope N 57°51'51" E 284.30' to an iron pin w/cap #2736, set; thence N 51°33'04" E 476.63' to an iron pin w/cap #2736, set; thence N 08°26'24" E 178.02' to an iron pin w/cap #2736, set; thence N 08°55'32" W 210.45' to an iron pin w/cap #2736, set in the line between tracts #PE94 and #PE95; thence continuing along the toe of the backfill slope N 11°57'36" W 97.79' to an iron pin w/cap #2736, set; thence N 26°40'09" W 168.84' to an iron pin w/cap #2736, set; thence N 76°06'30" W 244.44' to an iron pin w/cap #2736, set; thence N 29°37'22" W 249.79' to an iron pin w/cap #2736, set at the base of a highwall; thence with said highwall N 02°14'16" W 155.38' to an iron pin w/cap #2736 set; thence N 07°10'21" E 276.24' to a 3" aluminum cap set in a concrete monument at the base of a highwall; thence N 68°47'39" E 317.77' to an iron pin w/cap #2736, set at the base of a backfill slope; thence with the base of said slope S 83°30'34" E 279.77' to an iron pin w/cap #2736, set; thence N 47°53'46" E 241.90' to an iron pin w/cap #2736, set; thence N 66°35'26" E 272.61' to a 3" aluminum cap set in a concrete monument on the top edge of a fill; thence with the edge of said fill N 34°16'12" W 481.98' to an iron pin w/cap #2736, set in the east line of Mountain Properties Inc. et. al. property; thence with said property and the west line of tract #PE95 N 39°21'01" E 170.16' to an iron pin w/cap #2736, set; N 45°51'23" E 287.46' to an iron pin w/cap #2736, set at the southwest corner of tract #PE255; thence continuing with tract #PE255 and Mountain Properties Inc. N 23°36'03" E 117.51' to an iron pin w/cap #2736, set; thence N 64°45'45" E 172.18' to an iron pin w/cap #2736, set; thence N 53°06'04" E 324.67' to an iron pin w/cap #2736, set; thence N 62°51'46" E 136.45' to an iron pin w/cap #2736, set; thence N 67°47'02" E 89.79' to an iron pin w/cap #2736, set; thence N 16°02'07" E 106.92' to an iron pin w/cap #2736, set, the southwest corner of another Mountain Properties Inc. Tract #3; thence with said property S 73°35'39" E 103.31' to an iron pin w/cap #2736, set; thence S 78°21'12" E 230.06' to an iron pin w/cap #2736, set; thence S 77°01'03" E 140.03' to an iron pin w/cap #2736, set; thence S 73°20'38" E 137.74' to an iron pin w/cap #2736, set; thence S 65°14'44" E 273.51' to an iron pin w/cap #2736, set; thence N 03°11'24" E 46.20' to an iron pin w/cap #2736, set; thence N 35°42'21" E 197.80' to an iron pin w/cap #2736, set; thence N 18°41'36" E 131.94' to an iron pin w/cap #2736, set; thence S 83°11'45" E 98.81' to an iron pin w/cap #2736, set; thence N 78°46'12" E 131.76' to an iron pin w/cap #2736, set; thence S 71°40'26" E 98.82' to an iron pin w/cap #2736, set; thence S 50°38'15" E 98.84' to an iron pin w/cap #2736, set; thence S 74°10'43" E 269.49' to an iron pin w/cap #2736, set; thence S 58°08'59" E 219.62' to an iron pin w/cap #2736 set; thence S 69°20'11" E 182.66' to an iron pin w/cap #2736, set; thence S 53°08'29" E 329.46' to an iron pin w/cap #2736, set; thence N 64°44'43" E 131.78' to an iron pin w/cap #2736, set; thence N 86°51'31" E 190.90' to an iron pin w/cap #2736, set; thence N 84°19'49" E 1019.42' to an iron pin with a 1" aluminum cap stamped "Interstate Coal", found, a common corner to Grantor, Mountain Properties Inc. and the Napier

Heirs (D.B. 174, pg. 747; D.B. 174, pg. 742); thence crossing the road with the Napier Heirs property S 06°24'26" W 49.73' to an iron pin w/cap #239, found in the north line of Trus Joist MacMillan; thence with said property S 84°41'40" W 526.19' to the point of beginning and containing 11,423,852.16 square feet or 262.2556 acres.

PARCEL #2

Beginning on an iron pin w/1" aluminum cap stamped "Interstate Coal", found; said point is corner #00 of Grantor tract #PE165 (D.B. 208, pg. 266; M.B. 28, pg. 337), the northeast corner of Mountain Properties Inc. (D.B. 257, pg. 210) and in the west line of the Napier Heirs property (D.B. 174, pg. 747; D.B. 174, pg. 742); thence with a common line between Grantor and Mountain Properties Inc. N 88°13'16" W 129.52' to an iron pin w/cap #2736, set; thence N 62°17'32" W 372.57' to an iron pin w/cap #2736, set; thence N 73°37'32" W 256.82' to an iron pin w/cap #2736, set; thence N 71°17'32" W 132.01' to an iron pin w/cap #2736, set; thence S 82°12'46" W 171.66' to an iron pin w/cap #2736, set; thence N 50°47'26" W 139.97' to an iron pin w/cap #2736, set; thence N 64°47'32" W 197.99' to an iron pin w/cap #2736, set; thence S 00°15'45" W 95.56' to an iron pin w/cap #2736, set; thence S 82°12'46" W 82.53' to an iron pin w/cap #2736, set; thence S 75°42'55" W 66.03' to an iron pin w/cap #2736, set; thence N 88°47'23" W 66.02' to an iron pin w/cap #2736, set; thence S 71°43'01" W 165.07' to an iron pin w/cap #2736, set; thence S 64°13'15" W 115.56' to an iron pin w/cap #2736, set; thence N 88°17'24" W 132.03' to an iron pin w/cap #2736, set; thence S 87°02'41" W 169.35' to an iron pin w/cap #2736, set; thence N 63°37'32" W 235.69' to an iron pin w/cap #2736, set; thence N 68°54'43" W 132.55' to an iron pin w/cap #2736, set; thence S 59°45'19" W 98.04' to an iron pin w/cap #2736, set; thence S 57°50'22" W 241.60' to an iron pin w/cap #2736, set; thence S 66°05'11" W 352.91' to an iron pin w/cap #2736, set; thence S 83°45'00" W 156.06' to an iron pin w/cap #2736, set; thence S 79°55'01" W 141.51' to an iron pin w/cap #2736, set; at the northwest corner of Mountain Properties Inc., corner #20 of Grantor tract #PE165, and in the east line of another Mountain Properties Inc. tract (D.B. 257, pg. 210); thence with a common line between said Mountain Properties Inc. second tract and Grantor tract #PE165 N 33°48'21" W 319.24' to an iron pin w/cap #2736, set; thence N 46°39'05" W 255.55' to an iron pin w/cap #2736, set; thence N 46°09'03" W 311.98' to an iron pin w/cap #2736, set; thence N 07°23'31" E 359.21' to an iron pin w/cap #2736, set; thence N 23°24'44" E 163.46' to an iron pin w/cap #2736, set; thence N 37°30'07" E 265.50' to an iron pin w/cap #2736, set; thence N 08°36'54" W 142.52' to an iron pin w/cap #2736, set; thence N 19°37'40" W 127.19' to an iron pin w/cap #2736, set; thence N 17°53'09" W 135.67' to an iron pin w/cap #2736, set; a common corner to Mountain Properties Inc., Grantor the Floyd Mullins Heirs (D.B. 124, pg. 293), and V.G. Combs (D.B. 130, pg. 7; D.B. 176, pg. 636); thence with a common line between said Combs property and Grantor tract #PE165 N 54°40'31" E 148.43' to an iron pin w/cap #2736, set; thence N 44°30'11" E 365.78' to an iron pin w/cap #2736, set; thence N 15°19'15" E 182.16' to an iron pin w/cap #2736, set; thence N 39°00'01" E 158.21' to an iron pin w/cap #2736, set; thence N 49°50'34" E 286.82' to an iron pin w/cap #2736, set; thence N 59°55'09" E 139.96' to an iron pin w/cap #2736, set; thence N 31°41'11" E 119.71' to an iron pin w/cap #2736, set; thence N 27°25'16" E 184.15' to an iron pin w/cap #2736, set; thence leaving said lines and severing Grantor tract #PE165 along the approximate top edge of a fill S 68°57'19" E 128.13' to a 3" aluminum disk set in the top of a 3" concrete monument; thence continuing with the approximate top edge of the fill S 44°58'32" E 267.95' to an iron pin w/cap #2736, set; thence S 14°58'04" E 268.06' to an iron pin w/cap #2736, set; thence S 20°34'58" E 106.68' to an iron pin w/cap #2736, set; thence S 43°12'32" E 232.35' to an iron pin w/cap #2736, set; thence S 18°15'10" E 471.75' to an iron pin w/cap #2736, set; thence S 31°12'05" E 162.80' to an iron pin w/cap #2736, set; thence S 43°05'03" E 218.23' to an iron pin w/cap #2736, set; thence S 55°17'46" E 364.24' to an iron pin w/cap #2736, set; thence S 65°28'14" E 325.96' to a 3" aluminum disk set in the top of a 3" concrete monument on the approximate

edge of the fill thence S 72°47'55" E 325.32' to an iron pin w/cap #2736, set; thence S 63°38'02" E 103.95' to an iron pin w/cap #2736, set; thence S 17°43'54" W 171.04' to an iron pin w/cap #2736, set; thence S 32°59'59" E 187.30' to an iron pin w/cap #2736, set; thence N 79°41'43" E 117.96' to an iron pin w/cap #2736, set; thence S 28°50'55" E 337.26' to a 3" aluminum disk set in the top of a 3" concrete monument on the approximate edge of the fill thence S 74°44'53" E 496.79' to a 3/8" rebar (no cap), found, said point is corner #43 of Grantor tract #PE165 and is in the west line of the Napier Heirs; thence with a common line between Grantor tract #PE165 and the Napier Heirs S 13°49'27" W 217.82' to the point of beginning and containing 5,181,165.60 sq. ft. or 118.9432 acres by survey.

PARCEL #3

Beginning on an iron pin w/1" aluminum disk marked "Interstate Coal," found on the north side of the road leading to the subject property and the Ky May Inc. Property (D.B. 257, pg. 210). Said point is the southeast corner of the subject property and corner #00 of ANR Coal Company, LLC. (D.B. 208, pg. 266; M.B. 28, pg. 337) Tract #PE157 and in the west line of the Napier Heirs (D.B. 174, pg. 742 & 747). Thence with said road and ANR Coal Company, LLC. Tract #PE157 S 84° 19' 49" W 1019.42' to an iron pin w/cap #2736, set; thence S 86° 51' 31" W 190.90' to an iron pin w/cap #2736, set; thence S 64° 44' 43" W 131.78' to an iron pin w/cap #2736, set; thence leaving the road and continuing with ANR Coal Company, LLC. Tract #PE255 N 53° 08' 29" W 329.46' to an iron pin w/cap #2736, set; thence N 69° 20' 11" W 182.66' to an iron pin w/cap #2736, set; thence N 58° 08' 59" W 219.62' to an iron pin w/cap #2736, set; thence N 74° 10' 43" W 269.49' to an iron pin w/cap #2736, set; thence N 50° 38' 15" W 98.84' to an iron pin w/cap #2736, set; thence N 71° 40' 26" W 98.82' to an iron pin w/cap #2736, set; thence S 78° 46' 12" W 131.76' to an iron pin w/cap #2736, set; thence N 83° 11' 45" W 98.81' to an iron pin w/cap #2736, set; thence S 18° 41' 36" W 131.94' to an iron pin w/cap #2736, set; thence S 35° 42' 21" W 197.80' to an iron pin w/cap #2736, set; thence S 03° 11' 24" W 46.20' to an iron pin w/cap #2736, set; thence N 65° 14' 44" W 273.51' to an iron pin w/cap #2736, set; thence N 73° 20' 38" W 137.74' to an iron pin w/cap #2736, set; thence N 77° 01' 03" W 140.03' to an iron pin w/cap #2736, set; thence N 78° 21' 12" W 230.06' to an iron pin w/cap #2736, set; thence N 73° 35' 39" W 103.31' to an iron pin w/cap #2736, set; corner #8 of Tract #PE255 and in the east line of another Mountain Properties, Inc. Tract (D.B. 257, PG. 210); thence with Mountain Properties east line N 05° 10' 42" E 399.92' to an iron pin w/cap #2736, set; thence N 11° 30' 01" E 181.96' to an iron pin w/cap #2736, set; corner #20 of Tract #PE165; thence leaving Mountain Properties, Inc. line and with ANR Coal Company, LLC. Tract #PE165 N 79° 55' 01" E 141.51' to an iron pin w/cap #2736, set; thence N 83° 45' 00" E 156.06' to an iron w/cap #2736, set; thence N 66° 05' 11" E 352.91' to an iron pin w/cap #2736, set; thence N 57° 50' 22" E 241.60' to an iron pin w/cap #2736, set; thence N 59° 45' 19" E 98.04' to an iron pin w/cap #2736, set; thence S 68° 54' 43" E 132.55' to an iron pin w/cap #2736, set; thence S 63° 37' 32" E 235.69' to an iron pin w/cap #2736, set; thence N 87° 02' 41" E 169.35' to an iron pin w/cap #2736, set; thence S 88° 17' 24" E 132.03' to an iron pin w/cap #2736, set; thence N 64° 13' 15" E 115.56' to an iron pin w/cap #2736, set; thence N 71° 43' 01" E 165.07' to an iron pin w/cap #2736, set; thence S 88° 47' 23" E 66.02' to an iron pin w/cap #2736, set; thence N 75° 42' 55" E 66.03' to an iron pin w/cap #2736, set; thence N 82° 12' 46" E 82.53' to an iron pin w/cap #2736, set; thence N 00° 15' 45" E 95.56' to an iron pin w/cap #2736, set; thence S 64° 47' 32" E 197.99' to an iron pin w/cap #2736, set; thence S 50° 47' 26" E 139.97' to an iron pin w/cap #2736, set; thence N 82° 12' 46" E 171.66' to an iron pin w/cap #2736, set; thence S 71° 17' 32" E 132.01' to an iron pin w/cap #2736, set; thence S 73° 37' 32" E 256.82' to an iron pin w/cap #2736, set; thence S 62° 17' 32" E 372.57' to an iron pin w/cap #2736, set; thence S 88° 13' 16" E 129.52' to an iron pin w/1"

aluminum cap stamped "Interstate Coal", found in the west line of the Napier Heirs property; thence with said Napier property S 21° 13' 52" E 304.94' to an iron pin w/1" aluminum cap stamped "Interstate Coal", found; thence S 10° 39' 49" E 459.63' to an iron pin w/1" aluminum cap stamped "Interstate Coal" found; thence S 13° 44' 47" E 135.47' to the point of beginning and containing 3,401,701.3 sq. ft. or 78.0923 acres by survey.

GRANT OF EASEMENTS

Grantor does also hereby grant and convey unto Grantee, its successors and assigns, two nonexclusive permanent rights-of-way and permanent easements for ingress and egress to the properties, and the Grantee shall have the right to grant access for water, electric, sewer, telephone, natural gas and other utility lines and pipelines in, on, over and through the easements to and from the above described lands. However, it is understood and agreed that Grantee's access to Parcel #'s 2 and 3 must be secured through conveyance of lands by Mountain Properties, Inc. contemplated to occur of even date herewith. Said easements are a total of 50 feet in width, the centerline of which are more particularly described as follows:

FIRST EASEMENT

Beginning at a point where an existing road and Roadway easement as decided to Leslie Wood Products crosses the southern boundary of parcel #1 as described above, said point bears N 52°09'06" E 25.15' from corner #18 of parcel #1, thence with said road and easement as described in D.B. 254, pg. 784 S 05°03'28" W 462.22' to a point, thence S 51°11'12" E, 149.03' to a point; thence N 61°03'22" E 276.01' to a point, thence N 74°15'14" E 288.95' to a point, thence N 78°05'29" E 231.20' to a point, thence S 83°27'04" E 240.52' to a point, thence N 78°02'05" E 422.74' to a point, thence N 74°40'12" E 439.96' to a point, thence N 80°54'44" E 276.64' to a point, thence N 73°03'54" E 269.33' to a point, thence N 56°05'13" E 372.04' to a point, thence N 36°18'22" E 146.26' to a point, thence N 10°41'35" E 198.76' to a point, thence N 08°30'42" E 174.49' to a point, thence N 37°09'01" E 198.09' to a point, thence N 35°07'10" E 162.95' to a point, thence N 35°38'22" E 136.68' to a point, thence N 55°43'06" E 88.44' to a point on the right of way of the county road as decided by Grantor to the Perry County Fiscal Court by Deed of Correction dated September 27, 1994 at D.B. 252, pg. 201. Said above description is taken from D.B. 254, pg. 784 as decided to Leslie Wood Products by Grantor. The easement is for a 50' right of way, 25' on each side of the above described centerline.

SECOND EASEMENT

Beginning on a point located at the center of a 50 feet wide easement to be conveyed, said point bears N 82°04'13" E 531.79 feet from the beginning corner of parcel one herein and the beginning of parcel two herein bears N 06°24'26" E 24.86 feet and on the line of property herein conveyed, thence leaving said property line and with the center of said centerline: N 87°09'09" E 137.05' to a point, thence S 83°20'43" E 144.82' to a point in centerline of an existing road, thence with the centerline of the existing road S 60°21'30" E 99.17' to a point in centerline of an existing road, thence S 57° 09' 09" E 118.84' to a point in centerline of existing road, thence S 45°15'19" E 174.67' to a point in centerline of existing road, thence S 26°03'18" E 88.63' to a point in centerline of existing road, thence S 34°44'04" W 110.80' to a point in

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centerline of existing road, thence S 40°08'38" W 162.89' to a point in centerline of existing road, thence S 31°56'55" W 155.99' to a point in centerline of existing road, thence S 23°13'21" W 226.65' to a point in centerline of existing road, thence S 4°07'54" W 101.50' to a point in centerline of existing road, thence S 11°28'46" W 97.18' to the intersection of the centerline of the existing road and the Bush Cemetery road, thence leaving the existing road along the centerline of the Bush Cemetery road in the north easterly direction approximately 2,700 feet to the intersection of Kentucky Highway 15 right-of-way. The Bush Cemetery road crosses the Right Fork of Rockhouse Creek and passes at or near a tract of land conveyed to Virginia, Iron, Coal & Coke Company to Dewey Grigsby and Kay Grigsby, his wife, by Deed of Conveyance dated August 9, 1971 and of record in Deed Book 147, Page 368, records of the Perry County Clerk's Office.

The parties hereto agree that it is their mutual intent that the easements herein granted or conveyed for ingress and egress are intended to be dedicated to the Perry County Fiscal Court or other appropriate governmental body for public use as a state or county road. Grantor covenants that it shall, upon request by Grantee, its successors or assigns, join with Grantee to dedicate or convey permanent easements or other rights of way to such governmental entities.

SOURCE OF TITLE

A portion of the property was conveyed to VICC Land Company by Virginia Iron, Coal and Coke Company by deed dated May 1, 1979 and of record at Deed Book 178, page 773, records of the Perry County Clerk's Office. ANR Coal Company received title to a portion of the above described property through corporate merger with VICC Land Company on September 1, 1985. The corporate merger is recorded in Miscellaneous Book 18, page 742, records of the Perry County Clerk's Office. All of the subject property was conveyed to Apache Mining Company, d/b/a Enterprise Coal Company by ANR Coal Company, a Delaware corporation, by Deed dated April 18, 1986, and of record at Deed Book 208, page 266, records of the Perry County Clerk's Office. A Delaware corporation formerly known as Enterprise Coal Company was merged into Apache Mining Company on February 26, 1988. Thereafter, on March 2, 1988, the Articles of Incorporation of Apache Mining Company were amended changing the name of that corporation to Enterprise Coal Company, a Kentucky corporation. The Certificate of Merger and Articles of Amendment changing the corporate name are of record at Miscellaneous Book 22, page 398, records of the Perry County Clerk's Office. Enterprise Coal Company, a Kentucky corporation, was merged into ANR Coal Company, LLC effective December 30, 1996 as noted of record in an Affidavit at Miscellaneous Book 22, page 222, and in Articles of Merger of Enterprise Coal Company into ANR Coal

Company, LLC, in Miscellaneous Book 29, page 648, all of record in the Perry County Clerk's Office. ANR Coal Company, LLC's name was changed to Coastal Coal Company, LLC effective July 21, 1998 as noted of record in an Affidavit at Miscellaneous Book 29, page 646 and in an Application for Amended Certificate of Authority of record at Miscellaneous Book 29, page 658, all of record in the Perry County Clerk's Office. The surface and mineral Parcels and easement interests herein conveyed are portions of the Grantor's following tracts: PE- 1, William Allen; PE-95, Colson Duff; PE-165, Samuel Grigsby; PE-157, James Grigsby; PE-255, Martha Holliday; and PE-94, John Davis.

PE-1 William Allen:

<u>GRANTOR</u>	<u>DATE</u>	<u>D.B.</u>	<u>PAGE</u>
William Allen	11/08/1902	P	352

PE-157 James Grigsby:

<u>GRANTOR</u>	<u>DATE</u>	<u>D.B.</u>	<u>PAGE</u>
Andrew Adams et. al.	03/25/1986	207	170
Edward L. Clemons et. al.	03/04/1986	207	173
Lynn Lee, Inc.	10/19/1983	197	134
Continental Realty Co.	07/02/1917	35	326

PE-165 Samuel Grigsby:

<u>GRANTOR</u>	<u>DATE</u>	<u>D.B.</u>	<u>PAGE</u>
Continental Realty Co.	07/02/1917	35	326

PE-95 Colson Duff:

<u>GRANTOR</u>	<u>DATE</u>	<u>D.B.</u>	<u>PAGE</u>
Lynn Lee, Inc.	10/19/1983	197	134
Tennis Coal & Coke Company, et. al.	12/17/1928	56	625

PE-255 Martha Holliday:

<u>GRANTOR</u>	<u>DATE</u>	<u>D.B.</u>	<u>PAGE</u>
Lynn Lee, Inc.	10/19/1983	197	134
Green Holliday, et. al.	04/22/1969	140	472

PE-94 John Davis:

<u>GRANTOR</u>	<u>DATE</u>	<u>D.B.</u>	<u>PAGE</u>
Lynn Lee, Inc.	10/19/1983	197	134
Continental Realty Co.	07/02/1917	35	326

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EXCEPTION NO. 1

The Grantor, for itself and for the benefit of Mountain Properties, Inc., and the lessees, licensees, successors and assigns of each, specifically excepts and reserves from this conveyance that certain permanent easement or right of way, to be fifty feet in width, through Parcel # 1 for ingress and egress to that property denoted as Grantor's tract #'s PE-239 and PE-241, which is more fully depicted on the map attached hereto as Exhibit 1. The Grantor and Grantee acknowledge that it is the mutual intent of the parties that Grantee shall have the right at any time to relocate the easement or to provide an alternate means of access to the property or estate served by the easement and through the properties herein conveyed. The Grantee shall not be restricted to providing easement access at the same location specified above but may provide alternate access at any point along the contiguous boundary of the property conveyed herein and Grantor's tract #'s PE-239 or PE-241.

EXCEPTION NO. 2

This conveyance is expressly made subject to those rights and privileges granted to Kentucky West Virginia Gas Company by Virginia, Iron, Coal & Coke Company by deed dated April 17, 1939, and of record at Deed Book 72, page 311, records of the Perry County Clerk's Office. This conveyance is also made expressly subject to the rights and privileges granted to the Hazard-Perry County Airport Board by VICC Land Company and Kentucky-West Virginia Gas Company by deed dated April 29, 1980, and of record at Deed Book 182, page 644, records of the Perry County Clerk's Office. To the extent not heretofore granted or conveyed away, there is excepted and reserved from this conveyance any and all oil and gas (including coal bed methane) and rights appurtenant thereto underlying the tracts or parcels conveyed hereunder together with all necessary rights of way and rights to explore for, remove and transport the same; provided, that the Grantor shall not drill any well, lay any pipeline or otherwise conduct operations on the surface of the properties herein conveyed without the prior written consent of the Grantee, its successors or assigns, and the surface estate herein conveyed shall be the dominant estate, and the oil and gas rights herein excepted and reserved shall be exercised in a manner so as not to disturb the peaceful use and enjoyment of the property herein conveyed including existing or future improvements thereon.

EXCEPTION NO. 3

There is hereby excepted those residual rights with respect to reclamation obligations that survived the expiration or termination of the Indian Head Mining, Inc. and River Coal Company, Inc. Consolidated and Amended Lease Agreement dated November 11, 1977, which was assigned to Pro-Land, Inc. on January 25, 1983, and such rights as pertain to the use of the First Easement area for ingress and egress pursuant to that certain Surface Lease dated May 1, 1987 between Apache Mining Company d/b/a Enterprise Coal Company and Pro-Land, Inc., as the same may be modified by Agreement of even date herewith among Grantor, Grantee and the lessee and permittee of operations pursuant thereto.

EXCEPTION NO. 4

There is hereby excepted those rights of access and for utility easements granted to Leslie Wood Products, Inc. by deed dated November 10, 1995 and recorded in Perry County Deed Book 254, page 784, and to KY MAY, Inc. by deed dated November 20, 1995 and recorded in Perry County Deed Book 255, page 568, and those public rights of way previously granted to Perry County by deed dated April 1, 1968 and recorded in Perry County Deed Book 138, page 347.

EXCEPTION NO. 5

There is hereby excepted all existing conditions, covenants, easements, exceptions, reservations, restrictions and rights-of-way of whatever nature, if any, whether or not of record in the Perry County Clerk's Office or otherwise, and to any state of facts that an accurate survey may reveal, and is expressly subject to all city, county, municipal and state zoning laws and other ordinances, regulations, and restrictions, including statutes and other laws of municipal, county or other governmental authorities applicable to, and enforceable against, the property described herein.

MISCELLANEOUS PROVISIONS

1. Grantor agrees to pay all real estate and/or ad valorem taxes assessed against the land herein conveyed for the current tax year assessed as of January 1, 1998.
2. Grantor expressly reserves to itself, its lessees, licensees, successors and assigns, the perpetual right to utilize the above described rights-of-way and easements, or any relocated or alternate rights-of-way and easements which may in the future be constructed by Grantee as well as the right to utilize any state or county roads or public roads later constructed by Grantee its

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successors and assigns, or by any governmental entity within the tracts or parcels conveyed by this Deed of Conveyance, for purposes of ingress and egress to and from properties now owned or hereinafter acquired by Grantor, its successors and assigns outside the boundaries of Parcels 1, 2 and 3 conveyed in this Deed of Conveyance.

3. Grantor also expressly reserves for itself and Mountain Properties, Inc., and the lessees, licensees, successors and assigns of each, and for the benefit of their contiguous and nearby properties, the right to access and use any utilities, including but not limited to those for water, electric, sewer, natural gas, and/or telephone in, on, over, or through the above described rights-of-way and easements, or any relocated or alternative rights-of-way and easements for utilities which may in the future be constructed by or on behalf of Grantee, its successors and assigns. Grantee covenants that it, its successors and assigns, shall grant reasonable easements or rights of way in the future to permit connection to such utilities at the nearest practicable location at Grantor's or Mountain Properties, Inc.'s expense.

4. Grantee, its successors and assigns, shall indemnify, defend, and hold Grantor, its successors and assigns, harmless from any and all claims and damages, including but not limited to, all liability from injury to person or property as well as related reasonable attorney fees and costs arising from Grantee's, or its successors and assigns, use of the above described rights-of-way and easements, or from any activity, work, or thing done, permitted, or suffered by Grantee in or about the above described rights-of-way and easements.

5. Grantor, its successors and assigns, shall indemnify, defend, and hold Grantee, its successors and assigns, harmless from any and all claims and damages, including but not limited to, all liability from injury to person or property as well as related reasonable attorney fees and costs arising from Grantor's, or its successors and assigns, use of the above described rights-of-way, or from any activity, work, or thing done, permitted, or suffered by Grantor in or about the above described rights-of-way and easements.

TO HAVE AND TO HOLD the same unto Grantee, its successors and assigns, with Covenants of Special Warranty.

IN TESTIMONY WHEREOF, Grantor has heretofore set its hand on this date first above written by and through its authorized officer and by virtue of authority vested in him by said organization.

COASTAL COAL COMPANY, LLC

BY: William S. Hudgins Jr
ITS: Senior Vice President

STATE OF KENTUCKY

COUNTY OF PERRY

I, Jeffery A. Tolliver, a Notary Public in and for the County and State aforesaid, hereby certify that the foregoing Deed of Conveyance by and between Coastal Coal Company, LLC, a Delaware limited liability company, and Perry, Harlan, Leslie, Breathitt Regional Industrial Authority, Inc., a non profit Kentucky corporation, was acknowledged before me by Coastal Coal Company, LLC, by and through William S. Hudgins, Jr., its Senior Vice President and General Counsel, to be the voluntary act and deed of such organization.

Witness my hand on this 7th day of October, 1998.

My Commission expires: 11-29-98

Jeffery A. Tolliver
NOTARY PUBLIC

CERTIFICATION OF CONSIDERATION

We, Coastal Coal Company, LLC, a Delaware limited liability company, Grantor, and Perry, Harlan, Leslie, Breathitt Regional Industrial Authority, Inc., a nonprofit Kentucky corporation, Grantee, do hereby certify, pursuant to Chapter 382, that the above stated consideration in the amount of \$3,049,590.40, is the true, correct and full consideration paid for the property and other interests herein conveyed. We further certify our understanding that falsification of the stated consideration or sale price of the property is a Class D felony, subject to one to five years imprisonment and fines up to \$10,000.

COASTAL COAL COMPANY, LLC

BY: William S. Hudgins Jr
ITS: Senior Vice President

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PERRY, HARLAN, LESLIE, BREATHITT
REGIONAL INDUSTRIAL AUTHORITY,
INC.BY: Ed Harris
ITS: Chairman

STATE OF KENTUCKY

COUNTY OF PERRY

I, Jeffery A. Tolliver, a Notary Public in and for the County and State
aforesaid, do certify that the foregoing Certificate of Consideration was before me in said County
on this the 7th day of October, 1998, by William S. Hudgins, Jr. of Coastal Coal
Company, LLC, a Delaware limited liability company, for and on behalf of Coastal Coal
Company, LLC.

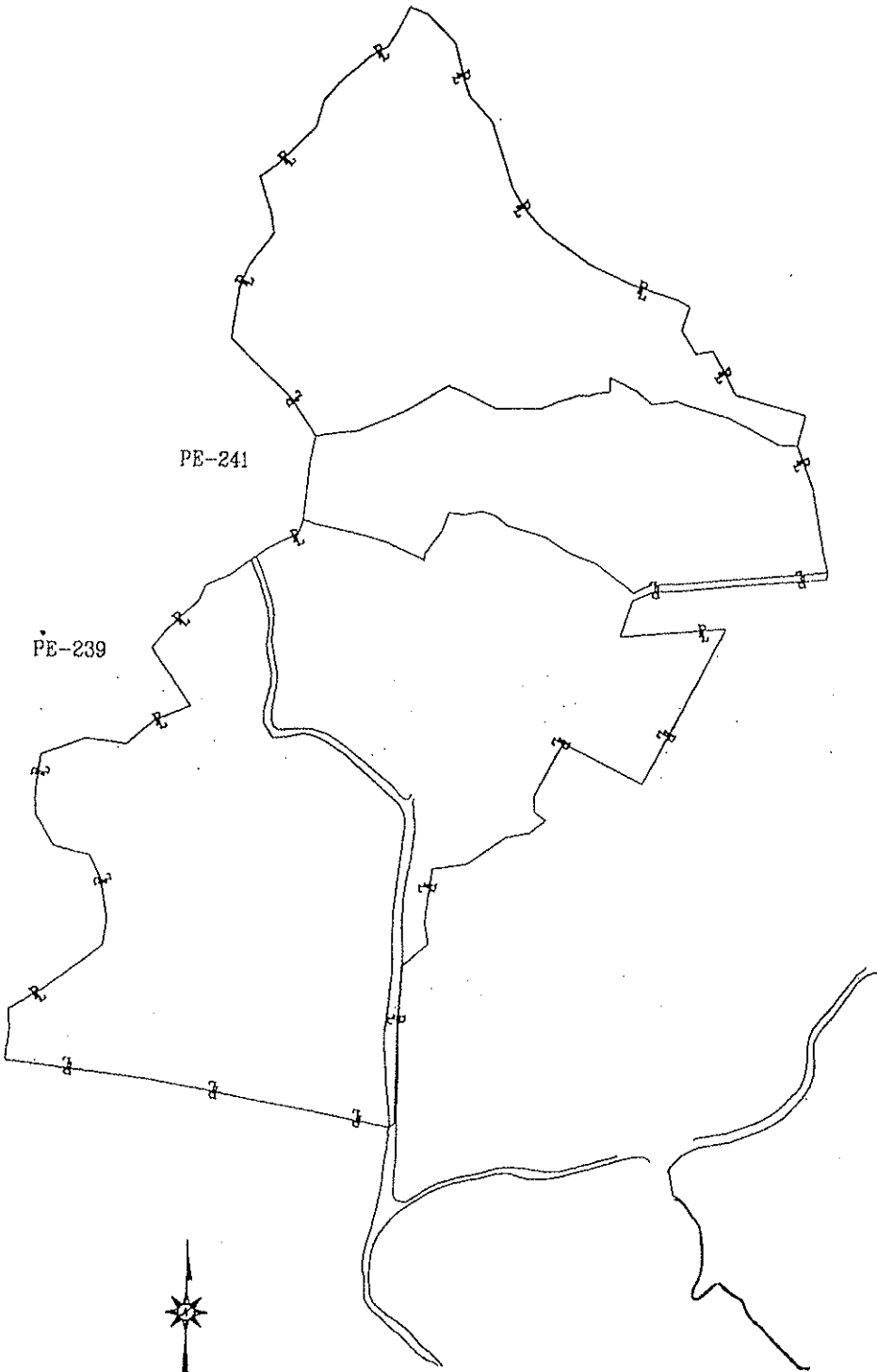
My Commission expires: 11-29-98Jeffery A. Tolliver
NOTARY PUBLIC

STATE OF KENTUCKY

COUNTY OF PERRY

I, Jeffery A. Tolliver, a Notary Public in and for the County and State
aforesaid, do certify that the foregoing Certificate of Consideration was before me in said County
on this the 7th day of October, 1998, by James Edward Harris of Perry, Harlan, Leslie,
Breathitt Regional Industrial Authority, Inc., a nonprofit Kentucky corporation, for and on behalf
of Perry, Harlan, Leslie, Breathitt Regional Industrial Authority, Inc.

My Commission expires: 11-29-98Jeffery A. Tolliver
NOTARY PUBLIC



PE-241

PE-239



PROPERTY BOUNDARY

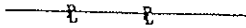
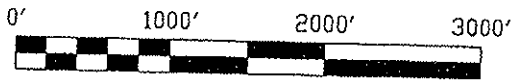


EXHIBIT 1
EASEMENT RESERVED IN DEED OF CONVEYANCE
TO INDUSTRIAL AUTHORITY



SCALE: 1" = 1000'

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STATE OF KENTUCKY

COUNTY OF PERRY

I, Haven King, Clerk of the County and State aforesaid, do certify that the foregoing Deed of Conveyance from Coastal Coal Company, LLC, a Delaware limited liability company, Grantor, and Perry, Harlan, Leslie, Breathitt Regional Industrial Authority, Inc., a nonprofit Kentucky corporation, Grantee, was lodged for record in my office on the 8th day of Oct, 1998, and it the foregoing, and this, my certificate, have been duly recorded in my office in Deed Book No. 271 at page 425.

Witness my hand this 8th day of October, 1998.

HAVEN KING,

PERRY COUNTY CLERK

BY: Barbara Sue Tranks

This instrument was prepared by
the law firm of Hollon, Hollon &
Collins of Hazard, Kentucky

By: Paul R. Collins
Paul R. Collins

M:\NETDRIVE\CLIENTS\PERY\INDV\PERYCO3.DED

Deed Tax
\$3050.00

DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS

1998 OCT -8 AM 11: 02

THIS DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS (the "Declaration"), which shall be effective as of the 7th day of October, 1998, is made by PERRY, HARLAN, LESLIE, BREATHITT REGIONAL INDUSTRIAL AUTHORITY, INC., a Kentucky non-profit, non-stock corporation, P.O. Drawer 10, Hazard, Kentucky 41702 (the "Declarant"), in favor of the KENTUCKY ECONOMIC DEVELOPMENT FINANCE AUTHORITY, a governmental agency of the Commonwealth of Kentucky, with an address at 2400 Capital Plaza Tower, 500 Mero Street, Frankfort, Kentucky 40601-1975 ("KEDFA").

WITNESSETH:

WHEREAS, the Declarant is the holder of fee simple title to certain real property generally located in Perry County, Kentucky, more particularly described on Exhibit A attached hereto and made a part hereof, together with any and all buildings and improvements located thereon, rights and appurtenances thereunto belonging and appurtenant easements thereto (the "Property");

WHEREAS, KRS 42.4588 establishes a Local Government Economic Development Fund (the "LGEDF"), which fund consists of a percentage of the severance and processing taxes assessed upon coal mined in coal producing counties in the Commonwealth of Kentucky, from which KEDFA is authorized to make grants to certain coal-producing counties in Kentucky for the purpose of financing industrial development projects, as more particularly described in KRS 42.4588;

WHEREAS, the Secretary of the Cabinet for Economic Development has recommended and KEDFA has awarded a \$4,250,000.00 LGEDF Regional Multi-County Grant pursuant to the Declarant's application (the "Grant"), all of which shall be disbursed from the Multi-County LGEDF Account in accordance with the regional industrial park program;

WHEREAS, the Declarant will use solely for costs incurred in the acquisition of the Property, engineering and certain other related costs (the "Project"); and,

WHEREAS, because proceeds of LGEDF grants may only be expended in connection with "industrial development projects", as set forth in KRS 42.4588, KEDFA requires as a condition precedent to the disbursement of any proceeds of the Grant that all parties thereto execute, deliver and record this Declaration in the official land records of Perry County, Kentucky, in order to create certain covenants running with the land for the purposes of enforcing the requirements of the Grant and protecting the value and desirability of the Project for use for "Industrial Development Purposes", as such term is defined herein;

NOW THEREFORE, in consideration of the Grant, and for other good and valuable consideration, the receipt, mutuality and sufficiency of which is hereby acknowledged, the Declarant hereby agrees that all of the Property shall be held, sold and conveyed subject to the following restrictions, covenants, and conditions:

*Recorded 4-14-2000
See Amended Covenants
Deed BK 280 PG 377
Attest: Haven King clerk
By: Barbara Sue Franks D.C.*

1. Restrictive Covenants. The Declarant hereby represents, warrants and covenants that the Property shall be used, enjoyed and held only for (i) manufacturing, processing and assembling, (ii) worker training and education, (iii) any use that results in the addition of value to a product, including without limitation data processing, telecommunications, and distribution facilities, provided the use is approved in writing by the Secretary of the Cabinet for Economic Development, its successors and assigns, (iv) any other use permitted under KRS 42.4588 and successor statutes, and (v) any other use approved in writing by the Secretary of the Cabinet for Economic Development, its successors and assigns (all of the foregoing purposes and uses of the Property shall hereinafter collectively be referred to as "Industrial Development Purposes"). No portion of the Property shall be used for any purpose other than an Industrial Development Purpose during the term of this Declaration, unless otherwise required by applicable laws.

2. Term. The Declarant hereby states on behalf of itself and all parties having any right, title or interest in the Property that the covenants and restrictions set forth in this Declaration (i) shall be and hereby are covenants running with the land, and shall be binding upon the Declarant's successors in title and all parties having any right, title or interest in the Property, (ii) are not merely the personal covenants of the Declarant, and (iii) shall inure to the benefit of and shall be enforceable by KEDFA, its successors and assigns, for a term of twenty (20) years from the date this Declaration is recorded, and shall automatically renew for a like twenty (20) year period unless amended in accordance with the provisions of Paragraph 3 hereinbelow. Each contract, deed or other instrument executed in connection with the conveyance of all or any portion of the Property shall expressly provide that such conveyance is subject to this Declaration during the term hereof; provided, however, that the covenants contained herein shall survive and be effective regardless of whether any such contract, deed or other instrument provides that such conveyance is subject to this Declaration.

3. Amendment of Declaration. KEDFA may amend this Declaration at any time during the initial term hereof following the recording hereof if KEDFA determines, in its sole discretion, that such amendment is necessary or desirable in order to effect, complete, perfect or otherwise continue and preserve the obligations of the Declarant under this Declaration and preserve the Property for use for Industrial Development Purposes, and Declarant hereby agrees to execute any such amendment pursuant to Paragraph 5(b) hereinbelow. After the initial term has run, Declarant and/or its successors and assigns may amend these restrictions in any manner deemed necessary by the affirmative vote of the holder(s) of a majority of the acreage of the Property.

4. Representations and Warranties. The Declarant hereby represents, covenants and warrants to KEDFA as follows:

(a) The execution and performance of this Declaration by the Declarant (i) will not and does not violate any provision of law, rule or regulation or any order of any court or other agency or governmental body, (ii) will not and does not violate any provision of any indenture, agreement, mortgage, mortgage note or other instrument to which the Declarant is a party or by which it or the Property is bound, and (iii) will not and does not result in the creation or imposition of any prohibited encumbrance of any kind or nature; and

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(b) As of the date hereof, neither the Declarant nor any other person, corporation, partnership, trustee or other legal entity is using the Property for any purpose other than for an Industrial Development Purpose.

5. Additional Covenants of Declarant. The Declarant hereby further covenants and agrees in favor of KEDFA as follows:

(a) The Declarant will not knowingly take or permit any action that would result in a violation of this Declaration; and

(b) The Declarant will at any time upon request by KEDFA make, execute and deliver or cause to be made, executed and delivered in favor of KEDFA any and all other further instruments, certificates and other documents as may, in the sole discretion of KEDFA, be necessary or desirable in order to effect, complete, perfect or otherwise continue and preserve the obligations of the Declarant under this Declaration, including without limitation any amendment of this Declaration; and

(c) Declarant further acknowledges and agrees that the proceeds of the Grant are sufficient consideration for the covenants and agreements made by the Declarant herein, (iii) acknowledges that KEDFA is specifically relying upon the covenants and agreements of the Declarant as set forth in this Declaration in agreeing to make the Grant, and (iv) acknowledges that without the covenants and agreements of the Declarant as set forth in this Declaration, KEDFA would not have made the Grant described hereinabove.

6. Enforcement of Covenants and Restrictions. THE DECLARANT HEREBY AGREES AND ACKNOWLEDGES THAT FOR A PERIOD OF TWENTY (20) YEARS FROM THE DATE OF RECORDING OF THIS DECLARATION, (i) KEDFA SHALL BE ENTITLED, IN ADDITION TO ALL OTHER REMEDIES PROVIDED BY LAW OR IN EQUITY, TO ENFORCE SPECIFIC PERFORMANCE OF THE RESPECTIVE OBLIGATIONS OF THE DECLARANT UNDER THIS DECLARATION IN A STATE COURT OF COMPETENT JURISDICTION, AND (ii) THE BENEFICIARIES OF THE OBLIGATIONS HEREUNDER CANNOT BE ADEQUATELY COMPENSATED BY MONETARY DAMAGES IN THE EVENT OF ANY DEFAULT HEREUNDER. THE DECLARANT HEREBY AGREES THAT IT SHALL NOTIFY KEDFA UPON ANY VIOLATION OF THIS DECLARATION WHICH OCCURS OR IS PERCEIVED TO HAVE OCCURRED WITHIN SAID TWENTY (20) YEAR PERIOD, AND FURTHER AGREES THAT DURING SAID PERIOD KEDFA ALONE SHALL HAVE THE RIGHT TO DETERMINE, IN ITS SOLE DISCRETION, IF ANY SUCH VIOLATION HAS OCCURRED, OR TO ENFORCE ANY PROVISION HEREOF.

7. Miscellaneous.

(a) Headings. The section headings set forth in this Declaration are for convenience of reference only, and the words contained therein shall in no way be held to explain, modify, amplify or aid in the interpretation, construction or meaning of the provisions of this Declaration.

(b) Partial Invalidity. If any term or provision of this Declaration, or the application thereof to any person or circumstances shall, to any extent, be determined to be invalid or unenforceable by a court of competent jurisdiction, the remainder of this Declaration shall not be affected thereby, and each of the remaining provisions of this Declaration shall be valid and enforceable to the fullest extent permitted by applicable laws.

(c) Modification. This Declaration sets forth the entire understanding of the parties hereto with respect to the subject matter hereof, supersedes all existing agreements among them concerning the subject matter hereof, and may be amended only in accordance with Paragraph 3 hereinabove.

(d) Time of Essence. Time is of the essence in the performance of each of the terms and conditions of this Declaration.

(e) Governing Law. This Agreement shall be governed, construed and interpreted under the laws of the Commonwealth of Kentucky.


(f) Notices. All notices to be given pursuant to this Declaration shall be in writing and shall be deemed given when mailed by certified or registered mail, return receipt requested, to the parties at the addresses set forth in the preamble hereof, or to such other address as any of the parties hereto may from time to time designate in accordance with the terms of this paragraph.

(g) Survival of Obligations. The obligations of the Declarant as set forth herein and in the Grant shall survive the disbursement of the Grant.

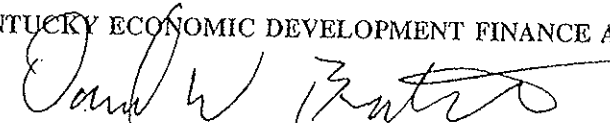
(h) Successors and Assigns. This Declaration shall inure to the benefit of, and shall be binding upon, the Declarant and KEDFA, and their respective successors and assigns.

IN WITNESS WHEREOF, the Declarant and KEDFA have executed this Declaration of Covenants, Conditions and Restrictions as of the respective dates set forth below.

PERRY, HARLAN, LESLIE, BREATHITT REGIONAL INDUSTRIAL
AUTHORITY, INC.

By: 
ED HARRIS, Chairman

KENTUCKY ECONOMIC DEVELOPMENT FINANCE AUTHORITY

By: 
DAVID W. BRATCHER, Director
Grant Programs Division

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COMMONWEALTH OF KENTUCKY)
COUNTY OF Perry) SS:
)

The foregoing instrument was signed, sworn to and acknowledged before me on this the 7th day of October, 1998, by Ed Harris in his capacity as Chairman of the Perry, Harlan, Leslie, Breathitt Regional Industrial Authority, Inc., a Kentucky non-profit, non-stock corporation, for and on behalf of said corporation.

Jeffrey A. Zolner
NOTARY PUBLIC, STATE AT LARGE, KY

My Commission Expires: 11-29-98

COMMONWEALTH OF KENTUCKY)
COUNTY OF FRANKLIN) SS:
)

The foregoing instrument was signed, sworn to and acknowledged before me on this the 6th day of October, 1998, by David W. Bratcher in his capacity as Director, Grant Programs Division, Kentucky Economic Development Finance Authority, a governmental agency of the Commonwealth of Kentucky, for and on behalf of said governmental agency.

Kathleen H. Mucci
NOTARY PUBLIC, STATE AT LARGE, KY

My Commission Expires: 10/19/2000

THIS INSTRUMENT PREPARED BY:

McBRAYER, McGINNIS, LESLIE & KIRKLAND, PLLC

By: James H. Frazier III
JAMES H. FRAZIER, III
163 W. Short Street, Suite 300
Lexington, KY 40507
(606) 231-8780

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EXHIBIT A

The property which is the subject of the Declaration of Covenants, Conditions and Restrictions is more particularly bounded and described as follows:

Unless stated otherwise, monuments referred to as iron pin w/cap is a set 5/8" x 24" epoxy coated rebar with orange plastic cap stamped "Forrester Hamilton RLS 2736," typically projecting 2" above the ground. Monuments referred to as a 3" aluminum cap set in a concrete monument is a 3" aluminum cap embedded in a 4" x 24" concrete monument stamped "Leo Miller & Assoc., Leo Miller PLS 1904, Do Not Destroy, Boundary Corner," typically projecting approximately 2" above ground. All bearings and coordinates stated herein are based on the Kentucky State Plane Coordinate System South Zone, Datum 1927 as established by Grantor.

PARCEL #1

Beginning on an iron pin w/cap #239, found on the south edge of the road leading to the subject property, said point is a common corner to Grantor (D.B. 208, pg. 266; M.B. 28, pg. 337), Ky May Inc. (D.B. 255, pg. 563) and Trus Joist MacMillan (D.B. 243, pg. 726); thence with said road and the north line of Ky May Inc. S 83°49'33" W 483.81' to an iron pin w/cap #2419, found; thence S 86°48'34" W 182.28' to an iron pin w/cap #2419, found; thence S 64°46'09" W 151.99' to an iron pin w/cap #2419, found; thence leaving the road and continuing with the Ky May Inc. property S 17°47'27" W 264.43' to an iron pin w/cap #2419, found; thence N 84°41'45" E 725.58' to an iron pin w/cap #2419, found in the east line of Trus Joist MacMillan; thence with said Trus Joist MacMillan property S 27°00'22" W 1221.38' to an iron pin w/cap #2419, found, the south east corner of Leslie Wood Products (D.B. 254, pg. 784); thence with Leslie Wood Products property N 62°58'26" W 613.42' to an iron pin w/cap #2736, set; thence S 27°02'07" W 425.33' to an iron pin w/cap #2419, found; thence S 01°58'18" E 111.43' to an iron pin w/cap #2419, found; thence S 51°59'49" E 96.59' to an iron pin w/cap #2736, set in the west line of Trus Joist MacMillan; thence, severing the land of the Grantor, S 50°31'13" W, 140.99' to an iron pin w/cap #2736; set on the edge of a fill; thence, with the edge of said fill S 78°33'02" W 161.96' to an iron pin w/cap #2736, set thence; S 53°32'52" W 334.21' to an iron pin w/cap #2736 set; thence, S 81°25'08" W 232.96' to an iron pin w/cap #2736 set; thence S 06°24'13" W 376.66' to an iron pin w/cap #2736 set; thence S 10°56'05" E 149.77' to an iron pin w/cap #2736 set; thence S 48°29'31" W 237.17' to an iron pin w/cap #2736 set; thence, S 00°55'39" W 561.60' to an iron pin w/cap #2736 set in the line between Grantor's tracts #PE157 and #PE94; thence with the line between tracts #PE157 and #PE94, thence S 52°09'06" W 45.62' to an iron pin w/cap #2736, set; thence severing tract #PE94 N 79°42'13" W 1704.62' to an iron pin w/cap #2736, set; thence N 83°10'53" W 948.64' to an iron pin w/cap #2736, set in the west line of tract #PE94 and the east line of Mountain Properties Inc. (D.B. 257, pg. 210); thence with Mountain Properties Inc. east line N 06°51'34" E 208.18'

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to an iron pin w/cap #2736, set; thence N 02°18'53" W 151.75' to an iron pin w/cap #2736, set at the base of a backfill slope; thence leaving the Mountain Properties Inc. property and severing the lands of the Grantor along the base of said backfill slope N 57°51'51" E 284.30' to an iron pin w/cap #2736, set; thence N 51°33'04" E 476.63' to an iron pin w/cap #2736, set; thence N 08°26'24" E 178.02' to an iron pin w/cap #2736, set; thence N 08°55'32" W 210.45' to an iron pin w/cap #2736, set in the line between tracts #PE94 and #PE95; thence continuing along the toe of the backfill slope N 11°57'36" W 97.79' to an iron pin w/cap #2736, set; thence N 26°40'09" W 168.84' to an iron pin w/cap #2736, set; thence N 76°06'30" W 244.44' to an iron pin w/cap #2736, set; thence N 29°37'22" W 249.79' to an iron pin w/cap #2736, set at the base of a highwall; thence with said highwall N 02°14'16" W 155.38' to an iron pin w/cap #2736 set; thence N 07°10'21" E 276.24' to a 3" aluminum cap set in a concrete monument at the base of a highwall; thence N 68°47'39" E 317.77' to an iron pin w/cap #2736, set at the base of a backfill slope; thence with the base of said slope S 83°30'34" E 279.77' to an iron pin w/cap #2736, set; thence N 47°53'46" E 241.90' to an iron pin w/cap #2736, set; thence N 66°35'26" E 272.61' to a 3" aluminum cap set in a concrete monument on the top edge of a fill; thence with the edge of said fill N 34°16'12" W 481.98' to an iron pin w/cap #2736, set in the east line of Mountain Properties Inc. et. al. property; thence with said property and the west line of tract #PE95 N 39°21'01" E 170.16' to an iron pin w/cap #2736, set; N 45°51'23" E 287.46' to an iron pin w/cap #2736, set at the southwest corner of tract #PE255; thence continuing with tract #PE255 and Mountain Properties Inc. N 23°36'03" E 117.51' to an iron pin w/cap #2736, set; thence N 64°45'45" E 172.18' to an iron pin w/cap #2736, set; thence N 53°06'04" E 324.67' to an iron pin w/cap #2736, set; thence N 62°51'46" E 136.45' to an iron pin w/cap #2736, set; thence N 67°47'02" E 89.79' to an iron pin w/cap #2736, set; thence N 16°02'07" E 106.92' to an iron pin w/cap #2736, set, the southwest corner of another Mountain Properties Inc. Tract #3; thence with said property S 73°35'39" E 103.31' to an iron pin w/cap #2736, set; thence S 78°21'12" E 230.06' to an iron pin w/cap #2736, set; thence S 77°01'03" E 140.03' to an iron pin w/cap #2736, set; thence S 73°20'38" E 137.74' to an iron pin w/cap #2736, set; thence S 65°14'44" E 273.51' to an iron pin w/cap #2736, set; thence N 03°11'24" E 46.20' to an iron pin w/cap #2736, set; thence N 35°42'21" E 197.80' to an iron pin w/cap #2736, set; thence N 18°41'36" E 131.94' to an iron pin w/cap #2736, set; thence S 83°11'45" E 98.81' to an iron pin w/cap #2736, set; thence N 78°46'12" E 131.76' to an iron pin w/cap #2736, set; thence S 71°40'26" E 98.82' to an iron pin w/cap #2736, set; thence S 50°38'15" E 98.84' to an iron pin w/cap #2736, set; thence S 74°10'43" E 269.49' to an iron pin w/cap #2736, set; thence S 58°08'59" E 219.62' to an iron pin w/cap #2736 set; thence S 69°20'11" E 182.66' to an iron pin w/cap #2736, set; thence S 53°08'29" E 329.46' to an iron pin w/cap #2736, set; thence N 64°44'43" E 131.78' to an iron pin w/cap #2736, set; thence N 86°51'31" E 190.90' to an iron pin w/cap #2736, set; thence N 84°19'49" E 1019.42' to an iron pin with a 1" aluminum cap stamped "Interstate Coal", found, a common corner to Grantor, Mountain Properties Inc. and the Napier Heirs (D.B. 174, pg. 747; D.B. 174, pg. 742); thence crossing the road with the Napier Heirs property S 06°24'26" W 49.73' to an iron pin w/cap #239, found in the

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north line of Trus Joist MacMillan; thence with said property S 84°41'40"W 526.19' to the point of beginning and containing 11,423,852.16 square feet or 262.2556 acres.

PARCEL #2

Beginning on an iron pin w/1" aluminum cap stamped "Interstate Coal", found; said point is corner #00 of Grantor tract #PE165 (D.B. 208, pg. 266; M.B. 28, pg. 337), the northeast corner of Mountain Properties Inc. (D.B. 257, pg. 210) and in the west line of the Napier Heirs property (D.B. 174, pg. 747; D.B. 174, pg. 742); thence with a common line between Grantor and Mountain Properties Inc. N 88°13'16" W 129.52' to an iron pin w/cap #2736, set; thence N 62°17'32" W 372.57' to an iron pin w/cap #2736, set; thence N 73°37'32" W 256.82' to an iron pin w/cap #2736, set; thence N 71°17'32" W 132.01' to an iron pin w/cap #2736, set; thence S 82°12'46" W 171.66' to an iron pin w/cap #2736, set; thence N 50°47'26" W 139.97' to an iron pin w/cap #2736, set; thence N 64°47'32" W 197.99' to an iron pin w/cap #2736, set; thence S 00°15'45" W 95.56' to an iron pin w/cap #2736, set; thence S 82°12'46" W 82.53' to an iron pin w/cap #2736, set; thence S 75°42'55" W 66.03' to an iron pin w/cap #2736, set; thence N 88°47'23" W 66.02' to an iron pin w/cap #2736, set; thence S 71°43'01" W 165.07' to an iron pin w/cap #2736, set; thence S 64°13'15" W 115.56' to an iron pin w/cap #2736, set; thence N 88°17'24" W 132.03' to an iron pin w/cap #2736, set; thence S 87°02'41" W 169.35' to an iron pin w/cap #2736, set; thence N 63°37'32" W 235.69' to an iron pin w/cap #2736, set; thence N 68°54'43" W 132.55' to an iron pin w/cap #2736, set; thence S 59°45'19" W 98.04' to an iron pin w/cap #2736, set; thence S 57°50'22" W 241.60' to an iron pin w/cap #2736, set; thence S 66°05'11" W 352.91' to an iron pin w/cap #2736, set; thence S 83°45'00" W 156.06' to an iron pin w/cap #2736, set; thence S 79°55'01" W 141.51' to an iron pin w/cap #2736, set; at the northwest corner of Mountain Properties Inc., corner #20 of Grantor tract #PE165, and in the east line of another Mountain Properties Inc. tract (D.B. 257, pg. 210); thence with a common line between said Mountain Properties Inc. second tract and Grantor tract #PE165 N 33°48'21" W 319.24' to an iron pin w/cap #2736, set; thence N 46°39'05" W 255.55' to an iron pin w/cap #2736, set; thence N 46°09'03" W 311.98' to an iron pin w/cap #2736, set; thence N 07°23'31" E 359.21' to an iron pin w/cap #2736, set; thence N 23°24'44" E 163.46' to an iron pin w/cap #2736, set; thence N 37°30'07" E 265.50' to an iron pin w/cap #2736, set; thence N 08°36'54" W 142.52' to an iron pin w/cap #2736, set; thence N 19°37'40" W 127.19' to an iron pin w/cap #2736, set; thence N 17°53'09" W 135.67' to an iron pin w/cap #2736, set; a common corner to Mountain Properties Inc., Grantor the Floyd Mullins Heirs (D.B. 124, pg. 293), and V.G. Combs (D.B. 130, pg. 7; D.B. 176, pg. 636); thence with a common line between said Combs property and Grantor tract #PE165 N 54°40'31" E 148.43' to an iron pin w/cap #2736, set; thence N 44°30'11" E 365.78' to an iron pin w/cap #2736, set; thence N 15°19'15" E 182.16' to an iron pin w/cap #2736, set; thence N 39°00'01" E 158.21' to an iron pin w/cap #2736, set; thence N 49°50'34" E 286.82' to an iron pin w/cap #2736, set; thence N 59°55'09" E 139.96' to an iron pin w/cap #2736, set; thence N 31°41'11" E 119.71' to an iron pin w/cap #2736, set;

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thence N 27°25'16" E 184.15' to an iron pin w/cap #2736, set; thence leaving said lines and severing Grantor tract #PE165 along the approximate top edge of a fill S 68°57'19" E 128.13' to a 3" aluminum disk set in the top of a 3" concrete monument; thence continuing with the approximate top edge of the fill S 44°58'32" E 267.95' to an iron pin w/cap #2736, set; thence S 14°58'04" E 268.06' to an iron pin w/cap #2736, set; thence S 20°34'58" E 106.68' to an iron pin w/cap #2736, set; thence S 43°12'32" E 232.35' to an iron pin w/cap #2736, set; thence S 18°15'10" E 471.75' to an iron pin w/cap #2736, set; thence S 31°12'05" E 162.80' to an iron pin w/cap #2736, set; thence S 43°05'03" E 218.23' to an iron pin w/cap #2736, set; thence S 55°17'46" E 364.24' to an iron pin w/cap #2736, set; thence S 65°28'14" E 325.96' to a 3" aluminum disk set in the top of a 3" concrete monument on the approximate edge of the fill thence S 72°47'55" E 325.32' to an iron pin w/cap #2736, set; thence S 63°38'02" E 103.95' to an iron pin w/cap #2736, set; thence S 17°43'54" W 171.04' to an iron pin w/cap #2736, set; thence S 32°59'59" E 187.30' to an iron pin w/cap #2736, set; thence N 79°41'43" E 117.96' to an iron pin w/cap #2736, set; thence S 28°50'55" E 337.26' to a 3" aluminum disk set in the top of a 3" concrete monument on the approximate edge of the fill thence S 74°44'53" E 496.79' to a 3/8" rebar (no cap), found, said point is corner #43 of Grantor tract #PE165 and is in the west line of the Napier Heirs; thence with a common line between Grantor tract #PE165 and the Napier Heirs S 13°49'27" W 217.82' to the point of beginning and containing 5,181,165.60 sq. ft. or 118.9432 acres by survey.

PARCEL #3

Beginning on an iron pin w/1" aluminum disk marked "Interstate Coal," found on the north side of the road leading to the subject property and the Ky May Inc. Property (D.B. 257, pg. 210). Said point is the southeast corner of the subject property and corner #00 of ANR Coal Company, LLC. (D.B. 208, pg. 266; M.B. 28, pg. 337) Tract #PE157 and in the west line of the Napier Heirs (D.B. 174, pg. 742 & 747). Thence with said road and ANR Coal Company, LLC. Tract #PE157 S 84° 19' 49" W 1019.42' to an iron pin w/cap #2736, set; thence S 86° 51' 31" W 190.90' to an iron pin w/cap #2736, set; thence S 64° 44' 43" W 131.78' to an iron pin w/cap #2736, set; thence leaving the road and continuing with ANR Coal Company, LLC. Tract #PE255 N 53° 08' 29" W 329.46' to an iron pin w/cap #2736, set; thence N 69° 20' 11" W 182.66' to an iron pin w/cap #2736, set; thence N 58° 08' 59" W 219.62' to an iron pin w/cap #2736, set; thence N 74° 10' 43" W 269.49' to an iron pin w/cap #2736, set; thence N 50° 38' 15" W 98.84' to an iron pin w/cap #2736, set; thence N 71° 40' 26" W 98.82' to an iron pin w/cap #2736, set; thence S 78° 46' 12" W 131.76' to an iron pin w/cap #2736, set; thence N 83° 11' 45" W 98.81' to an iron pin w/cap #2736, set; thence S 18° 41' 36" W 131.94' to an iron pin w/cap #2736, set; thence S 35° 42' 21" W 197.80' to an iron pin w/cap #2736, set; thence S 03° 11' 24" W 46.20' to an iron pin w/cap #2736, set; thence N 65° 14' 44" W 273.51' to an iron pin w/cap #2736, set; thence N 73° 20' 38" W 137.74' to an iron pin w/cap #2736, set; thence N 77° 01' 03" W 140.03' to an iron pin w/cap #2736, set; thence N 78°

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21' 12" W 230.06' to an iron pin w/cap #2736, set; thence N 73° 35' 39" W 103.31' to an iron pin w/cap #2736, set; corner #8 of Tract #PE255 and in the east line of another Mountain Properties, Inc. Tract (D.B. 257, PG. 210); thence with Mountain Properties east line N 05° 10' 42" E 399.92' to an iron pin w/cap #2736, set; thence N 11° 30' 01" E 181.96' to an iron pin w/cap #2736, set; corner #20 of Tract #PE165; thence leaving Mountain Properties, Inc. line and with ANR Coal Company, LLC. Tract #PE165 N 79° 55' 01" E 141.51' to an iron pin w/cap #2736, set; thence N 83° 45' 00" E 156.06' to an iron w/cap #2736, set; thence N 66° 05' 11" E 352.91' to an iron pin w/cap #2736, set; thence N 57° 50' 22" E 241.60' to an iron pin w/cap #2736, set; thence N 59° 45' 19" E 98.04' to an iron pin w/cap #2736, set; thence S 68° 54' 43" E 132.55' to an iron pin w/cap #2736, set; thence S 63° 37' 32" E 235.69' to an iron pin w/cap #2736, set; thence N 87° 02' 41" E 169.35' to an iron pin w/cap #2736, set; thence S 88° 17' 24" E 132.03' to an iron pin w/cap #2736, set; thence N 64° 13' 15" E 115.56' to an iron pin w/cap #2736, set; thence N 71° 43' 01" E 165.07' to an iron pin w/cap #2736, set; thence S 88° 47' 23" E 66.02' to an iron pin w/cap #2736, set; thence N 75° 42' 55" E 66.03' to an iron pin w/cap #2736, set; thence N 82° 12' 46" E 82.53' to an iron pin w/cap #2736, set; thence N 00° 15' 45" E 95.56' to an iron pin w/cap #2736, set; thence S 64° 47' 32" E 197.99' to an iron pin w/cap #2736, set; thence S 50° 47' 26" E 139.97' to an iron pin w/cap #2736, set; thence N 82° 12' 46" E 171.66' to an iron pin w/cap #2736, set; thence S 71° 17' 32" E 132.01' to an iron pin w/cap #2736, set; thence S 73° 37' 32" E 256.82' to an iron pin w/cap #2736, set; thence S 62° 17' 32" E 372.57' to an iron pin w/cap #2736, set; thence S 88° 13' 16" E 129.52' to an iron pin w/1" aluminum cap stamped "Interstate Coal", found in the west line of the Napier Heirs property; thence with said Napier property S 21° 13' 52" E 304.94' to an iron pin w/1" aluminum cap stamped "Interstate Coal", found; thence S 10° 39' 49" E 459.63' to an iron pin w/1" aluminum cap stamped "Interstate Coal" found; thence S 13° 44' 47" E 135.47' to the point of beginning and containing 3,401,701.3 sq. ft. or 78.0923 acres by survey.

SOURCE OF TITLE: Being the same property acquired by the Declarant from Coastal Coal Company, LLC by deed dated September 30, 1998 and recorded at Deed Book 271, page 425, and from Mountain Properties, Inc. by deed dated September 30, 1998 and recorded at Deed Book 271, page 419, all of record in the Perry County Clerk's Office.

MANETDRIVECLIENTS\PERY\INDV\DECLARTN.EXH

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STATE OF KENTUCKY
COUNTY OF PERRY

I, Haven King, Clerk of the State and County aforesaid do certify
that the foregoing instrument was lodged for record in my office and it
the foregoing and this my certificate have been duly recorded in my office
in Deed Book No. 271 Page 439.

Witness my hand this 8th day of October 1998.

HAVEN KING, CLERK
PERRY COUNTY

BY Barbara Sue Franks D.C.

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AC.I.N

AN.R COAL CO. INC

P.R 266-277

THIS DEED, made this 18th day of April, 1986, by and between ANR COAL COMPANY, a Delaware corporation ("Grantor"), and APACHE MINING COMPANY D/B/A ENTERPRISE COAL COMPANY, a Kentucky corporation, whose mailing address is P. O. Box 1871, Roanoke, Virginia 24008 ("Grantee").

WITNESSETH:

FOR AND IN CONSIDERATION of the sum of TEN (\$10.00) DOLLARS cash and other good and valuable consideration paid by Grantee to Grantor, the receipt of which is hereby acknowledged, Grantor hath bargained and sold and doth by these presents grant and convey, with General Warranty and English Covenants of Title, unto Grantee, all those certain properties more particularly described as follows:

1. The fee, coal, mineral, surface and other estates or interests, as defined by the hereinafter mentioned deeds, in and to those certain tracts or parcels of real property, situate in the County of Perry, State of Kentucky, described by reference to deeds of record in the Clerk's Office of the Circuit Court of said County on a schedule showing the names of Grantors and Grantees, deed dates and deed books and page numbers, less out-conveyances similarly shown, said schedule being denominated "Schedule A Perry County, Kentucky, for inclusion in deed of April 18, 1986, by and between ANR Coal Company and Apache Mining Company d/b/a Enterprise Coal Company" and being attached to and by this reference made a part of this deed.
2. All of the right, title, interest, estate and claims of Grantor in and to real estate, coal and other minerals and mining and extraction rights, of whatsoever kind and nature and however acquired, located in the County of Perry, State of Kentucky, including but not limited to leasehold estates and the property conveyed by the deed dated May 1, 1979, between Virginia Iron, Coal and Coke Company, a Virginia corporation, as Grantor, and VICC Land Company, a Delaware corporation, whose corporate existence was terminated through merger into ANR Coal Company, a Delaware corporation, as Grantee, of record in Deed Book 178, page 773, in the Clerk's Office of the Circuit Court of Perry County, Kentucky. The aforesaid merger of VICC Land Company into ANR Coal Company pursuant to the Certificate of Merger Between VICC Land Company and ANR Coal Company dated September 1, 1985, as filed in the Office of Secretary of State in the State of Delaware on February 26, 1986, is attached hereto and made a part hereof as Schedule B.
3. All interests related to or appurtenant to any of the foregoing real property, including but not limited to, all improvements thereon, fixtures attached thereto, mining rights and privileges, surface rights, leases, licenses, agreements, easements, rights of way and water, timber, wheelage and underground haul-through rights.

TO HAVE AND TO HOLD unto Grantee, its successors and assigns forever.

The properties and rights conveyed by this deed are subject to the leasehold rights of Lessees (other than Grantor) in existence prior to the date hereof.

ANR COAL COMPANY

By: James L. Van Lanen
President

ATTEST:

By: Robert H. Warnick Jr.
Vice President - Operations

STATE OF VIRGINIA

CITY OF ROANOKE, To-Wit:

I, Sandra S. McAnally, a Notary Public of said City do hereby certify that James L. Van Lanen, President, and Robert H. Warnick, Jr., Vice President - Operations, who signed the writing above, bearing date the 18th day of April, 1986, for ANR Coal Company, a Delaware corporation, have this day in my said City, before me, acknowledged the said writing to be the act and deed of said corporation.

Given under my hand and notarial seal this 18th day of April, 1986.

My commission expires Februray 6, 1988.

Sandra S. McAnally
Notary Public

I hereby certify that the foregoing instrument was prepared by Kevin L. Yocum, Attorney, P. O. Box 1871, Roanoke, Virginia 24008.

Kevin L. Yocum
Kevin L. Yocum

Date: April 18, 1986

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SCHEDULE A
PERRY COUNTY, KENTUCKY

FOR INCLUSION IN DEED OF APRIL 18, 1986 BY AND BETWEEN
ANR COAL COMPANY AND APACHE MINING COMPANY d/b/a
ENTERPRISE COAL COMPANY

NOTE: VICC = VIRGINIA IRON, COAL AND COKE COMPANY
CCC = COLONY COAL AND COKE COMPANY
VLC = VICC LAND COMPANY

GRANTOR	GRANTEE	DEED DATE	IN-CONVEYANCES DEED BOOK/PAGE	OUT-CONVEYANCES DEED BOOK/PAGE
CCC	VICC	03-22-39	72/223	
VICC	VA LAND DEV CO	10-31-69	145/546	
	WHOSE NAME WAS CHANGED TO VICC			
VICC	VLC	05-01-79	178/773	
VICC	KY W VA GAS CO	04-17-39		72/311
KRCC	VICC	02-05-41	76/185	
VICC	W.J. BAYS	07-16-41		76/526
ROBERT G. VAN VRANKIN	VICC	10-03-44	83/180	
R.G. VAN VRANKIN	VICC	09-20-51	103/191	
AND				
H.A. SPAULDING				
LONNIE DUFF	VLC	07-18-84	200/141	
ET UX				
VICC	EMERY E. ENGLE	01-01-40		74/85
KRCC	VICC	10-01-48	96/619	
VICC	KY DEPT OF HIGHWAYS	08-21-67		135/267
VLC	BOB BUSH ET UX	11-14-84		201/691
VLC	JESSE BUSH ET UX	12-14-84		202/24
VICC	KY. POWER CO.	03-16-77		141/198
E.L. CAMPBELL	VICC	11-23-56	113/91	
VICTORNIA	VICC	09-12-58	116/238	
DEVERA BACK				
CLARENCE MILLER	VICC	06-18-59	118/535	
CLARENCE MILLER	VICC	03-14-60	120/24	
CLYDE DAVIDSON	VICC	05-28-68	138/579	
VICC	POLLY CAMPBELL	03-27-41		76/184
VICC	CAMPBELL BEND	12-03-63		127/482
	REGULAR BAPTIST CHURCH			

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GRANTOR	GRANTEE	DEED DATE	IN-CONVEYANCES DEED BOOK/PAGE	OUT-CONVEYANCES DEED BOOK/PAGE
ALIMAR COAL CO	VICC	01-03-56	112/465	
PERRY COUNTY BD	VICC	07-06-53	107/598	
OF EDUCATION				
BOYD CAMPBELL	VICC	11-14-42	79/70	
BOYD CAMPBELL	VICC	03-27-43	79/486	
VICC	HAZARD COAL CO	06-09-59		118/526
CCC	WILLIAM ELLISON	08-27-23		CONTRACT BOOK 7/58
LYNN LEE INC.	VLC	10-19-83	197/134	
VLC	HAZARD PERRY COUNTY AIRPORT BOARD	04-29-80		182/415
VLC	HAZARD PERRY COUNTY AIRPORT BOARD	04-29-80		182/406
VLC	HAZARD PERRY COUNTY AIRPORT BOARD	04-29-80		182/644
VLC	KY. POWER CO.	03-28-84		199/428
VICC	MARLOWE COAL CO.	10-03-55		111/122
KYCOGA LAND CO.	VICC	08-04-42	78/420	
VIRGIL EVERSOLE	VICC	08-25-43	80/501	
ET UX				
BLUE DIAMOND	VICC	08-23-60	72/223	
COAL COMPANY				
COM. OF KY.	VLC	06-19-81	187/293	
VICC	VLC	12-13-82	193/531	
VICC	JERRY T. MILLER	04-10-68		138/532
VICC	CHARLES E.	04-25-68		138/562
	SHIRLEY			
VICC	ARDELL CHAMPION	07-08-68		139/115
VICC	KY. POWER CO.	05-01-69		141/41
VLC	VICC	11-26-79		181/10
S.B. COMBS	VICC	10-26-50	101/322	
W.M. DAVIDSON	VICC	01-17-42	77/553	
ET AL				
JOHN DAVIDSON	VICC	01-23-42	77/556	
CHARLIE DAVIDSON	VICC	01-31-42	77/592	
MAUDE D. PRICE	VICC	03-02-42	78/111	
ELLEN D KERLEY	VICC	03-19-42	78/115	
STELLA D. BROF-	VICC	04-08-42	78/138	
FIT				
LOIS D. BARKER	VICC	03-28-42	78/141	
BETTY D. HOWARD	VICC	06-18-42	78/426	
HAZARD COAL CO	VICC	06-15-43	80/143	
VICC	HAZARD COAL CO	06-09-59		118/526
KENMONT COAL CO	VICC	12-05-55	111/286	
HENRY TINCHER	VICC	11-19-56	113/73	
VICC	KY W VA GAS CO	06-07-62		124/367

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GRANTOR	GRANTEE	DEED DATE	IN-CONVEYANCES DEED BOOK/PAGE	OUT-CONVEYANCES DEED BOOK/PAGE
VLC	VICC	05-25-79		181/22
VLC	KY. POWER CO.	01-16-82		R/W EASEMENT 141/275
KRCC	VICC	03-21-50	100/305	
VIRGIL EVERSOLE	VICC	08-25-43	80/501	
VICC	KRCC	03-21-50		100/305
VICC	KY. DEPT. OF HIGHWAYS	06-07-76		152/472
VICC	LONDON AND ED CLEMONS	10-10-56		113/110
VICC	H.A. SPAULDING	09-20-51		103/200
HELEN LEWIS	VICC	07-09-57	114/182	
VICC	DENVER AND LYLE PRATT	10-31-61		123/273
BOB BUSH ET UX	VLC	11-14-84	201/726	
JESSE BUSH	VLC	12-14-84	202/37	
JOSEPH NAPIER ET UX	VICC	39	73/354	
VICC	PERRY COUNTY	04-01-68		138/347
VICC	B.H. HOLLIDAY	09-04-69		143/220
VLC	LYNN LEE, INC.	07-20-83		197/117
VICC	JOHN E. WATTS	07-03-41		76/507
VICC	KRCC	10-01-48		96/612
VICC	U.S.A.	02-25-63		132/213
HAZARD COAL CO	VICC	12-31-43	81/301	
VLC	KRCC	08-18-83		
VICC	ALEX JUNIOR SINGLETON	03-14-42		78/618
VICC	TAULBEE BRASHEAR	04-28-42		78/217
VICC	ELIJAH COMBS	07-22-44		83/17
VICC	CLARENCE MILLER	06-18-59		118/532
VICC	CLAUDE CREECH	04-04-68		138/628
VICC	ED CLEMONS	04-28-69		140/445
VICC	I.H. BUCHANON	05-26-71		146/597
VICC	ED CLEMONS	08-09-71		147/386
VICC	D.K. NAPIER	02-25-72		149/165
VICC	WILLIE NAPIER	09-04-69		142/274
VICC	DEWEY GRIGSBY	08-09-71		147/368
FELIX STACY HEIRS	VICC	03-13-43	CIVIL ORDER BOOK 32/396	
VICC	COM. OF KY.	05-01-39		72/462
VICC	I.H. WILLIAMS	04-08-65		130/280
VICC	HARLEN DAVIDSON	07-03-69		142/11
VICC	FUGATE ENTER- TAINMENT CO, INC	07-19-83		195/753
RUTHERFORD BAKER	VICC	01-14-66	132/110	
JOHN WATTS HEIRS	VICC	06-21-46	88/297	
KRESCO, INC.	VICC	04-14-80	182/402	
LYNN LEE, INC.	VLC	10-19-83	197/126	

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GRANTOR	GRANTEE	DEED DATE	IN CONVEYANCES DEED BOOK/PAGE	OUT CONVEYANCES DEED BOOK/PAGE
GENEVA GUINN	VICC	12-06-46	91/463	
NATHANIEL WOOTON	VICC	11-01-49	98/456	
GREEN HOLLIDAY ET AL BY COMM.	VICC	04-22-69	140/472	
R. C. TYNE HEIRS	VICC	07-08-76	167/67	
HAZARD COAL CO	VICC	09-15-56	112/590	
VLC	VICC	05-25-79		181/18
VLC	VICC	05-25-79		181/14
VICC	COMM. OF KY.	03-09-76		152/385
VICC	BOYD MULLINS	10-13-61		125/251
VLC	VICC	03-24-82		190/496
VICC	JOHN CUMMINGS	12-18-67		137/548
HAZARD COAL CO	VICC	06-09-59	118/500	
VICC	KRCC	02-05-41		76/143
TOLBERT HOLIDAY ET AL	VICC	06-02-43	80/66	
JOHN SINGLETON	VICC	03-14-42	78/65	
FIRST NATIONAL	VICC	11-05-48	97/24	
EXCH. BANK OF ROANOKE, VA.				
SOPHIA COMBS ET AL	VICC	11-16-50	101/400	
VICC	CHESTER A. COMBS ET AL	03-22-43		81/163
VICC	OLLIE COMBS	10-25-44		83/33
VICC	ROOSEVELT COMBS	03-10-42		84/482
VICC	C.A. DIXON ETAL	12-02-43		81/156
VICC	C.A. DIXON ETAL	09-23-41		81/152
VICC	HAZARD COAL CO	06-15-43		80/122
VICC	GREEN TOLBERT ET AL	42		LIS PENDENS 2/411
VICC	GREEN TOLBERT ET AL	42		LIS PENDENS 2/401
VICC	KY. AND W. VA. POWER COMPANY	12-07-45		R/W EASEMENT 87/144
VICC	KY. AND W. VA. POWER COMPANY	07-25-41		R/W EASEMENT 76/561
VICC	KRCC	09-18-42		78/633
VICC	KY. W. VA. POWER CO	01-13-47		92/290
VICC	KY. W. VA. POWER CO	01-13-47		92/599
VICC	COMM. OF KY.	05-07-47		94A/373
VICC	KY. W. VA. POWER CO	05-03-50		100/627
VICC	KRCC	03-21-50		100/302
VICC	KY. W. VA. POWER CO	12-14-50		101/496
VICC	BARNEY W. BAKER	09-21-51		103/78
VICC	KY. W. VA. POWER CO	12-21-51		99/564A
VICC	KY. W. VA. POWER CO	07-30-52		99/554A
VICC	KY. W. VA. POWER CO	05-22-53		106/20-C
VICC	KY. W. VA. POWER CO	04-19-56		106/150-A4
VICC	LONDON AND ED CLEMONS	02-20-57		115/499
VICC	COMM. OF KY.	01-10-67		135/56

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GRANTOR	GRANTEE	DEED DATE	IN-CONVEYANCES DEED BOOK/PAGE	OUT-CONVEYANCES DEED BOOK/PAGE
VICC	COMM. OF KY.	01-09-67		135/50
VICC	COMM. OF KY.	12-29-66		135/46
VICC	COMM. OF KY.	12-29-66		135/43
VICC	HAZARD GAS CO.	05-03-67		136/556
VICC	KY. POWER CO.	07-29-66		106/422
VICC	COMM. OF KY.	01-09-68		135/372
VICC	COMM. OF KY.	01-10-68		135/379
VICC	COMM. OF KY.	01-11-68		135/384
VICC	COMM. OF KY.	01-12-68		135/386
VICC	COMM. OF KY.	01-12-68		135/389
VICC	COMM. OF KY.	02-15-68		135/399
VICC	ARNOLD BRANSON JR. ET AL	03-05-68		138/158
VICC	WILL RALEIGH	03-06-68		138/170
VICC	ALTON YOUNG	03-18-68		138/233
VICC	OVA TURNER	03-06-68		138/267
VICC	ARLIE COMBS	03-12-68		138/268
VICC	ARLIE COMBS	03-05-68		138/270
VICC	JOE CORNETT	03-08-68		138/314
VICC	EARL EDWARDS	03-05-68		138/315
VICC	HELEN COMBS	03-06-68		138/630
VICC	JAMES JENT	03-14-68		139/191
VICC	JAMES JENT	05-06-68		140/55
VICC	MELVIN JENT	03-06-68		142/267
VICC	OVA TURNER	03-11-68		147/547
VICC	KY.W.VA.POWER CO	09-22-71		148/190
VICC	KY.W.VA.POWER CO	09-22-71		148/188
VICC	PERRY COUNTY BOARD OF ED.	06-07-72		149/844
VICC	EARL EDWARDS			
VICC	KY.W.VA.GAS CO	05-02-72		149/882
VICC	OVA & BEATRICE TURNER	04-24-68		157/329
VICC	NICHOLAS B. BAKER	11-19-59		121/319
VICC	UNITED STATES OF AMERICA	08-07-62		124/527

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GRANTOR	GRANTEE	DEED DATE	IN-CONVEYANCES DEED BOOK/PAGE	OUT-CONVEYANCES DEED BOOK/PAGE
VLC	KY. POWER CO.	12-20-85		206/339
VLC	D. K. NAPIER	03-04-86		207/274
D. K. NAPIER	VLC	03-27-86	207/176	
E. L. CLEMONS	VLC	03-04-86	207/173	
. ADAMS ET AL	VLC	03-25-86	207/170	
LC	KEM COAL CO	04-10-86		

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SCHEDULE B

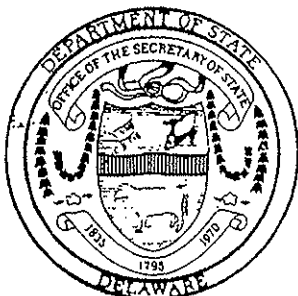
State of Delaware

PAGE 1

Office of Secretary of State

I, MICHAEL HARKINS, SECRETARY OF STATE OF THE STATE OF DELAWARE DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF MERGER OF "VICC LAND COMPANY" MERGING WITH AND INTO "ANR COAL COMPANY" UNDER THE NAME OF "ANR COAL COMPANY" AS RECEIVED AND FILED IN THIS OFFICE THE TWENTY-SIXTH DAY OF FEBRUARY, A.D. 1986, AT 9 O'CLOCK A.M.

+ | | | | | | | | |



B60570007

A handwritten signature of Michael Harkins in ink.
Michael Harkins, Secretary of State

AUTHENTICATION: 10767405

DATE: 03/20/1986

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CERTIFICATE OF MERGER

OF

VICC LAND COMPANY

INTO

ANR COAL COMPANY

* * * * *

The undersigned corporation

DOES HEREBY CERTIFY:

FIRST: That the name and state of incorporation of each of the constituent corporations of the merger is as follows:

<u>NAME</u>	<u>STATE OF INCORPORATION</u>
VICC Land Company	Delaware
ANR Coal Company	Delaware

SECOND: That a Plan of Merger between the parties to the merger has been approved, adopted, certified, executed and acknowledged by each of the constituent corporations in accordance with the requirements of subsection (c) of 251 of the General Corporation Law of the State of Delaware.

THIRD: The name of the surviving corporation of the merger is ANR Coal Company, a Delaware corporation.

FOURTH: That the Certificate of Incorporation of ANR Coal Company, a Delaware corporation, shall be the Certificate of Incorporation of the surviving corporation.

FIFTH: That the executed Plan of Merger is on file at the principal place of business of the surviving corporation. The address of said principal place of business is P. O. Box 1871, Roanoke, Virginia 24008.

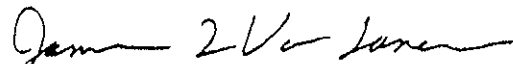
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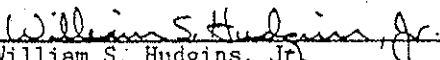
SIXTH: That a copy of the Plan of Merger will be furnished on request and without cost to any stockholder of any constituent corporation.

DATED: September 1, 1985.

ANR COAL COMPANY


James L. Van Lanen
President

ATTEST:


William S. Hudgins, Jr.
Vice President, General Counsel and
Assistant Secretary

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STATE OF KENTUCKY

COUNTY OF PERRY

I, Clarence Howard, County Clerk of the County and State aforesaid do
certify that the foregoing was lodged for record in my office on this day
and it the foregoing and this my certificate have been duly recorded in

Deed Book NO. 208 at Page 266.

Witness my hand this 17 day of June, 19 86.

CLARENCE HOWARD, CLERK
PERRY COUNTY.

\$.50 *tax*

BY: Lewis Conley D.C.

18

PAYNE NAPIER

P.P. 18-2F
20

THIS DEED OF CONVEYANCE made and entered into this 5th day of March, 1979, by and between SHERMAN ENGLE and VINA ENGLE, his wife, of Rt. 2, Box 503, Hazard, Perry County, Kentucky, parties of the first part and GEORGE R. ENGLE, of R. R. 2, Box 503, Hazard, Perry County, Kentucky, party of the second part,

W I T N E S S E T H:

That the parties of the first part for and in consideration of the love and affection first parties have for their son, the receipt and sufficiency of which is hereby acknowledged, have bargained and sold, and by these presents, do hereby bargain, sell and convey unto the said party of the second part, a certain tract or parcel of land, lying in Perry County, Kentucky, and described as follows:

Lying and being on the waters of Lost Creek, a tributary of Troublesome Creek of the North Fork of the Kentucky River and described as follows:

Beginning at the ditch line between two roads and Mart Gayheart's line; thence up the hill with Mart Gayheart's line three hundred and seventy (370) feet; thence straight around the hill one hundred and fifty (150) feet; thence back down the hill two hundred (200) feet to a culvert; thence down the hill to a ditch line; thence following the ditchline approximately three hundred (300) feet to the beginning.

Grantors expressly reserve unto themselves a certain roadway currently existing across the conveyed property to Lloyd and Sherman Engle's house. This reservation shall inure to the benefit of grantors, their heirs and assigns forever.

Grantors further reserve unto themselves the first right of refusal to buy the subject property in the event that grantee

should subsequently decide to sell said property.

Being a part of the same property conveyed by Luther Engle to the grantor herein by deed dated September 27, 1948, and of record in Deed Book 96 at page 610, records of the Perry County Court Clerk's Office.

To have and to hold said tract of land, with the appurtenances thereunto belonging unto the party of the second part, his heirs and assigns forever, with covenants of General Warranty.

In testimony whereof, the parties of the first part have hereunto subscribed their names on this the day and date aforesaid.

Sherman Engle
Vina Engle

STATE OF KENTUCKY

COUNTY OF PERRY

I, Sherry O. Pollard, a Notary in and for the County and State aforesaid, do certify that the foregoing Deed from Sherman Engle and Vina Engle, his wife, to George R. Engle, was this day produced to me, and duly acknowledged before me, in said County, by Sherman Engle and Vina Engle, his wife, parties thereto, to be their true act and deed.

Given under my hand this the 5th day of March, 1979.

Sherry O. Pollard
Notary Public, Kentucky,
State-at-Large

My commission expires: February 14, 1982.

STATE OF KENTUCKY

COUNTY OF PERRY

I, Earl M. Deaton, Clerk of the County Court of the County aforesaid, do certify that the foregoing Deed from Sherman Engle and Vina Engle, his wife, to George R. Engle, was, on the 14 day of March, 1979, lodged in my office for record, and that it, the foregoing, and this certificate, have been duly recorded in my office in Deed Book 178 at page 18.

WITNESS MY HAND, this the 14 day of March, 1979.

EARL M. DEATON, CLERK
PERRY COUNTY COURT

No Fee

By: Janice Mollie, D. C.

This instrument was prepared
by the undersigned attorney
of Hazard, Kentucky.

Kenneth S. Baker
KENNETH S. BAKER

Attorney-at-Law

P. O. Box 1096

Hazard, Kentucky 41701

SPECIAL WARRANTY DEED

THIS DEED OF CONVEYANCE made and entered into as of the 21st day of December, 1995 by and between **LESLIE RESOURCES, INC.**, a Kentucky corporation doing business at 120 Campbell Drive, Hazard, Kentucky 41701, hereinafter referred to as Grantor, and **MOUNTAIN PROPERTIES, INC.**, a Kentucky corporation, doing business at 120 Campbell Drive, Hazard, Kentucky 41701, hereinafter referred to as Grantee.

WITNESSETH: That for and in consideration of the sum of Ten Dollars (\$10.00), cash in hand paid, and other good and valuable consideration, the receipt of which is hereby acknowledged, Grantor does hereby grant, bargain, sell and convey unto Grantee, its successors and assigns, all of its right, title and interest in and to all of that certain property located in Perry County, Kentucky, and more particularly described as follows:

Being all of that certain property conveyed unto Grantor by deed from Leeco, Inc. dated December 20, 1995 and of record at Deed Book 255, Page 415, records of the Perry County Court Clerk, to which deed reference is hereby made for a more particular description of the property hereby conveyed.

PROVIDED, HOWEVER, there is excepted from the foregoing warranty and covenants of title and this conveyance is made subject to any easements and restrictions of record affecting said property, and taxes and assessments for the current year, which taxes and assessments and those of succeeding years, Grantee assumes and agrees to pay.

CERTIFICATE

The parties hereto do hereby certify, pursuant to KRS Chapter 382, that the fair market value of the property herein conveyed is \$2,178,528. We understand that falsification of the stated full estimated value is a Class D Felony, subject to one to five years imprisonment and fines up to \$10,000. The Grantee joins in this conveyance for the sole purpose of certifying the value of the above described property pursuant to KRS Chapter 382.

TO HAVE AND TO HOLD, with all appurtenances thereunto belonging, unto Grantee, its successors and assigns forever, with covenant of Special Warranty.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands this the day and year first above written.

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211

GRANTOR:

LESLIE RESOURCES, INC.

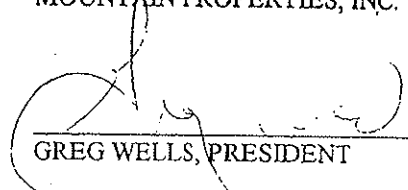
BY:


GREG WELLS, PRESIDENT

GRANTEE:

MOUNTAIN PROPERTIES, INC.

BY:



GREG WELLS, PRESIDENT

STATE OF KENTUCKY

COUNTY OF PERRY

The foregoing instrument was acknowledged to before me, and the foregoing Consideration Certificate was subscribed and sworn to before me by Greg Wells, known to me to be the President of Leslie Resources, Inc., on behalf of said corporation, on this the 21 day of December, 1995.

My Commission Expires:

4-9-96
NOTARY PUBLIC

STATE OF KENTUCKY

COUNTY OF PERRY

The foregoing Consideration Certificate was subscribed and sworn to before me on this the 21 day of December, 1995 by Greg Wells, known to me to be the President of Mountain Properties, Inc., on behalf of said corporation.

My Commission Expires:

4-9-96
NOTARY PUBLIC

Document Image

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STATE OF KENTUCKY

COUNTY OF PERRY

I, CLARENCE HOWARD, Clerk in and for the County and State aforesaid, do hereby
certify that the foregoing Special Warranty Deed and Consideration Certificate was duly lodged
for record in my office whereupon the same, together with this, my certificate, have been duly
recorded in Deed Book 257, Page 210.

Witness my hand this the 16th day of May, 1996.

CLARENCE HOWARD, CLERK
PERRY COUNTY COURT

No Tax

BY: *Lena Cross* D.C.

The foregoing instrument was
prepared by the undersigned
Attorney of Hazard, Kentucky:

GULLETT & COMBS

Ronald G. Combs

RONALD G. COMBS

P. O. Box 1039
Hazard, Kentucky 41702-1039
Telephone: (606) 439-1373

E:RGCI770PERRYCO.DED

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GENERAL WARRANTY DEED

THIS DEED OF CONVEYANCE made and entered into as of this the 15 day of May, 1996 by and between NELLIE AMBURGEY, single, of Box 13, Vicco, Kentucky 41773, hereinafter referred to as Grantor, and MOUNTAIN PROPERTIES, INC., a Kentucky corporation, with offices doing business at 1021 Tori Drive, Hazard, Kentucky 41701, hereinafter referred to as Grantee.

WITNESSETH: That for and in consideration of sum of Thirty Thousand Dollars (\$30,000), cash in hand paid, the receipt and sufficiency of which is hereby acknowledged, Grantor does hereby grant, bargain, sell and convey unto Grantee, its successors and assigns, that certain tract or parcel of property lying and being on Montgomery Creek of Carrs Fork of the North Fork of the Kentucky River in Perry County, Kentucky, and more particularly described as follows:

Lying and being in Perry County, Kentucky, on Montgomery Creek of Carrs Fork on the North Fork of the Kentucky River and bounded and described as follows, to-wit:

BEGINNING with the ninth line of a survey of said property and on a point binding with Samway Property, said beginning point being fifty feet in elevation below the lowest split of the Hazard 5A coal seam; thence running up the point with the meanders thereof S 44 W 93 feet; thence W 157 feet; thence S 51 W 177 feet; thence S 55 W 140 feet; thence S 70 W 170 feet; thence S 59 W 113 feet; S 65 W 312 feet; thence S 72 W 185 feet; thence S 71 W 155 feet; thence S 75 W 128 feet; thence S 35 W 135 feet; thence S 47 W 138 feet; thence S 61 W 131 feet binding on Washington Combs land; thence N 59 W 128 feet; thence N 71 W 73 feet; thence leaving Montgomery Creek with the ridge between Jent Fork and George's Branch S 10 W 102 feet; thence S 12 W 115 feet; thence S 11 W 118 feet; thence S 14 W 101 feet; thence S 3 E 97 feet; thence S 8 E 102 feet; thence leaving the ridge down the hill toward Jent Fork N 72 E 76 feet to a stake; thence N 76 E 130 feet to a poplar stump; thence S 71 E 172 feet; thence S 59 E 142 feet; thence S 69 E to a point that is fifty feet in elevation below the lowest split of the Hazard 5A coal seam; thence running Northeasterly and parallel with the meanders of the lowest split of the Hazard 5A coal seam, and fifty feet below said seam, to the point of beginning, containing approximately 10 acres, more or less.

Being a part of the same property conveyed unto Grantor by deed from Lillie Mae Amburgey, single, dated May 11, 1990 and of record at Deed Book 225, Page 678, records of the Perry County Court Clerk.

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CONSIDERATION CERTIFICATE

The parties hereto do hereby certify, pursuant to KRS Chapter 382, that the above stated consideration is the full consideration paid by Grantee to Grantor for the subject property. We understand that falsification of the stated value is a Class D Felony, subject to one to five years imprisonment and fines up to \$10,000. The Grantee joins in this conveyance for the sole purpose of certifying the value of the above described property pursuant to KRS Chapter 382.

TO HAVE AND TO HOLD, with all appurtenances thereunto belonging, unto Grantee, its successors and assigns forever, with covenant of General Warranty.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands this the day and year first above written.

GRANTOR:

Nellie Amburgey
NELLIE AMBURGEY

GRANTEE:

MOUNTAIN PROPERTIES, INC.

BY:

ITS:

STATE OF KENTUCKY

COUNTY OF PERRY

The foregoing general warranty deed was acknowledged to before me, and the foregoing consideration certificate was subscribed and sworn to before me this the 15 day of May, 1996 by Nellie Amburgey.

My Commission Expires: 8-5-96

Kare Baker
NOTARY PUBLIC

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STATE OF KENTUCKY

COUNTY OF PERRY

The foregoing consideration certificate was subscribed and sworn to before me this the 015 day of May, 1996 by Greg Wells, President of Mountain Properties, Inc., a Kentucky corporation, on behalf of said entity.

My Commission Expires: 8-5-96

Karl Baker
NOTARY PUBLIC

STATE OF KENTUCKY

COUNTY OF PERRY

I, CLARENCE HOWARD, Clerk of the County and State aforesaid, do hereby certify that the foregoing General Warranty Deed and Consideration Certificate was duly lodged for record in my office, whereupon the same, together with this, my certificate, have been duly recorded in Deed Book 257, Page 213.

Witness my hand this the 16th day of May, 1996.

CLARENCE HOWARD, CLERK
PERRY COUNTY COURT

\$30.00 Jay

BY: Lena Cross D.C.

The foregoing instrument was prepared by the undersigned attorney of Hazard, Kentucky:

GULLETT & COMBS

Ronald G. Combs
RONALD G. COMBS

P. O. Box 1039
Hazard, Kentucky 41702-5039
Telephone: (606) 439-1373

(ref:leslie\meleumby.ded)

P-5

PERRY

1999 AUG -3 AM 9:11

DEED OF CONVEYANCE

This DEED OF CONVEYANCE, made and entered into this 2nd day of August, 1999, by and between PERRY, HARLAN, LESLIE, BREATHITT REGIONAL INDUSTRIAL AUTHORITY, INC., with offices at 917 Perry Park Road, Hazard, Kentucky 41701, party of the first part ("Grantor"), and SYKES REALTY, INC., with offices at 100 N. Campus Street, Suite 3900, Tampa, Florida 33602, party of the second part ("Grantee").

WITNESSETH:

That said Grantor, for and in consideration of the sum of Three Hundred Thirty Thousand Six Hundred Dollars and No Cents (\$330,600.00), cash in hand paid, the receipt and adequacy of which is hereby acknowledged, have bargained and sold and by these presents do hereby bargain, sell, grant and convey unto the Grantee, its successors and assigns, all of its right, title and interest, including both the surface and certain mineral rights (excluding oil and gas and appurtenant rights hereinafter described) on Lot #'s 101 and 102 of the Coalfields Industrial Park on the Hollybush Branch and the Right Fork of the Rockhouse Fork of Tenmile Creek of Lost Creek of Troublesome Creek

Recorded 4-14-2000
See Deed of Correction
Deed bk 280 pg 389
attest: Haven King clerk
By: Barbara Lee Granks D.C.

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and Wiley Miller Branch of Grapevine Creek of the North Fork of the Kentucky River
in Perry County, Kentucky, and more particularly described and bounded as follows:

Metes and Bounds Descriptions

Coalfields Lot #101

A Certain Parcel of Land Located in Perry County Kentucky in the
Perry, Harlan, Leslie, Breathitt Regional Industrial Authority Inc.
(Coalfields Industrial Park), Being Lot #101 and More Particularly
Described as Follows:

Beginning on a Concrete Monument Set at the Northeast
Intersection of the Right of Way of Coalfields Industrial Road and Sykes
Boulevard; Said Point Bears S 77°44'46"W 2110.06' from the Beginning
Corner of Parcel #3 of the P.h.I.b. Coalfields Industrial Park and Has a
Coordinate Value of N 386525.819, E 2719414.233;

Thence with the East Right of Way of Sykes Boulevard 37.5' from
and Parallel to the Center of Said Right of Way N 23°00'00"W 800.00' to
a Concrete Monument Set;

Thence Leaving Sykes Boulevard and Severing the Lands of the
Grantor N 67°00'00"E 600.00' to a Concrete Monument Set;

Thence Continuing Through the Lands of the Grantor S 23°00'00"E
800.00' to a Concrete Monument Set in the West Right of Way of
Coalfields Industrial Road;

Thence with the North Right of Way of Coalfields Industrial Road
37.5' from and Parallel to the Center of Said Right of Way S 67°00'00"W
600.00' to the Beginning.

Containing 480000.00 Sq. Ft. or 11.0193 Acres as Surveyed by Leo
Miller L.L.s. #1904 of Leo Miller & Assoc. Inc. On 00-00-99.

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Coalfields Lot #102

A Certain Parcel of Land Located in Perry County Kentucky in the Perry, Harlan, Leslie, Breathitt Regional Industrial Authority Inc. (Coalfields Industrial Park), Being Lot #102 and More Particularly Described as Follows:

Beginning on a Concrete Monument Set at the Northeast Intersection of the Right of Way of Coalfields Industrial Road and Sykes Boulevard; Said Point Bears S 77°22'45"W 2183.79' from the Beginning Corner of Parcel #3 of the P.h.l.b. Coalfields Industrial Park and Has a Coordinate Value of N 386496.514, E 2719345.195

Thence with the North Right of Way of Coalfields Industrial Road 37.5' from and Parallel to the Center of Said Right of Way S 67°00'00"W 600.00' to a Concrete Monument Set;

Thence Leaving Coalfields Industrial Road and Severing the Lands of the Grantor N 23°00'00"W 800.00' to a Concrete Monument Set;

Thence Continuing Through the Lands of the Grantor N 67°00'00"E 600.00' to a Concrete Monument Set in the West Right of Way of Sykes Boulevard;

Thence with the West Right of Way of Sykes Boulevard 37.5' from and Parallel to the Center of Said Right of Way S 23°00'00"E 800.00' to the Beginning.

Containing 480000.00 Sq. Ft. or 11.0193 Acres as Surveyed by Leo Miller L.L.s. #1904 of Leo Miller & Assoc. Inc. On 00-00-99.

All Corners Referred to on the Plat or in the Metes and Bounds Description As: "Concrete Monument Set" Are 4" X 24" Long Concrete Monuments with a 2-1/2" ø Metal Disk Embedded in the Top and Stamped "Leo Miller - Leo Miller Pls 1904 - Boundary Corner Do Not Destroy". These Corners Were Set this Survey and Extend Typically 6" above the Surrounding Grade.

DEED

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SOURCE OF TITLE: Being a portion of Parcel Nos. 1 (surface and mineral rights) and 3 (mineral rights only) of the property conveyed from COASTAL COAL COMPANY, LLC, to Grantor by deed dated September 30, 1998, and recorded in Deed Book 271, page 425, and a portion of the property (surface rights only) conveyed by MOUNTAIN PROPERTIES, INC., to Grantor by deed dated September 30, 1998, and recorded in Deed Book 271, page 419, both of record in the Perry County Clerk's Office.

EXCEPTION NO. 1

This conveyance is subject to those certain rights of access to future utility services and to those reservations of easement or access rights in favor of Coastal Coal Company, LLC and Mountain Properties, Inc., and the lessees, licensees, successors and assigns of each, for ingress and egress to that property denoted as Coastal Coal Company LLC's tract #'s PE-239 and PE-241 which are contained in Deed Book 271, page 425 and Deed Book 271, page 419 in the Perry County Clerk's Office.

EXCEPTION NO. 2

This conveyance is expressly made subject to those rights and privileges reserved and excepted for development of certain oil and gas reserves by Coastal Coal Company, LLC in the Deed of Conveyance dated September 30, 1998 recorded at Deed Book 271, page 425 in the Perry County Clerk's Office, including (i) those rights granted to Kentucky West Virginia Gas Company by Virginia, Iron, Coal & Coke Company by

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deed dated April 17, 1939, and of record at Deed Book 72, page 311, records of the Perry County Clerk's Office; and (ii) those rights and privileges granted to the Hazard-Perry County Airport Board by VICC Land Company and Kentucky-West Virginia Gas Company by deed dated April 29, 1980, and of record at Deed Book 182, page 644, records of the Perry County Clerk's Office.

EXCEPTION NO. 3

This conveyance is made subject to a continuing right of entry under mining permits issued pursuant to state and federal law and certain residual leasehold rights with respect to reclamation obligations under certain mining permits issued under state and federal law that survived the expiration or termination of the Indian Head Mining, Inc. and River Coal Company, Inc. Consolidated and Amended Lease Agreement dated November 11, 1977, which was assigned to Pro-Land, Inc. on January 25, 1983, and such rights as pertain to the use of the lease area for ingress and egress pursuant to that certain Surface Lease dated May 1, 1987 between Apache Mining Company d/b/a Enterprise Coal Company and Pro-Land, Inc., as the same may have been modified by unrecorded Agreement dated September 30, 1998 among Grantor, Coastal Coal Company, LLC, Pro-Land, Inc. d/b/a Kem Coal Company and Leslie Resources, Inc.

EXCEPTION NO. 4

Ingress and egress to and from the properties is subject to those rights of access and for utility easements granted by Enterprise Coal Company to Leslie Wood Products,

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Inc. by deed dated November 10, 1995 and recorded in Perry County Deed Book 254, page 784, and to KY MAY, Inc. by deed dated November 20, 1995 and recorded in Perry County Deed Book 255, page 568, and those public rights of way previously granted by Virginia Iron Coal and Coke Company to Perry County by deed dated April 1, 1968 and recorded in Deed Book 138, page 347, by Cleveland Combs to Perry County by deed dated March 6, 1968 recorded in Deed Book 135, page 478, by Enterprise Coal Company to the Perry County Fiscal Court by Deed of Conveyance dated October 11, 1993 recorded at Deed Book 243, page 719 and Deed of Correction dated September 21, 1994 recorded at Deed Book 252, page 201, and by Coastal Coal Company, LLC to the Perry County Fiscal Court by Right of Way Deed dated December 22, 1998 recorded at Deed Book 272, page 676, all of record in the Perry County Clerk's Office.

EXCEPTION NO. 5

This conveyance is made subject to the terms of those certain Declarations of Covenants, Conditions and Restrictions between Grantor and the Kentucky Economic Development Finance Authority dated October 7, 1998 recorded at Deed Book 271, page 439 in the Perry County Clerk's Office, as amended by instrument contemplated to be executed and delivered contemporaneously with closing and to be recorded thereafter.

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EXCEPTION NO. 6

There is hereby excepted all existing conditions, covenants, easements, exceptions, reservations, restrictions and rights-of-way of whatever nature, if any, whether or not of record in the Perry County Clerk's Office or otherwise, and to any state of facts that an accurate survey may reveal, and the conveyance is expressly subject to all city, county, municipal and state zoning laws and other ordinances, regulations, and restrictions, including statutes and other laws of municipal, county or other governmental authorities applicable to, and enforceable against, the property described herein.

MISCELLANEOUS PROVISIONS

1. All real estate and/or ad valorem taxes, if any, assessed against the land herein conveyed for the current tax year assessed as of January 1, 1999 shall be prorated between Grantor and Grantee.

2. Rights of way for ingress and egress to Lot #'s 101 and 102 within the interior of the industrial park and access from the Lots to public utilities will be governed by the terms and conditions of that certain Development Agreement between the parties of even date herewith.

TO HAVE AND TO HOLD the same, together with the appurtenances thereunto belonging unto the Grantee, its successors and assigns forever, with covenants of General Warranty.

DEED

BOOK #/TITLE NAME: 276

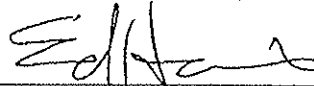
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IN TESTIMONY WHEREOF, witness the signatures of the Grantor on this the
day and year first above written.

GRANTOR:

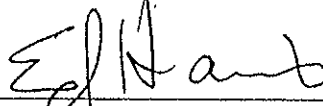
PERRY, HARLAN, LESLIE, BREATHITT
REGIONAL INDUSTRIAL AUTHORITY,
INC.

By: Ed Harris, Chairman

CERTIFICATE OF PARTIES

We, PERRY, HARLAN, LESLIE, BREATHITT REGIONAL INDUSTRIAL
AUTHORITY, INC., by its duly authorized Chairman, Ed Harris, Grantor, and
SYKES REALTY, INC., by its duly authorized Managing Director, David P. Ruele,
Grantee, do hereby swear and/or affirm, pursuant to KRS Chapter 382, that the fair
market value of the above stated property is Three Hundred Thirty Thousand Six
Hundred Dollars and No Cents (\$330,600.00).

GRANTOR:

PERRY, HARLAN, LESLIE, BREATHITT
REGIONAL INDUSTRIAL AUTHORITY,
INC.

By: Ed Harris, Chairman

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GRANTEE:
SYKES REALTY, INC.


By: David P. Ruele, Managing Director

STATE OF KENTUCKY)
)SS
COUNTY OF Perry)

I hereby certify that the foregoing deed and Certificate of the Parties was duly subscribed, sworn to and acknowledged before me by Ed Harris as Chairman of the PERRY, HARLAN, LESLIE, BREATHITT REGIONAL INDUSTRIAL AUTHORITY, INC., on this the 2nd day of August, 1999.


Notary PublicMy commission expires 10-2-99.STATE OF KENTUCKY)
)SS
COUNTY OF Perry)

I hereby certify that the foregoing Certificate of the Parties was duly subscribed, sworn to and acknowledged before me by David P. Ruele, Managing Director of SYKES REALTY, INC., on this the 2nd day of August, 1999.


Notary PublicMy commission expires 10-2-99.

DEED

BOOK #/TITLE NAME: 276

Page-SubPage #: 302-1

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STATE OF KENTUCKY)
) SS
COUNTY OF PERRY)

I, Haven King, Clerk of Perry County, do hereby certify that the foregoing Deed of Conveyance was on the 3rd day of August, 1999, lodged in my office for record and that it, the foregoing, and this my certificate have been duly recorded in my said office in Deed Book 276 page 293.

Witness my hand on this the 3rd day of August, 1999.

HAVEN KING, CLERK

By: Barbara Sue Franks D.C.

This instrument prepared by the law firm of Hollon, Hollon & Collins, Hazard, Kentucky.

James R. Collins
Attorney

O:\NETDRIVE\CLIENTS\PERY\INDV\SYKES\SYKES.DED

Deed Tax
\$331.00

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SYKES

P.P. 389-398

DEED OF CORRECTION
PERRY COUNTY CLERK'S OFFICE

200 APR 14 AM 9:56

DEED OF CORRECTION

This DEED OF CORRECTION, made and entered into this 14 day of September, 1999, by and between PERRY, HARLAN, LESLIE, BREATHITT REGIONAL INDUSTRIAL AUTHORITY, INC., with offices at 917 Perry Park Road, Hazard, Kentucky 41701, party of the first part ("Grantor"), and SYKES REALTY, INC., with offices at 100 N. Campus Street, Suite 3900, Tampa, Florida 33602, party of the second part ("Grantee").

WHEREAS, the Grantor previously conveyed certain property to Sykes Realty, Inc., by Deed of Conveyance dated August 2, 1999 recorded at Deed Book 276, page 293 in the Perry County Clerk's Office; and

WHEREAS, the parties have agreed to realign the property boundaries to better suit the Grantee's needs; and

WHEREAS, a new survey of the property heretofore conveyed now has been made and the parties wish to confirm the prior conveyance and adopt the new survey boundary for the property;

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NOW THEREFORE, That for and in consideration of the sum of Ten Dollars (\$10.00), cash in hand paid, the receipt of which is hereby acknowledged, Grantor does hereby bargain, grant, sell and convey unto Grantee, its successors and assigns, all of its right, title and interest, the following described property, to wit:

METES AND BOUNDS DESCRIPTIONS

LOT #101

A CERTAIN PARCEL OF LAND LOCATED IN PERRY COUNTY KENTUCKY IN THE PERRY, HARLAN, LESLIE, BREATHITT REGIONAL INDUSTRIAL AUTHORITY INC. (COALFIELDS INDUSTRIAL PARK). BEING LOT #101 AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING ON AN IRON PIN WCAP SET AT THE NORTHEAST INTERSECTION OF THE RIGHT OF WAY OF COALFIELDS INDUSTRIAL ROAD AND SYKES BOULEVARD; SAID POINT BEARS S 81°12'09"W 1603.56' FROM THE BEGINNING CORNER OF PARCEL #3 OF THE P.H.L.B. COALFIELDS INDUSTRIAL PARK AND HAS A COORDINATE VALUE OF N 386728.41, E 2719891.52;

THENCE WITH THE EAST RIGHT OF WAY OF SYKES BOULEVARD 37.5' FROM AND PARALLEL TO THE CENTER OF SAID RIGHT OF WAY N 23°00'00"W 800.00' TO AN IRON PIN WCAP SET;

THENCE LEAVING SYKES BOULEVARD AND SEVERING THE LANDS OF THE GRANTOR N 67°00'00"E 600.00' TO AN IRON PIN WCAP SET;

THENCE CONTINUING THROUGH THE LANDS OF THE GRANTOR S 23°00'00"E 861.55' TO AN IRON PIN WCAP SET IN THE WEST RIGHT OF WAY OF COALFIELDS INDUSTRIAL ROAD;

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THENCE WITH THE NORTH RIGHT OF WAY OF COALFIELDS INDUSTRIAL ROAD 37.5' FROM AND PARALLEL TO THE CENTER OF SAID RIGHT OF WAY S 84°39'52"W 202.85' TO AN IRON PIN W\CAP SET;

THENCE CONTINUING WITH THE NORTH RIGHT OF WAY OF COALFIELDS INDUSTRIAL ROAD 37.5' FROM AND PARALLEL TO THE CENTER OF SAID RIGHT OF WAY S 67°00'00"W 406.72' TO THE BEGINNING.

CONTAINING 485948.53 SQ. FT. OR 11.1558 ACRES AS SURVEYED BY LEO MILLER L.L.S. #1904 OF LEO MILLER & ASSOC. INC. ON 08-16-99.

LOT #102

A CERTAIN PARCEL OF LAND LOCATED IN PERRY COUNTY KENTUCKY IN THE PERRY, HARLAN, LESLIE, BREATHITT REGIONAL INDUSTRIAL AUTHORITY INC. (COALFIELDS INDUSTRIAL PARK). BEING LOT #102 AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING ON AN IRON PIN W\CAP SET AT THE NORTHWEST INTERSECTION OF THE RIGHT OF WAY OF COALFIELDS INDUSTRIAL ROAD AND SYKES BOULEVARD; SAID POINT BEARS S 80°34'25"W 1676.38' FROM THE BEGINNING CORNER OF PARCEL #3 OF THE P.H.L.B. COALFIELDS INDUSTRIAL PARK AND HAS A COORDINATE VALUE OF N 386699.11, E 2719822.48.

THENCE WITH THE NORTH RIGHT OF WAY OF COALFIELDS INDUSTRIAL ROAD 37.5' FROM AND PARALLEL TO THE CENTER OF SAID RIGHT OF WAY S 67°00'00"W 600.00' TO AN IRON PIN W\CAP SET;

THENCE LEAVING COALFIELDS INDUSTRIAL ROAD AND SEVERING THE LANDS OF THE GRANTOR N 23°00'00"W 800.00' TO AN IRON PIN W\CAP SET;

DEED

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THENCE CONTINUING THROUGH THE LANDS OF THE GRANTOR N 67°00'00"E 600.00' TO AN IRON PIN WCAP SET IN THE WEST RIGHT OF WAY OF SYKES BOULEVARD;

THENCE WITH THE WEST RIGHT OF WAY OF SYKES BOULEVARD 37.5' FROM AND PARALLEL TO THE CENTER OF SAID RIGHT OF WAY S 23°00'00"E 800.00' TO THE BEGINNING.

CONTAINING 480000.00 SQ. FT. OR 11.0193 ACRES AS SURVEYED BY LEO MILLER L.L.S. #1904 OF LEO MILLER & ASSOC. INC ON 08-16-99.

SOURCE OF TITLE: Being a portion of Parcel Nos. 1 (surface and mineral rights) and 3 (mineral rights only) of the property conveyed from COASTAL COAL COMPANY, LLC, to Grantor by deed dated September 30, 1998, and recorded in Deed Book 271, page 425, and a portion of the property (surface rights only) conveyed by MOUNTAIN PROPERTIES, INC., to Grantor by deed dated September 30, 1998, and recorded in Deed Book 271, page 419, both of record in the Perry County Clerk's Office. A survey of the property appears in that plat of Lot Nos. 101 and 102 of the Coalfields Industrial Park prepared by Leo Miller and Associates, Inc. dated September 3, 1999 recorded at Plat Cabinet No. 2, Slide No. 47 in the Perry County Clerk's Office.

EXCEPTION NO. 1

This conveyance is subject to those certain rights of access to future utility services and to those reservations of easement or access rights in favor of Coastal Coal Company, LLC and Mountain Properties, Inc., and the lessees, licensees, successors and

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assigns of each, for ingress and egress to that property denoted as Coastal Coal Company LLC's tract #'s PE-239 and PE-241 which are contained in Deed Book 271, page 425 and Deed Book 271, page 419 in the Perry County Clerk's Office.

EXCEPTION NO. 2

This conveyance is expressly made subject to those rights and privileges reserved and excepted for development of certain oil and gas reserves by Coastal Coal Company, LLC in the Deed of Conveyance dated September 30, 1998 recorded at Deed Book 271, page 425 in the Perry County Clerk's Office, including (i) those rights granted to Kentucky West Virginia Gas Company by Virginia, Iron, Coal & Coke Company by deed dated April 17, 1939, and of record at Deed Book 72, page 311, records of the Perry County Clerk's Office; and (ii) those rights and privileges granted to the Hazard-Perry County Airport Board by VICC Land Company and Kentucky-West Virginia Gas Company by deed dated April 29, 1980, and of record at Deed Book 182, page 644, records of the Perry County Clerk's Office.

EXCEPTION NO. 3

This conveyance is made subject to a continuing right of entry under mining permits issued pursuant to state and federal law and certain residual leasehold rights with respect to reclamation obligations under certain mining permits issued under state and federal law that survived the expiration or termination of the Indian Head Mining, Inc. and River Coal Company, Inc. Consolidated and Amended Lease Agreement dated

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November 11, 1977, which was assigned to Pro-Land, Inc. on January 25, 1983, and such rights as pertain to the use of the lease area for ingress and egress pursuant to that certain Surface Lease dated May 1, 1987 between Apache Mining Company d/b/a Enterprise Coal Company and Pro-Land, Inc., as the same may have been modified by unrecorded Agreement dated September 30, 1998 among Grantor, Coastal Coal Company, LLC, Pro-Land, Inc. d/b/a Kem Coal Company and Leslie Resources, Inc.

EXCEPTION NO. 4

Ingress and egress to and from the properties is subject to those rights of access and for utility easements granted by Enterprise Coal Company to Leslie Wood Products, Inc. by deed dated November 10, 1995 and recorded in Perry County Deed Book 254, page 784, and to KY MAY, Inc. by deed dated November 20, 1995 and recorded in Perry County Deed Book 255, page 568, and those public rights of way previously granted by Virginia Iron Coal and Coke Company to Perry County by deed dated April 1, 1968 and recorded in Deed Book 138, page 347, by Cleveland Combs to Perry County by deed dated March 6, 1968 recorded in Deed Book 135, page 478, by Enterprise Coal Company to the Perry County Fiscal Court by Deed of Conveyance dated October 11, 1993 recorded at Deed Book 243, page 719 and Deed of Correction dated September 21, 1994 recorded at Deed Book 252, page 201, and by Coastal Coal Company, LLC to the Perry County Fiscal Court by Right of Way Deed dated December

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22, 1998 recorded at Deed Book 272, page 676, all of record in the Perry County Clerk's Office.

EXCEPTION NO. 5

This conveyance is made subject to the terms of those certain Declarations of Covenants, Conditions and Restrictions between Grantor and the Kentucky Economic Development Finance Authority dated October 7, 1998 recorded at Deed Book 271, page 439 in the Perry County Clerk's Office, as amended by instrument contemplated to be executed and delivered contemporaneously with closing and to be recorded thereafter.

EXCEPTION NO. 6

There is hereby excepted all existing conditions, covenants, easements, exceptions, reservations, restrictions and rights-of-way of whatever nature, if any, whether or not of record in the Perry County Clerk's Office or otherwise, and to any state of facts that an accurate survey may reveal, and the conveyance is expressly subject to all city, county, municipal and state zoning laws and other ordinances, regulations, and restrictions, including statutes and other laws of municipal, county or other governmental authorities applicable to, and enforceable against, the property described herein.

DEED

BOOK #/TITLE NAME: 280

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MISCELLANEOUS PROVISIONS

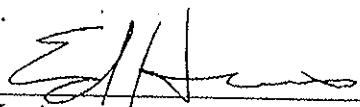
1. All real estate and/or ad valorem taxes, if any, assessed against the land herein conveyed for the current tax year assessed as of January 1, 1999 shall be prorated between Grantor and Grantee.

2. Rights of way for ingress and egress to Lot #'s 101 and 102 within the interior of the industrial park and access from the Lots to public utilities will be governed by the terms and conditions of that certain Development Agreement between the parties dated August 2, 1999, as amended.

TO HAVE AND TO HOLD the same, together with the appurtenances thereunto belonging unto the Grantee, its successors and assigns forever, with covenants of General Warranty.

IN TESTIMONY WHEREOF, witness the signatures of the Grantor on this the day and year first above written.

GRANTOR:
PERRY, HARLAN, LESLIE, BREATHITT
REGIONAL INDUSTRIAL AUTHORITY,
INC.



Ed Harris
Chairman

DEED

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STATE OF KENTUCKY)
)SS
COUNTY OF PERRY)

I hereby certify that the foregoing Deed of Correction was duly subscribed, sworn to and acknowledged before me by Ed Harris as Chairman of the PERRY, HARLAN, LESLIE, BREATHITT REGIONAL INDUSTRIAL AUTHORITY, INC., on this the 14th day of September, 1999.

Karen S. Southwood
Notary Public

My commission expires 10-2-99.

DEED

BOOK #/TITLE NAME: 280

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STATE OF KENTUCKY)
) SS
COUNTY OF PERRY)

I, Haven King, Clerk of Perry County, do hereby certify that the foregoing Deed of Correction, was on the ~~14th~~ day of April, ~~1999~~²⁰⁰⁰, lodged in my office for record and that it, the foregoing, and this my certificate have been duly recorded in my said office in Deed Book ~~280~~, page ~~389~~.

Witness my hand on this the ~~14th~~ day of April, ~~1999~~²⁰⁰⁰.

HAVEN KING, CLERK

By: Barbara Sue Franks D.C.

This instrument prepared by the law firm of Hollon, Hollon & Collins, Hazard, Kentucky.

Paul R Collins
Attorney

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P-2

PAYNE NAPIER

783-785

T. J. NAPIER and
BEULAH NAPIER, his wife

TO: DEED

PAYNE NAPIER and
CONNIE H. NAPIER, his
wife

THIS DEED OF CONVEYANCE, made and entered into this the
20th day of March, 1987 by and between T. J. NAPIER and
BEULAH NAPIER, his wife of Chavies, Perry County, Kentucky,
parties of the first part and PAYNE NAPIER and CONNIE H.
NAPIER, his wife of ^{RR1 Box 185} Hazard, Perry County, Kentucky, parties
of the second part;

WITNESSETH:

That for and in consideration of the sum of Twenty-Five
Hundred Dollars (\$2,500.00) the parties of the first part do
hereby sell, grant and convey unto the parties of the second
part, with the remainder to the survivor of them, in fee
simple, a certain tract or parcel of land lying and being in
Perry County, Kentucky and being more particularly described
as follows:

BEGINNING on the edge of a coal haul road
at a point where the barbed wire fence joins
the webb fence; thence 150 feet down the
webb fence and turning left 50 feet; thence
around the hill to barbed wire fence; thence
left with the barbed wire fence to point of
beginning.

This property is granted subject to a right
of way that serves the property of Nordie
Wilma Collins, see Deed Book 174, Page 744.

Being part of the same property conveyed
to the Grantors herein by Anna B. Napier,
et al dated the 11th of August, 1978 and
found at Deed Book 174, Page 747 in the
Perry County Court Clerk's office.

TO HAVE AND TO HOLD the same, together with all the
appurtenances thereunto belonging unto the parties of the

DEED

BOOK #/TITLE NAME: 211

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second part, with the remainder to the survivor of them, in fee simple, with covenants of General Warranty.

WITNESS the hands of the parties of the first part, this the day and year first above written.

T. J. Napier
T. J. NAPIER

Beulah Napier
BEULAH NAPIER

STATE OF KENTUCKY

COUNTY OF PERRY

This is to certify that the foregoing Deed from T. J. Napier and Beulah Napier, his wife to Payne Napier and Connie H. Napier, his wife, was this the 20th day of March, 1987, duly signed and acknowledged before me by T. J. Napier and Beulah Napier, his wife to be their free acts and deeds.

My Commission Expires:

April 23, 1988

James Owen Gables
NOTARY PUBLIC, STATE AT LARGE

STATE OF KENTUCKY

COUNTY OF PERRY

I, Clarence Howard, Clerk in and for the County and State aforesaid do hereby certify that the foregoing Deed from T. J. Napier and Beulah Napier, his wife to Payne Napier and Connie H. Napier, his wife was lodged in my office for record, whereupon same, together with the foregoing and this, my certificate have been duly recorded

DEED

BOOK #/TITLE NAME: 211

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in my office at Deed Book 211, Page 783.

Given under my hand this the 20 day of
March, 1987.

CLARENCE HOWARD, CLERK
PERRY COUNTY COURT

BY: Louis Fugate D.C.

This Deed was prepared without the
benefit of title examination by the
undersigned attorney of Hazard, KY.

Marcia W. Branham

MARCIA W. BRANHAM
GULLETT, COMBS & HOLLIDAY
Post Office Drawer 1039
Hazard, Kentucky 41701
Phone: (606) 439-1373

Exp
\$ 2.00

of said Kentucky River Coal Corporation and of himself as President thereof; also that the same was duly attested before me by Catesby W. Clay, known to me to be the Secretary.

Witness my hand this 22 day of May, 1961.

My commission expires May 18, 1964.

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SEAL

PHYLLIS DAY
Notary Public, Fayette Co., Ky.

STATE OF KENTUCKY

COUNTY OF PERRY

I, Jessie Horn, Clerk of the Perry County Court, hereby certify that the foregoing deed from Kentucky River Coal Corporation to Eunice A. nett was this day, June 5, 1962, lodged in my office for record and that I have this day duly recorded the same in my said office, with the foregoing and this my certificate in Deed Book No. 124, page 292.

Given under my hand, this 6 day of June, 1962.

JESSIE HORN, CLERK
PERRY COUNTY COURT.

BY *Murch Johnson* D.C.

U. S. Int. Rev. Stamps .55¢

LYDA HAMBLIN, AND TAYLOR HAMBLIN

TO: DEED

FLOYD MULLINS

FLOYD MULLINS
HEIRS

DEED BOOK 124
P.P. 293-294

THIS DEED, made and entered into this the 20 day of March, 1952, by and between Lyda Hamblin and her husband, Taylor Hamblin, of Krypton, Perry County, Kentucky, parties of the first part, and Floyd Mullins party of the second part, witnesseth:

That said parties of the first part, for and in consideration of the sum of Seven Hundred (\$700.00) Dollars, in hand paid, the receipt of which is acknowledged, do hereby sell, grant and convey to the party of the second part his heirs and assigns the following described property, to-wit:

A certain tract or parcel of land, lying and being on Ten Mile Creek in Perry County, Kentucky, and Beginning at creek opposite the center of the point between the John Neace Cove Hollow and the Haw-tree Hollow, thence up the said Haw Tree and John Neace Cove point to the top of the hill, Jim Gwin's line; thence with said Jim Gwin's line to the top of the point; between the house hollow and spring

Comments and Keywords

The displayed image above is complete and is NOT ZOOMED...



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FLOYD MULLINS
HEIRS
CONT.

point hollow thence down said point to a white oak tree below the spring point hollow; thence to the creek; thence with the creek to the beginning containing 50 acres more or less.

It is understood by and between the parties that the coal and mineral have been excepted on the upper end.

Being the same land conveyed from the heirs of Elias Mullins to Lyda Hamblin by Deed bearing date 18 day of Mar. 1950 and of record in Deed Book No. 102 at page 626, Perry County Clerk's Office.

To have and to hold the same, together with all the appurtenances thereunto belonging unto the party of the second part his heirs and assigns forever, with covenant of general warranty

In testimony whereof, witness our signatures.

TAYLOR HAMBLIN

LYDIA HAMBLIN

STATE OF KENTUCKY,)
) SCT.
COUNTY OF PERRY)

I, Prentiss Baker, Clerk of the County Court, for the County and State aforesaid, do certify that the foregoing Deed from Lyda Hamblin & Taylor Hamblin to Floyd Mullins was on the 20 day of March, 1952, produced to me in said County and acknowledged and delivered by Lyda Hamblin & Taylor Hamblin parties grantors there-to to be their act and deed.

Given under my hand this 20 day of March, 1952.

PRENTISS BAKER, CLERK

BY Jessie Horn D.C.

STATE OF KENTUCKY,)
) SCT.
COUNTY OF PERRY)

I, Jessie Horn, Clerk of the County Court for the County and State aforesaid, certify that the foregoing Deed was on the 5th day of June, 1962, lodged in my office for record, whereupon the same, with the foregoing and this certificate have been duly recorded in my office.

Given under my hand, this 6th day of June, 1962.

JESSIE HORN, CLERK
PERRY COUNTY COURT.

BY Marion Johnson D.C.

U. S. Int. Rev. Stamps. 55¢

GEORGE CAMPBELL & LAURA WHITAKER CAMPBELL

TO: DEED

DEED

BOOK #/TITLE NAME: 130

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V. G. COMBS

BOOK 130

PP 7-8

7

STATE OF KENTUCKY,

COUNTY OF PERRY.

I, Jessie Horn, Clerk of the County Court for the County and State aforesaid, certify that the foregoing Deed was on the 30th day of March, 1965, lodged in my office for record, whereupon the same with the foregoing and this certificate have been duly recorded in my office.

Given under my hand, this 31st day of March, 1965.

Jessie Horn, Clerk

U.S. INT. REV. STAMPS \$3.85.

BY Stella Penington D. C.

BRACK NEACE

Prepared by George Campbell
Bonnyman, Kentucky

TO: DEED

V. G. COMBS and JENNIE LUE COMBS

THIS DEED OF CONVEYANCE made and entered into this 6th day of March, 1965 between Brack Neace of Perry County of and State of Kentucky, of the first party, and V. G. Combs and Jennie Lue Combs of Perry County of Perry Kentucky, and State aforesaid, of the second party.

WITNESSETH, that the party of the first part for and in consideration of the sum of \$700.00 Seven Hundred Dollars Cash in hand paid the receipt and sufficiency of which is hereby acknowledged, has bargained and sold, and by these presents do bargain, sell and convey unto the said party of the second part, a certain tract or parcel of land, lying in Perry County, Kentucky, and described as follows:

And located on Ten Mile Creek a tributary also a tributary of Lost Creek also a tributary of the North fork of Kentucky river and bounded as follows, Beginning, on a Beech tree on the east side of Ten Mile Creek Near the mouth of Saw Fork. Thence up the spur with Elias Mullins line to the top of the ridge. Thence with the ridge around the head of Peeb Hollow. Thence down the spur with Sam Grigsby line and down the hill with Peeb Hollow. Thence across the Branch, and with the fence to the top of the Knob. Thence down the Point with Sam Grigsby to Ten Mile Creek Near the old Garden. Thence up the Branch to the lower end of Walnut Hollow Bottom. Thence with the foot of the hill to the Beginning, containing 100 acres more or less.

Being the same land conveyed by Pearl G. Childers and Curtis Childers Her Husband, to the grantors herein by Deed dated 24th day of April 1939 and recorded in Deed Book No. 72 page 553 records of the Perry County Court Clerk's Office.

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V. G. COMBS
CONT.

To have and to hold said tract of land, with the appurtenances thereunto belonging unto the parties of the second party His, heirs and assigns forever, with covenants of General Warranty.

In testimony whereof, the party of the first part has hereunto subscribed Their name the day and date aforesaid.

Brack Neace

Roma Neace

STATE OF KENTUCKY

Sct.

Perry County

I, George Campbell Notary Public the County aforesaid do certify that the foregoing Deed from Brack Neace to V. G. Combs was this day produced to me, and duly acknowledged before me, in said County, by Brack Neace party thereto, to be His act and deed.

Given under my hand this 6th day of March, 1965.

George Campbell
Notary Public

My Commission Expires July 7th 1968

SEAL

STATE OF KENTUCKY

Sct.

PERRY COUNTY.

I, Jessie Horn, Clerk of the County Court of the County aforesaid, do certify that the foregoing Deed from Brack Neace to V. G. Combs and Jennie Lue Combs was, on the 30th day of March, 1965, lodged in my office for record, and that it, the foregoing, and this certificate, have been duly recorded in my office in deed book 130, page 7.

WITNESS my hand, this 31st day of March, 1965.

Jessie Horn, Clerk

U.S. INT. REV. STAMPS \$1.10.

By Stella Pennington D. C.

JASPER J. SMITH and REVA C. SMITH

Prepared by H. B. Noble, Atty. of
Hazard, Ky.

TO: DEED 67

WILLIAM J. SMITH and ALICE R. SMITH

THIS DEED, made and entered into this the 30 day of March 1965, by and between Jasper J. Smith and his wife, Reva C. Smith, both of Eulan, Perry County, Kentucky, Parties of the First Part and William J. Smith and his wife, Alice R. Smith, both of Hazard, Perry County, Kentucky Parties of the Second Part,

WITNESSETH: That said parties of the First Part, for and in consideration

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BOOK 176
PP. 636-637~~W. G. Mullins~~
V. G. COMBS

DEED of Correction

Eagle Print—Whitesburg, Ky.

THIS DEED OF Correction made and entered into this October day of 1978
between Brock Neace and wife, Roma Neace, Deputy, Indiana,

of Deputy County of Jefferson and State
of Indiana of the first part, and V. G. Combs and Jennie Lou Combs
Hazard, Ky. 41701 Route # 1 Box 436,

County of Perry and State aforesaid, of the second part:

WITNESSETH, that the part ies of the first part for and in consideration of the sum of the
benefits and obligations to correct a deed between the parties
dated March 6, 1965 and recorded in D.B. 130 page 7, Perry County
Ky. Clerk's Office, Hazard, Ky..

the receipt and sufficiency of which is hereby acknowledged, have bargained and sold, and by these presents do bargain, sell and convey unto the said
part ies of the second part, a certain tract or parcel of land, lying in Perry
County, Kentucky, and described as follows:

A tract of land located on Ten Mile
Creek, a tributary of Lost Creek which is a tributary of the
North Fork of the Kentucky River, and described as follows:

"Beginning on a beech tree on the east side of
Ten Mile Creek near the mouth of Gwinn Fork and
the Elias Mullins line; thence up the spur with Elias
Mullins line to the top of the ridge; thence turning
left and running with the ridge around to the head of
Jeab Hollow, and coal company land; thence down the spur
picking up the Sam Grigsby line and running on with his
line down the hill to Jeab Hollow; thence across Jeab
Hollow and running with a fence to the top of the knob;
thence down the point to Ten Mile Creek and Sam Grigsby
line; thence down the point with Sam Grigsby line
to Ten Mile Creek near the old garden and a branch;
thence up the branch to the lower end of Walnut Hollow
Bottom; thence around the foot of the hill to the
beginning". Containing 100 acres more or less.

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~~V.G. COMBS~~
V.G. COMBS CONT.

637

Being the same land conveyed by Pearl G. Childers and Curtis Childers

to the grantor⁴ _____ herein by Deed dated February 24th, 1939,
and recorded in Deed Book No. 72 page 553 records of the Perry
County Court Clerk's Office.

To have and to hold said tract of land, with the appurtenances thereunto belonging unto the part ies
_____ of the second part their, heirs and assigns forever, with covenants of General
Warranty.

In testimony whereof, the part ies of the first part ha ve hereunto subscribed
their name 4 the day and date aforesaid.

This deed was prepared
by undersigned:
E. G. Wilson, Attorney

(x) Brack Neace
(x) Roma Neace

Box 814 Hazard, Ky.

STATE OF Indiana
a n d COUNTY. of Scott SCOTT Set.

I, Dorothy B. Shields, Notary Public for the County aforesaid
do certify that the foregoing Deed from Brack Neace and wife, Roma Neace, of
Deputy, Indiana,
to V. G. Combs and Jennie Lou Combs

_____ was this day produced to me, and duly
acknowledged before me, in said County, by Brack Neace and wife, Roma Neace,
part ies thereto, to be their individual act and deed.

Given under my hand this 24th day of October, 1978

Dorothy B. Shields
Dorothy B. Shields
My commission expires 3/8/82

STATE OF KENTUCKY,
Perry COUNTY.

Set.

I, Earl M. Meaton Clerk of the County Court of the County aforesaid.
do certify that the foregoing Deed from Brack Neace and wife, Roma
Neace to V. G. Combs + Jennie
Lou Combs was, on the 25 day of October 1978
lodged in my office for record, and that it, the foregoing, and this certificate, have been duly recorded
in my office in deed book 176 page 626

WITNESS my hand, this 25 day of October, 1978

no fee

Earl M. Meaton Clerk
By Jamie Miller D. C.

DEED

BOOK #/TITLE NAME: 174

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JOHN NAPIER

P.P. 742-752

AFFIDAVIT OF DESCENT

OF

WILLIE NAPIER

Affiant, Anna B. Napier, states that she is the widow of Willie Napier, who died intestate, a resident of Perry County, the Commonwealth of Kentucky, on the 15th day of June, 1978, leaving the following heirs-at-law or next of kin surviving, to-wit:

NAMES:	AGES:	ADDRESSES:	RELATIONSHIP:	SHAR.
Anna B. Napier	21+	Chavies, Kentucky	Widow	1/2
Corsie N. Noble	21+	Bonnyman, Kentucky	Daughter	1/10
Fontaine Napier	21+	Franklin, Ohio	Son	1/10
Lois Napier	21+	Dry Ridge, Ky.	Daughter	1/10
T. J. Napier	21+	Chavies, Kentucky	Son	1/10
Norcie Wilma Collins	21+	Williamstown, Ky.	Daughter	1/10

Affiant further states that said Decedent left no other child or children or descendant of any children, or by adoption, other than above mentioned, and the above mentioned persons are the only surviving heirs-at-law of said Decedent.

Anna B. Napier
ANNA B. NAPIER, widow

I have read the above statement and it is true and correct to the best of my knowledge and belief.

Anna B. Napier
ANNA B. NAPIER

DEED

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Subscribed and sworn to before me by Anna B. Napier,
this the 14 day of August, 1978.

My commission expires: 27 Oct 1979

Ann B. Napier
NOTARY PUBLIC, STATE AT LARGE

STATE OF KENTUCKY

COUNTY OF PERRY

I, Earl M. Deaton, Clerk of the County and State afore-
said do hereby certify that the foregoing Affidavit of
Descent of Willie Napier was lodged in my office for record,
whereupon the same, together with the foregoing, and this,
my certificate have been duly recorded in my said Office
in Deed Book 174, Page 742.

Given under my hand this the 18th day of August, 1978.

EARL M. DEATON, CLERK
PERRY COUNTY COURT

BY Lemuel A. Allen D. C.

This instrument prepared
by the undersigned Attorney
of Hazard, Kentucky.

A. P. Gullett
A. P. GULLETT

DEED

BOOK #/TITLE NAME: 174

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ANNA B. NAPIER, a widow;
FONTAINE NAPIER and OPAL NAPIER,
his wife; LOIS NAPIER and ROY NAPIER,
her husband; T. J. NAPIER and BEULAH
NAPIER, his wife; and CORSIE N. NOBLE
and BEECHER NOBLE, her husband

This Deed prepared with
out title examination by
the undersigned Attorney
of Hazard, Kentucky.

TO: DEED


A. P. GULLETT

NORCIE WILMA COLLINS and
WOODROW COLLINS, her husband

THIS DEED OF CONVEYANCE made and entered into this the
// day of August, 1978, by and between ANNA B. NAPIER, a
widow of Star Route 1, Box 105, Chavies, Kentucky; FONTAINE
NAPIER and OPAL NAPIER, his wife of 9739 Roberts Drive, Frankl
Ohio; LOIS NAPIER and ROY NAPIER, her husband of Route 2, Dry
Ridge, Kentucky; T. J. NAPIER and BEULAH NAPIER, his wife of
Star Route 1, Box 110, Chavies, Kentucky; CORSIE N. NOBLE
and BEECHER NOBLE, her husband of Bonnyman, Perry County,
Kentucky, parties of the first part and NORCIE WILMA COLLINS
and WOODROW COLLINS, her husband of 4 Lakeview Drive, Williams-
town, Kentucky, parties of the second part,

WITNESSETH:

That for and in consideration of the love and affection
that Grantors have for Grantees and a division of the landed
estate of Willie Napier, the parties of the first part do
hereby grant and convey unto the parties of the second part,
their heirs and assigns forever, a certain tract or parcel of
land lying and being in Perry County, Kentucky and being more
particularly described as follows:

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Beginning at fence corner next to Payne Napier and T. J. Napier going down hill toward Cove Hollow 50 feet to rock with "X" mark; thence going around hill to big beech tree with "X" mark; thence going from beech tree to stake at fence row turn right come up fence with VIC line to T. J. Napier's line thence turn right at T. J. Napier's line and follow T. J. Napier's line to barbed wire fence; thence turn right at barbed wire fence back to beginning..

T. J. Napier is to have the right to use the spring on this property for water for himself and any agricultural or household use.

Being a part of the same property conveyed to Willie Napier and Anna B. Napier on the 24th day of September, 1966 found at Deed Book 133, Page 532 in the Perry County Court Clerk's Office. (See also Affidavit of Descent of Willie Napier found at Deed Book 174, Page 742, Perry County Court Clerk's Office.

TO HAVE AND TO HOLD the same, together with all the appurtenances thereunto belonging unto the parties of the second part, their heirs and assigns forever, with covenants of General Warranty.

Witness the hands of the parties of the first part, the day and year first above written.

Anna B. Napier
ANNA B. NAPIER, widow

Fontaine Napier
FONTAINE NAPIER

Opal Napier
OPAL NAPIER

Lois Napier
LOIS NAPIER

Roy Napier
ROY NAPIER

DEED

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T. J. Napier
T. J. NAPIER

Beulah Napier
BEULAH NAPIER

Corsie Noble
CORSIE N. NOBLE

BEECHER NOBLE

STATE OF KENTUCKY

COUNTY OF PERRY

This is to certify that the foregoing Deed from Anna B. Napier, et al to Norcie Wilma Collins and Woodrow Collins was this the 11 day of August, 1978, duly signed and acknowledge before me by Anna B. Napier, a widow, Fontaine Napier and Opal Napier, his wife, Lois Napier and Roy Napier, her husband, T. J. Napier and Beulah Napier, his wife, Corsie N. Noble and ~~Beulah Noble, her husband~~ to be their free acts and deeds.

My commission expires: 27 Oct 1979

a. J. H. H. H. H.
NOTARY PUBLIC, STATE AT LARGE

STATE OF KENTUCKY

COUNTY OF PERRY

I, Earl M. Deaton, Clerk of the State and County aforesaid do hereby certify that the foregoing Deed from Anna B. Napier, et al to Norcie Wilma Collins and Woodrow Collins was lodged in my said office, whereupon the same, together with the foregoing and this, my certificate have been duly recorded in my said Office at Deed Book 174 at Page 744.

Given under my hand this the 18th day of August, 1978

EARL M. DEATON, CLERK
PERRY COUNTY COURT

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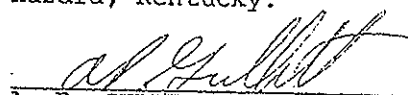
BY Beulah Napier D.C.

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ANNA B. NAPIER, a widow;
FONTAINE NAPIER and OPAL
NAPIER, his wife; CORSIE
N. NOBLE and BEECHER NOBLE,
her husband; LOIS NAPIER
and ROY NAPIER, her husband;
NORCIE WILMA COLLINS and
WOODROW COLLINS, her husband

This Deed prepared without
title examination by the
undersigned Attorney of
Hazard, Kentucky.


A. P. GULLETT

TO: DEED

T. J. NAPIER and BEULAH NAPIER

THIS DEED OF CONVEYANCE made and entered into this the
11 day of August, 1978, by and between ANNA B. NAPIER, a
widow of Star Route 1, Box 105, Chavies, Kentucky; FONTAINE
NAPIER and OPAL NAPIER, his wife of 9739 Roberts Drive,
Franklin, Ohio; CORSIE N. NOBLE and BEECHER NOBLE, her husband,
of Bonnyman, Perry County, Kentucky; LOIS NAPIER and ROY NAPIER,
her husband of Route 2, Dry Ridge, Kentucky; NORCIE WILMA
COLLINS and WOODROW COLLINS, her husband of 4 Lakeview Drive,
Williamstown, Kentucky, parties of the first part and T. J.
NAPIER and BEULAH NAPIER, his wife of Star Route 1, Box 110,
Chavies Kentucky, parties of the second part;

WITNESSETH:

That for and in consideration of the love and affection
that Grantors have for Grantees and a division of the landed
estate of Willie Napier, the parties of the first part do
hereby grant and convey unto the parties of the second part,
their heirs and assigns forever, a certain tract or parcel of
land lying and being in Perry County, Kentucky and being more
particularly described as follows:

DEED

BOOK #/TITLE NAME: 174

Page-SubPage #: 748-1

Document Image

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Beginning at the center of the hill which joins VIC and Payne Napier line, thence coming down the hill with VIC line and across a coal haul road to a barbed wire fence and webb fence, thence 150 feet down the webb fence and lift 50 feet, thence around the hill to barbed wire fence and down the fence to Payne Napier line, thence left up the hill following fence and straight up the hill to the point of beginning.

Being a part of the same property conveyed to Willie Napier and Anna B. Napier, his wife, dated the 24th of September, 1966 and of record in Deed Book 133, Page 532 in the Perry County Court Clerk's Office. (See also Affidavit of Descent of Willie Napier found at Deed Book 174, Page 742 in the Perry County Court Clerk's Office).

Norcie Wilma Collins is granted a right of way across this property to serve the property she receives of even date herewith, see Deed Book 174, Page 744.

TO HAVE AND TO HOLD the same, together with all the appurtenances thereunto belonging unto the parties of the second part, their heirs and assigns forever, with covenants of General Warranty.

Witness the hands of the parties of the first part, the day and year first above written.

Anna B. Napier
ANNA B. NAPIER, widow

Fontaine Napier
FONTAINE NAPIER

Opal Napier
OPAL NAPIER

Corsie Noble
CORSIE N. NOBLE

BEECHER NOBLE

749

Lois Napier
LOIS NAPIER

Roy Napier
ROY NAPIER

Norcie Wilma Collins
NORCIE WILMA COLLINS

Woodrow Collins
WOODROW COLLINS

STATE OF KENTUCKY
COUNTY OF PERRY

This is to certify that the foregoing Deed from Anna B. Napier, et al to T. J. Napier and Beulah Napier, his wife was this the 11 day of August, 1978, duly signed and acknowledged before me by Anna B. Napier, a widow, Fontaine Napier and Opal Napier, his wife, Corsie N. Noble ~~and Beulah Noble, her~~ ~~husband~~, Lois Napier and Roy Napier, her husband, and Norcie Wilma Collins and Woodrow Collins, her husband, to be their free acts and deeds.

My commission expires: 27 Oct 1979

Earl M. Deaton
NOTARY PUBLIC, STATE AT LARGE

STATE OF KENTUCKY
COUNTY OF PERRY

I, Earl M. Deaton, Clerk for the State and County aforesaid do hereby certify that the foregoing Deed from Anna B. Napier et al to T. J. Napier and Beulah Napier was lodged in my said Office whereupon the same, together with the foregoing, and this, my certificate have been duly recorded in my said Office in Deed Book 174 at Page 747.

Given under my hand this the 18th day of August, 1978.

EARL M. DEATON, CLERK
PERRY COUNTY COURT

BY Leimona Allen D. C.

no tax

DEED

BOOK #/TITLE NAME: 174

Page-SubPage #: 750-1

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ANNA B. NAPIER, a widow;
CORSIE N. NOBLE and BEECHER
NOBLE, her husband; LOIS NAPIER
and ROY NAPIER, her husband; T. J.
NAPIER and BEULAH NAPIER, his wife;
and NORCIE WILMA COLLINS and WOODROW
COLLINS, her husband

This Deed prepared without
title examination by the
undersigned Attorney of
Hazard, Kentucky.


A. P. GULLETT

TO: DEED

FONTAINE NAPIER and OPAL NAPIER

THIS DEED OF CONVEYANCE made and entered into this the
11 day of August, 1978, by and between ANNA B. NAPIER, a
widow of Star Route 1, Box 105, Chavies, Kentucky; CORSIE N.
NOBLE and BEECHER NOBLE, her husband of Bonnyman, Perry County,
Kentucky; LOIS NAPIER and ROY NAPIER, her husband of Route 2
Dry Ridge, Kentucky; T. J. NAPIER and BEULAH NAPIER, his wife
of Star Route 1, Box 110, Chavies, Kentucky; NORCIE WILMA
COLLINS and WOODROW COLLINS, her husband of 4 Lakeview Drive,
Williamstown, Kentucky, parties of the first part and FONTAINE
NAPIER and OPAL NAPIER OF 9739 Roberts Drive, Franklin, Ohio,
parties of the second part;

WITNESSETH:

That for and in consideration of the love and affection
that Grantors have for Grantees and a division of the landed
estate of Willie Napier, the parties of the first part do
hereby grant and convey unto the parties of the second part,
their heirs and assigns forever, a certain tract or parcel of
land lying and being in Perry County, Kentucky and being more
particularly described as follows:

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Beginning at the Mouth of Big Cove Hollow at a rock with an X; thence coming up Rockhouse Fork of Ten Mile Creek to T. J. Napier and Beulah Napier line; thence turning right straight with their line to a rock with an X; thence back to the beginning.

Being a part of the same property conveyed by VIC to Willie Napier and Anna Napier on the 4th day of September, 1969 found at Deed Book 142, Page 274 in the Perry County Court Clerk's Office. (See also Affidavit of Descent of Willie Napier found at Deed Book 174 Page 742 in the Perry County Court Clerk's Office.

Anna B. Napier retains the right to live in and occupy the home on this property during her natural life.

TO HAVE AND TO HOLD the same, together with all the appurtenances thereunto belonging unto the parties of the second part, their heirs and assigns forever, with covenants of General Warranty.

Witness the hands of the parties of the first part, the day and year first above written.

Anna B. Napier
ANNA B. NAPIER, widow

Corsie Noble
CORSIE N. NOBLE

BEECHER NOBLE

Lois Napier
LOIS NAPIER

Roy Napier
ROY NAPIER

T. J. Napier
T. J. NAPIER

Beulah Napier
BEULAH NAPIER

DEED

BOOK #/TITLE NAME: 174

Page-SubPage #: 752-1

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Norcie Wilma Collins
NORCIE WILMA COLLINS

Woodrow Collins
WOODROW COLLINS

STATE OF KENTUCKY

COUNTY OF PERRY

This is to certify that the foregoing Deed from Anna B. Napier, et al to Fontaine Napier and Opal Napier was this the 11 day of August, 1978, duly signed and acknowledged before me by Anna B. Napier, a widow, Corsie N. Noble ~~and her husband~~ ~~Noble, her husband~~, Lois Napier and Roy Napier, her husband, T. J. Napier and Beulah Napier, his wife, and Norcie Wilma Collins and Woodrow Collins, her husband to be their free acts and deeds.

My commission expires: 27 October 1979

asa P. Hulth
NOTARY PUBLIC, STATE AT LARGE

STATE OF KENTUCKY

COUNTY OF PERRY

I, Earl M. Deaton, Clerk of the State and County aforesaid do hereby certify that the foregoing Deed from Anna B. Napier, et al to Fontaine Napier and Opal Napier was lodged in my said office, whereupon the same, together with the foregoing, and this, my certificate have been duly recorded in my said Office at Deed Book 174 at Page 750.

Given under my hand this the 18th day of August, 1978.

EARL M. DEATON, CLERK
PERRY COUNTY COURT

No Tax

BY Emmanuel Allen D. C.

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P-3

A.O.D.D. TRANSPORTATION P.P. 119-126

RECEIVED
PERRY COUNTY CLERKDEED OF CONVEYANCE
SEP 22 PM 2:23

MA

This **DEED OF CONVEYANCE**, made and entered into this 19th day of ~~August~~ ^{September}, 2006, by and between **COAL FIELDS REGIONAL INDUSTRIAL AUTHORITY, INC.**, formerly, **PERRY, HARLAN, LESLIE, BREATHITT REGIONAL INDUSTRIAL AUTHORITY, INC.**, with offices at 917 Perry Park Road, Hazard, Kentucky 41701, party of the first part ("Grantor"), and **A.O.D.D. TRANSPORT, INC.**, a Kentucky corporation with offices at P.O. Box 423, Rutledge, Tennessee 37861, party of the second part ("Grantee").

WITNESSETH:

That said Grantor, for and in consideration of the sum of One Hundred Sixteen Thousand Two Hundred Forty Dollars and No Cents (\$116,240.00), cash in hand paid, the receipt and adequacy of which is hereby acknowledged, have bargained and sold and by these presents do hereby bargain, sell, grant and convey unto the Grantee, its successors and assigns forever, the surface only of Lot # 106 of the Coalfields Industrial Park on the Hollybush Branch and the Right Fork of the Rockhouse Fork of Tenmile Creek of Lost Creek of Troublesome Creek and Wiley Miller Branch of Grapevine Creek of the North Fork of the Kentucky River in Perry County, Kentucky, and more particularly described and bounded as follows:

METES AND BOUNDS DESCRIPTION
COALFIELDS LOT #106

A CERTAIN PARCEL OF LAND LOCATED IN PERRY COUNTY KENTUCKY IN THE PERRY, HARLAN, LESLIE, BREATHITT REGIONAL INDUSTRIAL AUTHORITY INC., COALFIELDS INDUSTRIAL PARK, BEING LOT #106 AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING ON AN IRON PIN WCAP SET AT THE INTERSECTION OF COALFIELDS INDUSTRIAL BOULEVARD (ADOPTED COUNTY ROAD) AND AN UNNAMED (PROPOSED) STREET. SAID POINT HAS A

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COORDINATE VALUE BASED ON THE COALFIELDS INDUSTRIAL PARK
COORDINATE SYSTEM OF N: 386934.11, E: 2720564.66;

THENCE WITH THE EAST RIGHT OF WAY OF SAID PROPOSED
STREET, 50' FROM AND PARALLEL TO THE CENTER N 23°00'00"W 696.83'
TO AN IRON PIN W\CAP SET;

THENCE SEVERING THE LANDS OF THE GRANTOR (D.B. 271 PG.
419) N 85°44'10" E 1032.41' TO AN IRON PIN W\CAP SET IN THE COMMON
LINE BETWEEN THE GRANTOR AND THE NAPIER HEIRS D.B. 174 PG. 742
& 747;

THENCE WITH SAID LINE S 21°13'52"E 102.30' TO AN IRON PIN
W\CAP SET; THENCE S 10°39'48"E 459.63' TO AN IRON PIN W\CAP SET;
THENCE S 13°44'47"E 83.05' TO AN IRON PIN SET IN THE NORTH RIGHT OF
WAY OF COALFIELDS INDUSTRIAL BOULEVARD;

THENCE WITH THE NORTH RIGHT OF WAY OF SAID ROAD 50'
FROM AND PARALLEL TO THE CENTER S 84°15'12"W 903.64' TO THE
BEGINNING.;

CONTAINING 14.5338 ACRES OR 633092.6 SQ. FT. AS SURVEYED BY LEO MILLER
L.L.S. #1904 OF LEO MILLER & ASSOC. INC. ON 07-25-06.

SOURCE OF TITLE: Being a portion of the property conveyed by MOUNTAIN
PROPERTIES, INC., to Grantor by deed dated September 30, 1998, and recorded in Deed Book
271, page 419, both of record in the Perry County Clerk's Office. The Coal Fields Regional
Industrial Authority was formerly known as the Perry, Harlan, Leslie, Breathitt Regional Industrial
Authority. Its name was changed by Amended and Restated Articles of Incorporation of the Perry,
Harlan, Leslie, Breathitt Regional Industrial Authority, Inc. filed October 7, 2004 with the Secretary
of State and recorded in Miscellaneous Book 35, Page 294 in the Perry County Clerk's Office.

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EXCEPTION NO. 1

This conveyance is subject to those certain rights of access to future utility services and to those reservations of easement or access rights in favor of Coastal Coal Company, LLC and Mountain Properties, Inc., and the lessees, licensees, successors and assigns of each, for ingress and egress to that property denoted as Coastal Coal Company LLC's tract #'s PE-239 and PE-241 which are contained in Deed Book 271, page 425 and Deed Book 271, page 419 in the Perry County Clerk's Office.

EXCEPTION NO. 2

This conveyance is of surface only and does not include any coal, oil, gas or other mineral rights of any kind, and the conveyance is made subject to all outstanding mineral rights. This conveyance is also made subject to a continuing right of entry under mining permits issued pursuant to state and federal law and certain residual leasehold rights with respect to reclamation obligations under certain mining permits issued under state and federal law that survived the expiration or termination of the Indian Head Mining, Inc. and River Coal Company, Inc. Consolidated and Amended Lease Agreement dated November 11, 1977, which was assigned to Pro-Land, Inc. on January 25, 1983, and such rights as pertain to the use of the lease area for ingress and egress pursuant to that certain Surface Lease dated May 1, 1987 between Apache Mining Company d/b/a Enterprise Coal Company and Pro-Land, Inc., as the same may have been modified by unrecorded Agreement dated September 30, 1998 among Grantor, Coastal Coal Company, LLC, Pro-Land, Inc. d/b/a Kern Coal Company and Leslie Resources, Inc.

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EXCEPTION NO. 3

Ingress and egress to and from the properties is subject to those rights of access and for utility easements granted by Enterprise Coal Company to Leslie Wood Products, Inc. by deed dated November 10, 1995 and recorded in Perry County Deed Book 254, page 784, and to KY MAY, Inc. by deed dated November 20, 1995 and recorded in Perry County Deed Book 255, page 568, and those public rights of way previously granted by Virginia Iron Coal and Coke Company to Perry County by deed dated April 1, 1968 and recorded in Deed Book 138, page 347, by Cleveland Combs to Perry County by deed dated March 6, 1968 recorded in Deed Book 135, page 478, by Enterprise Coal Company to the Perry County Fiscal Court by Deed of Conveyance dated October 11, 1993 recorded at Deed Book 243, page 719 and Deed of Correction dated September 21, 1994 recorded at Deed Book 252, page 201, and by Coastal Coal Company, LLC to the Perry County Fiscal Court by Right of Way Deed dated December 22, 1998 recorded at Deed Book 272, page 676, all of record in the Perry County Clerk's Office.

EXCEPTION NO. 4

This conveyance is made subject to the terms of those certain Declarations of Covenants, Conditions and Restrictions between Grantor and the Kentucky Economic Development Finance Authority dated October 7, 1998 recorded at Deed Book 271, page 439 in the Perry County Clerk's Office, as amended by instrument contemplated to be executed and delivered contemporaneously with closing and to be recorded thereafter. The Subject Property is also bound by the terms of that Interlocal Cooperation Agreement dated February 4, 2003 and recorded at Miscellaneous Book 34, page 21 and Miscellaneous Book 35, Page 744 in the Perry County Clerk's Office by and between

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the following counties: Perry County, Harlan County, Leslie County, Breathitt County and Knott County.

EXCEPTION NO. 5

There is hereby excepted all existing conditions, covenants, easements, exceptions, reservations, restrictions and rights-of-way of whatever nature, if any, whether or not of record in the Perry County Clerk's Office or otherwise, and to any state of facts that an accurate survey may reveal, and the conveyance is expressly subject to all city, county, municipal and state zoning laws and other ordinances, regulations, and restrictions, including statutes and other laws of municipal, county or other governmental authorities applicable to, and enforceable against, the property described herein.

MISCELLANEOUS PROVISIONS

1. All real estate and/or ad valorem taxes, if any, assessed against the land herein conveyed for the current tax year assessed as of January 1, 2006 shall be prorated between Grantor and Grantee.

2. Rights of way for ingress and egress to Lot # 106 within the interior of the industrial park and access from the Lots to public utilities will be governed by the terms and conditions of any development agreement(s) between the parties of even date herewith.

TO HAVE AND TO HOLD the same, together with the appurtenances thereunto belonging unto the Grantee, its successors and assigns forever, with covenants of General Warranty.

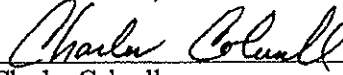
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IN TESTIMONY WHEREOF, witness the signature of the Grantor on this the day
and year first above written.

GRANTOR:

COAL FIELDS REGIONAL INDUSTRIAL
AUTHORITY, INC.

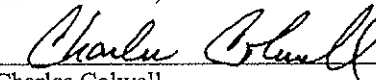

Charles Colwell
Chairman

CERTIFICATE OF PARTIES

We, COAL FIELDS REGIONAL INDUSTRIAL AUTHORITY, INC., by its Chairman,
Charles Colwell, Grantor, and A.O.D.D. TRANSPORT, INC., by its authorized officer,
Melinda J. Henson, Grantee, do hereby swear and/or affirm, pursuant to
KRS Chapter 382, that the fair market value of the above stated property is \$116,240.00.

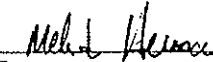
GRANTOR:

COAL FIELDS REGIONAL INDUSTRIAL
AUTHORITY, INC.


Charles Colwell
Chairman

GRANTEE:

A.O.D.D. TRANSPORT, INC.,


By: Melinda J. Henson
Its: President & Secretary

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STATE OF KENTUCKY)
)SS
COUNTY OF Perry)

I hereby certify that the foregoing deed and Certificate of the Parties was duly subscribed,
sworn to and acknowledged before me by Charles Colwell as Chairman of the **COAL FIELDS**
REGIONAL INDUSTRIAL AUTHORITY, INC., on this the 19 day of September, 2006.

Osborne Hall
Notary Public

My commission expires 4-20-2007.

STATE OF KENTUCKY)
)SS
COUNTY OF Perry)

I hereby certify that the foregoing Certificate of the Parties was duly subscribed, sworn to
and acknowledged before me by Melinda Hise, its Pres / Sec of **A.O.D.D.**
TRANSPORT, INC., on this the 19th day of September, 2006.

Osborne Hall
Notary Public

My commission expires 4-20-2007.

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STATE OF KENTUCKY)
) SS
COUNTY OF PERRY)

I, Haven King, Clerk of Perry County, do hereby certify that the foregoing Deed of Conveyance was on the 22 day of September, 2006, lodged in my office for record and that it, the foregoing, and this my certificate have been duly recorded in my said office in Deed Book 326, page 119.

Witness my hand on this the 22 day of September, 2006.

HAVEN KING, CLERK

By: Barbara Sue Trank D.C.

This instrument prepared by the law
firm of Hollon & Collins,
Hazard, Kentucky.

Paul R Collins
Attorney

Deed Tax
\$116.50

726

TRUS JOIST/MOYERHAUSER P.P. 726-740

THIS DEED OF CONVEYANCE, made and entered into this the 11th day of October, 1993, by and between ENTERPRISE COAL COMPANY, a Kentucky Corporation, of P.O. Box 1871, Roanoke, Virginia 24008, party of the first part, and TRUS JOIST MACMILLAN, a Limited Partnership of 9777 West Chinden Boulevard, Boise, Idaho 83714, party of the second part.

W I T N E S S E T H:

That for and in consideration of the sum of Six Hundred Fifty Nine Thousand Sixty Two Dollars and Fifty Cents (\$659,062.50), cash in hand paid, the receipt of which is hereby acknowledged, the party of the first part does hereby bargain, grant, sell and convey unto the party of the second part, its successors and assigns, the surface only of a certain tract or parcel of land located on the Right Fork and the Holly Bush Branch of the Rockhouse Fork of Tenmile Creek of Lost Creek of Troublesome Creek of the North Fork of the Kentucky River (watershed references were made as to their original location before mountain top removal strip mining occurred) in Perry County, Kentucky and being more particularly bounded and described as follows:

Beginning at an iron pin set on a line between Enterprise Coal Company's PE-221 Wiley Smith and PE-255 Martha Holliday tracts, said iron pin being located S 6-21-33 W 50.0 Ft. from the corner between Enterprise Coal Company's PE-221 Wiley Smith, PE-1 William Allen and PE-255 Martha Holliday tracts where formerly stood a 20 inch marked oak, thence

S 84-41-26 W 526.238 Ft. to an iron pin set 45.818 Ft. South of the line between Enterprise Coal Company's PE-1 William Allen and PE-255 Martha Holliday tracts, thence

S 27-00-04 W 2,812.136 Ft. crossing the line between Enterprise Coal Company's PE-255 Martha Holliday and PE-95 Colson Duff tracts at 1,295.555 Ft. to an iron pin, thence

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S 62-34-36 E 258.161 Ft. crossing the line between Enterprise Coal Company's PE-95 Colson Duff and PE-157 James Grigsby tract at 173.208 Ft. to an iron pin, thence

S 27-25-24 W 746.079 Ft. crossing the line between Enterprise Coal Company's PE-95 Colson Duff and PE-157 James Grigsby tracts at 200.140 Ft. and again at 345.777 Ft. to an iron pin, thence

S 62-34-36 E 559.741 Ft. to an iron pin, thence

N 27-25-24 E 746.081 Ft. to an iron pin, thence

S 62-34-36 E 376.291 Ft. to an iron pin, thence

N 26-58-25 E 690.071 Ft. to an iron pin, thence

S 62-58-20 E 165.020 Ft. to an iron pin, thence

N 28-54-56 E 119.950 Ft. to an iron pin, thence

N 38-24-46 E 289.701 Ft. to an iron pin, thence

N 62-25-58 W 153.420 Ft. to an iron pin, said iron pin located S 06-27-06 W from the highest point on the V.O.R. at the East Kentucky Regional Airport and N 46-28-45 W from the top of vent on the City of Hazard water storage tank, thence

N 10-20-11 E 924.781 Ft. crossing the line between Enterprise Coal Company's PE-157 James Grigsby and PE-221 Wiley Smith tracts at 906.798 Ft. to an iron pin; said iron pin referenced by the following: S 20-35-28 E 89.89 feet to a 1.25" aluminum cap on a 0.75" pipe; thence S 54-54-36 E 81.73 feet to a 3" aluminum tablet marked "Ref Pt" set in concrete and located 2 feet northwest of a chain link cemetery fence, thence S 54-54-36 E 95.41 feet (passing over a headstone marked Zollie Campbell at 44.70 feet) to another 3" tablet located on the center of a point 2 feet southeast from the southeast edge of the cemetery fence; thence

N 32-42-06 E 518.391 Ft. to an iron pin, thence
 Due North 754.890 Ft. to an iron pin, thence
 N 62-07-27 W 143.120 Ft. to an iron pin set 50.0
 Ft. South of a corner
 (stake on ridge called)
 to Enterprise Coal
 Company's PE-221 Wiley
 Smith tract, thence
 S 87-21-08 W 140.920 Ft. to the Point of Beginning
 containing 87.875 acres
 more or less.

All bearings and distances are referenced to the Kentucky State Plane Grid System with the Point of Beginning, being located at N 386,924.29 and E 2,721,470.714 in the south zone of said system, as referenced to the 1927 North American Datum.

Being a part of the same property conveyed to Apache Mining Company, D/B/A Enterprise Coal Company by ANR Coal Company, a Delaware Corporation, by Deed dated April 18, 1986, and of record at Deed Book 208, page 266, records of the Perry County Clerk's Office. Enterprise Coal Company was merged into Apache Mining Company on February 26, 1988. Thereafter, on March 2, 1988, the Articles of Incorporation of Apache Mining Company were amended changing the name of that Corporation to Enterprise Coal Company. The Certificate of Merger and the Articles of Amendment changing the corporate name are of record at Miscellaneous Book 22, page 398, records of the Perry County Clerk's Office.

ANR Coal Company received title to the above described property through corporate merger with VICC Land Company on September 1, 1985. The corporate merger is recorded in Miscellaneous Book 18, page 742, records of the Perry County Clerk's Office. The foregoing property is also part of the same property conveyed to VICC Land Company from Virginia Iron, Coal & Coke Company, by deed dated May 1, 1979, and of record at Deed Book 178, page 773, records of the Perry County Clerk's Office.

The surface property herein conveyed is a portion of the following Enterprise Coal Company tracts: PE-95, Colson Duff; PE-157, James Grigsby; PE-221, Wiley Smith; and PE-255, Martha Holliday.

The following references are sources of title for the individual Enterprise Coal Company tracts:

<u>GRANTOR</u>	<u>DATE</u>	<u>D.B.</u>	<u>PAGE</u>
PE-157 James Grigsby			
D.K. Napier et.ux.	03/26/1986	207	176
Andrew Adams et.al.	03/25/1986	207	170
Edward L. Clemons et al	03/04/1986	207	173
Bob Bush, et.ux.	11/14/1984	201	726
Lynn Lee, Inc.	10/19/1983	197	134
Continental Realty Co.	07/02/1917	35	326

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PE-95 Colson Duff

Lynn Lee, Inc.	10/19/1983	197	134
Tennis Coal & Coke Company, et.al.	12/17/1928	56	625

PE-255 Martha Holliday

Lynn Lee, Inc.	10/19/1983	197	134
Green Holliday, et.al.	04/22/1969	140	472

PE-221 WILEY SMITH

D.K. Napier, et.ux.	03/26/1986	207	176
Lynn Lee, Inc.	10/19/1983	197	134
Continental Realty Co.	07/02/1917	35	326

EXCEPTION NO. 1:

There is excepted from this conveyance all coal, oil, gas, and other minerals underlying the property together with the necessary rights of way and mining rights to remove the same; the surface rights herein granted are subordinated to all existing rights previously granted by party of the first part, and its predecessors in title; provided, however, that upon the termination of all such existing rights previously granted away, the surface estate herein conveyed shall be the dominant estate and the mining and other mineral rights herein excepted shall be exercised in a manner so as not to disturb the peaceful use and enjoyment of the surface estate herein conveyed including existing or future improvements thereon.

EXCEPTION NO. 2:

This conveyance is made expressly subject to the mining rights and privileges heretofore granted to Indian Head Mining Company, Inc., and River Coal Company, Inc., by consolidated and amended Lease Agreement of November 11, 1977, which was assigned to Pro-Land, Inc. on January 25, 1983, as well as all other amendments and addendums thereto and all surface mining permits relative thereto. This Lease is of record at Lease Book 24, page 195, records of the Perry County Clerk's Office. The party of the first part reserves herefrom the right to the continued receipt of

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all royalties, fees, and compensation to be received under the foregoing Lease until the same shall terminate or otherwise expire by its terms.

EXCEPTION NO. 3:

This conveyance is expressly made subject to those rights and privileges heretofore granted to Kentucky West Virginia Gas Company by Virginia, Iron, Coal & Coke Company by deed dated April 17, 1939, and of record at Deed Book 72, page 311, records of the Perry County Clerk's Office. This conveyance is also made expressly subject to the rights and privileges heretofore granted to the Hazard-Perry County Airport Board by VICC Land Company and Kentucky-West Virginia Gas Company by deed dated April 29, 1980, and of record at Deed Book 182, page 644, records of the Perry County Clerk's Office.

EXCEPTION NO. 4:

There is hereby excepted all existing conditions, covenants, easements, exceptions, reservations, restrictions and rights-of-way of whatever nature, if any, whether or not of record in the Perry County Clerk's office or otherwise, and to any state of facts that an accurate survey may reveal, and is expressly subject to all city, county, municipal and state zoning laws and other ordinances, regulations, and restrictions, including statutes and other laws of municipal, county or other governmental authorities applicable to, and enforceable against, the property described herein.

The party of the second part affirms, by acceptance of this Deed, that it has inspected the property and any improvements located thereon and has full knowledge of the condition, repair and location of same.

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MISCELLANEOUS PROVISIONS

(1) The party of the second part assumes and agrees to pay all real estate and/or ad valorem taxes assessed against the property for the current year and all subsequent years, the current taxes and assessments to be prorated as of the date of transfer of this Deed.

(2) It is the intent of the parties and is expressly understood by them that the sole access for the party of the second party for ingress, egress, and regress to and from the property herein conveyed shall be the roadway as described in the Deed of Conveyance between Enterprise Coal Company and the Perry County Fiscal Court dated the 11th day of October, 1993, and of record at Deed Book 243, page 719, records of the Perry County Clerk's Office and the right-of-way to be granted by Kem Coal Company to the Perry County Fiscal Court, which lies between the right-of-way granted by Enterprise Coal Company and Kentucky Highway 15.

TO HAVE AND TO HOLD the same unto the party of the second part, its successors and assigns, as to the surface only, with Covenants of Special Warranty.

IN TESTIMONY WHEREOF, the party of the first part has heretofore set its hand on this date first above written by and through its authorized officer and by virtue of authority vested in him by said Corporation.

ENTERPRISE COAL COMPANY

BY: William S. Hudson Jr.
ITS: Vice President

STATE OF KENTUCKY
COUNTY OF PERRY

I, William G. Gentry, a Notary Public in and for the County and State aforesaid, hereby certify that the

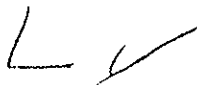
Document Image

732

foregoing Deed of Conveyance by and between Enterprise Coal Company, a Kentucky Corporation, and Trus Joist MacMillan, a Limited Partnership, was acknowledged before me by Enterprise Coal Company, a Kentucky Corporation, by and through William S. Hudgins, its Vice President, to be the voluntary act and deed of such Corporation.

Witness my hand on this the 15 day of October, 1993.

My Commission expires: March 28, 1997.


NOTARY PUBLIC


CERTIFICATION OF CONSIDERATION

We, Enterprise Coal Company, a Kentucky Corporation, parties of the first part, Grantor, and Trus Joist MacMillan, a Limited Partnership, party of the second part, Grantee, do hereby certify, pursuant to Chapter 382, that the above stated consideration in the amount of \$659,062.50, is the true, correct and full consideration paid for the property herein conveyed. We further certify our understanding that falsification of the stated consideration or sale price of the property is a Class D felony, subject to one to five years imprisonment and fines up to \$10,000.

ENTERPRISE COAL COMPANY, a
KENTUCKY CORPORATION

BY: William S. Hudgins, Jr.
ITS: Vice President

TRUS JOIST MACMILLAN, a
LIMITED PARTNERSHIP

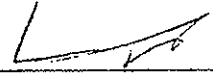
BY: 
ITS: Jr. Vice Pres. dent

Document Image

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STATE OF KENTUCKYCOUNTY OF PERRY

The foregoing Certificate of Consideration was signed, acknowledged, and sworn to before me on this the 11 day of October, 1993, by William S. Hearn, as Vice President of Enterprise Coal Company, a Kentucky Corporation, for and on behalf of Enterprise Coal Company, a Kentucky Corporation.

My Commission expires: August 28, 1994.
NOTARY PUBLICSTATE OF KENTUCKYCOUNTY OF PERRY

The foregoing Certificate of Consideration was signed, acknowledged, and sworn to before me on this the 21st day of October, 1993, by RANDY GORUK, as SR. VICE PRESIDENT of Trus Joist MacMillan, a Limited Partnership, on behalf of Trus Joist MacMillan.

My Commission expires: August 17th 1994.
NOTARY PUBLIC

STATE OF KENTUCKY

COUNTY OF PERRY

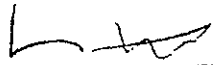
I, Clarence Howard, Clerk of the County and State aforesaid, do certify that the foregoing Deed of Conveyance from Enterprise Coal Company, a Kentucky Corporation, to Trus Joist MacMillan, a Limited Partnership, was lodged for record in my office on the 22 day of October, 1993, and it the foregoing, and this, my certificate, have been duly recorded in my office in Deed Book No. 243 at page 721.

Document Image

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Witness my hand this 22 day of October, 1993.CLARENCE HOWARD, CLERK
PERRY COUNTY

\$659.50

BY: Lena Cross D.C.The foregoing Deed was
prepared by the undersigned
attorney.

WILLIAM ENGLE, III
POST OFFICE DRAWER 1017
HAZARD, KENTUCKY 41701
PHONE: (606) 436-2165
BE0929.4

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735

DEED

THIS DEED OF CONVEYANCE made and entered into this the 21st day of October, 1993, by and between EAST KENTUCKY CORPORATION, a Kentucky municipal de jure corporation, created pursuant to KRS 154.33-510 et seq., with its principal office and principal place of business located in Hazard, Perry County, Kentucky, party of the first part, and TRUS JOIST MACMILLAN, a Limited Partnership of 9777 West Chinden Boulevard, Boise, Ohio 83714, party of the second part.

W I T N E S S E T H:

That for and in consideration of Ten Dollars (\$10.00), cash in hand paid, the receipt of which is hereby acknowledged, the party of the first part does hereby bargain, grant, sell, and convey unto the party of the second part, its successors and assigns forever, a certain tract or parcel of land lying and being on the waters of Rockhouse Fork of Tenmile Creek of Lost Creek of Troublesome Creek of the North Fork of the Kentucky River in Perry County, Kentucky, and more particularly described as follows:

Beginning at a point on top of the ridge between Hollybush Fork and Rockhouse Fork of Tenmile Creek, said point being the fifth corner in that certain deed dated October 11, 1993, from Rae Vansant, et al, to East Kentucky Corporation, said deed recorded in Deed Book 243, at page 714, records of the Perry County Clerk's Office, thence with the lines of said deed reversed

N 87 15 E 205 feet to two hickories and
a black oak, thence

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N 60 45 E

to a point on the 13th line or call of that certain deed dated October 11, 1993, from Enterprise Coal Company to Trus Joist MacMillan, a limited partnership, recorded in the Perry County Clerk's Office in Deed Book 243, at page 726. Thence with lines of said Trus Joist MacMillan deed

N 10 20 11 E

crossing the line between Enterprise Coal Company's PE-157 James Grigsby and PE-221 Wiley Smith tracts to an iron pin; said iron pin referenced by the following: S 20-35-28 E 89.89 feet to a 1.25" aluminum cap on a 0.75" pipe; thence S 54-54-36 E 81.73 feet to a 3" aluminum tablet marked "Ref Pt" set in concrete and located 2 feet northwest of a chain link cemetery fence, thence S 54-54-36 E 95.41 feet (passing over a headstone marked Zollie Campbell at 44.70 feet) to another 3" tablet located on the center of a point 2 feet southeast from the southeast edge of the cemetery fence; thence

N 32 42 06 E 518.391 feet

to an iron pin, thence

Due North 754.890 feet

to an iron pin, thence

N 62 07 27 W 143.120 feet

to an iron pin set 50.0 ft. South of a corner (stake on ridge called) to Enterprise Coal Company's PE-221 Wiley Smith tract, thence

with line or lines of said Trus Joist MacMillan Deed in a westerly direction

to a point on the 13th line or call of the aforesaid Rae Vansant, et. al. to East Kentucky Corporation deed, thence with lines of said deed reversed

S 8 30 W

to a point, thence

Document Image

737

S 4 25 W	270 feet	to a point, thence
S 39 15 W	252 feet	to a point, thence
S 35 45 W	310 feet	to a point, thence
S 60 00 W	403 feet	to a point, thence
S 21 15 W	322 feet	to a point, thence
S 22 00 W	388 feet	to a point, thence
S 60 20 W	560 feet	to a point, thence
S 48 50 W	170 feet	to the Point of Beginning containing 20.31 acres more or less

It should be noted that bearings and distances from the Trus Joist MacMillan deed are referenced to the Kentucky State Plane Grid System (south zone) as referenced to the 1927 North American Datum, whereas the bearings from the East Kentucky Corporation deed are probably of magnetic origin.

Being a portion of the same property conveyed from Rae Vansant, et. al. to East Kentucky Corporation by deed dated October 11, 1993, and of record in Deed Book 243, at page 714, records of the Perry County Clerk's Office.

TO HAVE AND TO HOLD the same, unto the party of the second part, its successors and assigns, with covenants of general warranty.

IN TESTIMONY WHEREOF, the party of the first part has hereunto set its hand on this date first above written by and through its authorized officer and by virtue of authority vested in him by said Corporation.

EAST KENTUCKY CORPORATION

BY: [Signature]
ITS: Executive Director

STATE OF KENTUCKY

COUNTY OF PERRY

I, DANIEL G. KING, a Notary Public in and for the State and County aforesaid, hereby certify that the foregoing Deed of Conveyance by and between East Kentucky Corporation and Trus Joist MacMillan was acknowledged before

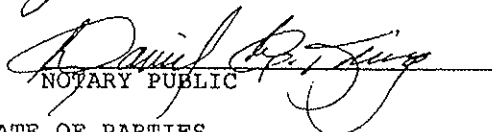
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me by East Kentucky Corporation by and through BEN
ROSS, its EXEC. DIRECTOR, to be the voluntary
act and deed of such Corporation.

Witness my hand on this the 21st day of October, 1993.

My Commission expires: August, 17th 1996.



NOTARY PUBLIC

CERTIFICATE OF PARTIES

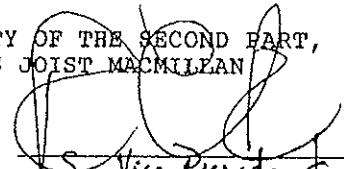
We, East Kentucky Corporation, party of the first part,
and Trus Joist MacMillan, party of the second part, do
certify pursuant to KRS Chapter 382, that the property
herein conveyed is transferred for the nominal consideration
of Ten Dollars (\$10.00). We further certify that the full
estimated fair cash value of the property herein conveyed is
Seventy Six Thousand, One Hundred Sixty Two Dollars and
Fifty Cents (\$76,162.50).

We further certify our understanding that falsification of
the stated consideration or sale price of the property is a
Class D Felony, subject to one to five years imprisonment
and fines up to Ten Thousand Dollars (\$10,000.00).

PARTY OF THE FIRST PART,
EAST KENTUCKY CORPORATION

BY: 
ITS: Executive Director

PARTY OF THE SECOND PART,
TRUS JOIST MACMILLAN

BY: 
ITS: Sr. Vice President

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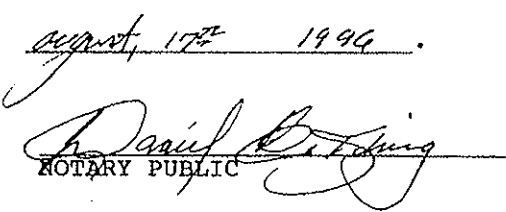
739

STATE OF KENTUCKY

COUNTY OF PERRY

The foregoing Certificate of Consideration was signed, acknowledged, and sworn to before me on this the 21st day of October, 1993, by BEN RASS, as EXEC. DIRECTOR, of East Kentucky Corporation, for and on behalf of East Kentucky Corporation.

My Commission expires: August, 17th 1996.


NOTARY PUBLIC

STATE OF KENTUCKY

COUNTY OF PERRY

The foregoing Certificate of Consideration was signed, acknowledged, and sworn to before me on this the 21st day of October, 1993, by RANDY GORUK, as SR. V. PRESIDENT, of Trus Joist MacMillan, a Limited Partnership, for and on behalf of Trus Joist MacMillan.

My Commission expires: August, 17th 1996.


NOTARY PUBLIC

STATE OF KENTUCKY

COUNTY OF PERRY

I, Clarence Howard, Clerk of the County and State aforesaid, do certify that the foregoing Deed of Conveyance from East Kentucky Corporation to Trus Joist MacMillan, a Limited Partnership, was lodged for record in my office on the 21 day of October, 1993, and it, the foregoing, and this, my certificate, have been duly recorded in my office in Deed Book 243, at page 735.

Witness my hand this the 22 day of October, 1993.

Document Image

740

\$.50 Jay

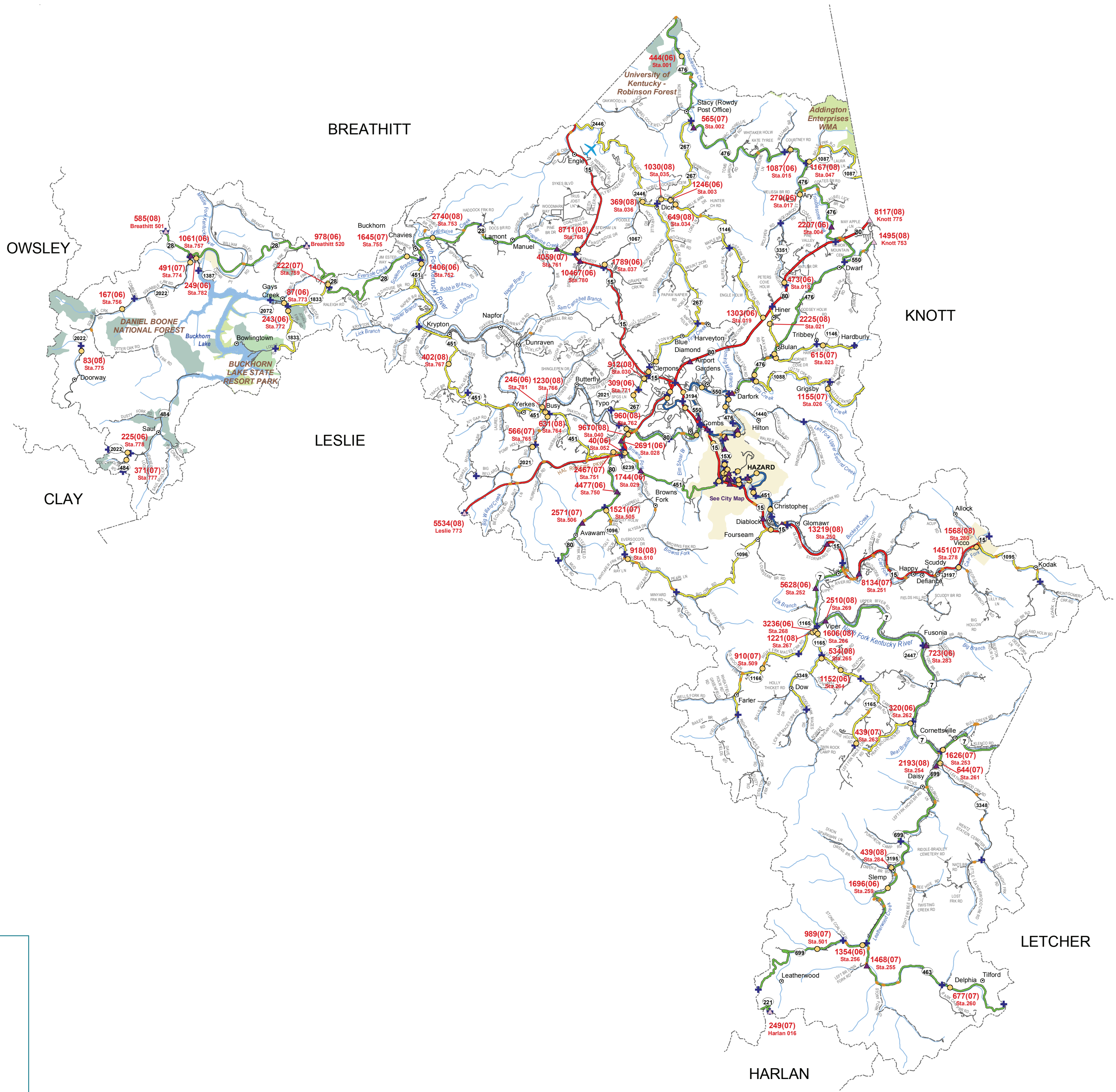
CLARENCE HOWARD, CLERK,
PERRY COUNTYBY: Lena Cress D.C.

The foregoing Deed was
prepared by the
undersigned attorney.

W Engle
WILLIAM ENGLE, III
POST OFFICE DRAWER 1017
HAZARD, KENTUCKY 41701
PHONE: (606) 436-2165
BE1021.7

EXHIBIT J8

Traffic Maps and Data



- Count Stations**
- ATR
 - Full Coverage
 - Classification
 - HPMS
 - Index Station
 - Interstate
 - Toll Road
 - Local HPMS
 - Urban Minor
 - Adjacent
 - Termini
- Functional Classification**
- Rural Interstate
 - Rural Principal Arterial
 - Rural Minor Arterial
 - Rural Major Collector
 - Rural Minor Collector
 - Urban Interstate
 - Urban Freeways & Expressways
 - Urban Principal Arterial
 - Urban Minor Arterial Street
 - Urban Collector Street
 - Rural & Urban Local
 - Bridge
 - Railroad
 - Stream
 - City/Town
 - Federal Aid Urbanized Area 2000
 - Incorporated Area
 - Lake
 - State Park
 - National Park or Recreation Area
 - Defense Facility
 - Wildlife Area
 - Geological Area
 - State, National, or Private Forest



Division of Planning



Traffic Station Counts PERRY COUNTY

2 1 0 2 4 6 Miles

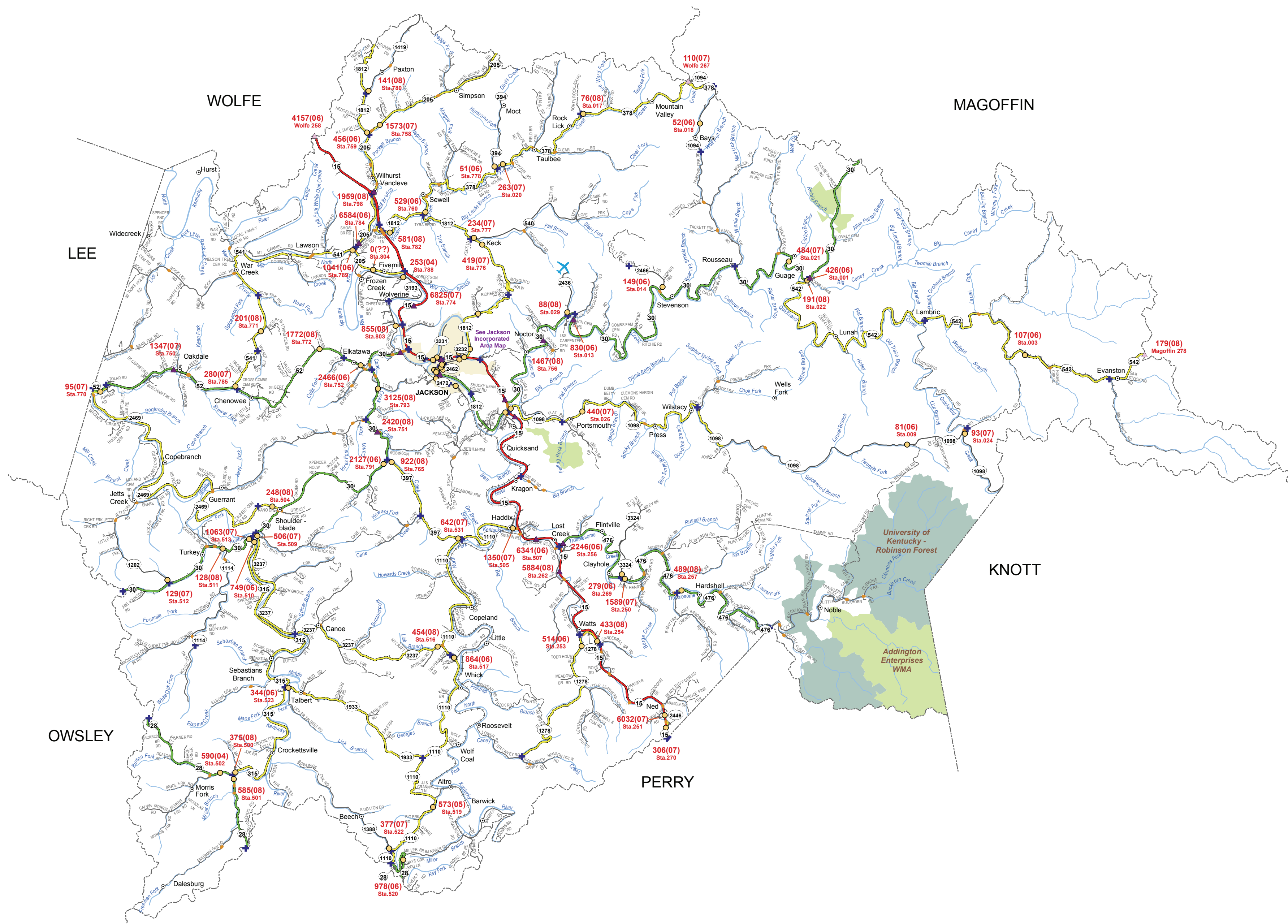
Last map revision: APRIL 2009 SC

Latest traffic count date for each station is indicated on the map in parentheses after the actual traffic count. For the most current traffic count information, please refer to the Counts Database Program (CTS) found on the Division of Planning website.

www.transportation.ky.gov/planning/index2.asp

Station locations are plotted at segment midpoints where actual milepoints have not been verified in the field.

Kentucky State Plane Coordinate System (NAD-83)



Count Stations

- ATR
- Full Coverage
- Classification
- HPMS
- Index Station
- Interstate
- Toll Road
- Local HPMS
- Urban Minor
- Adjacent
- Termini

Functional Classification

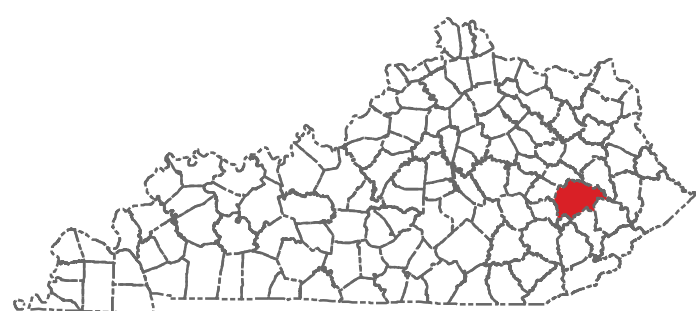
- Rural Interstate
- Rural Principal Arterial
- Rural Minor Arterial
- Rural Major Collector
- Rural Minor Collector
- Urban Interstate
- Urban Freeways & Expressways
- Urban Principal Arterial
- Urban Minor Arterial Street
- Urban Collector Street
- Rural & Urban Local
- Bridge
- Railroad
- Stream
- City/Town
- Federal Aid Urbanized Area 2000
- Incorporated Area
- Lake
- State Park
- National Park or Recreation Area
- Defense Facility
- Wildlife Area
- Geological Area
- State, National, or Private Forest



Traffic Station Counts BREATHITT COUNTY



Last map revision: APRIL 2009 CLE
Latest traffic count date for each station is indicated on the map in parentheses after the actual traffic count. For the most current traffic count information, please refer to the Counts Database Program (CTS) found on the Division of Planning website.
www.transportation.ky.gov/planning/index2.asp
Station locations are plotted at segment midpoints where actual milepoints have not been verified in the field.
Kentucky State Plane Coordinate System (NAD-83)



Kentucky Traffic Counts

Route: KY 15

Street:

District: 10

County: BREATHITT

City:

From MP: 0.000

At: PERRY COUNTY LINE

To MP: 4.047

At: KY 1278-GANDERBILL BRANCH ROAD

Station ID: 251

Station Cnty: BREATHITT

Station Type: Full Coverage

Functional Class: RURAL - Principal Arterial

Last Actual Count:

6,032 in 2007

New Road Year:

Impact Year:

<u>Year</u>	<u>Count</u>	<u>Type</u>
2009	6,140	Computer Estimate
2008	6,070	Computer Estimate
2007	6,030	Actual Count
2006		
2005		
2004	5,500	Actual Count
2003		
2002		
2001	5,340	Actual Count
2000		
1999		
1998		
1997		
1996	5,420	Actual Count
1995		
1994		
1993		
1992	4,350	Actual Count
1991		
1990		
1989		
1988		
1987	3,760	Actual Count
1986		
1985		
1984		
1983	4,180	Actual Count
1982		
1981	3,670	Actual Count
1980		
1979	4,460	Actual Count
1978		
1977	4,120	Actual Count
1976		
1975	3,550	Actual Count
1974		
1973	2,770	Actual Count
1972		
1971	2,470	Actual Count
1970		
1969	1,690	Actual Count

Kentucky Traffic Counts

251

1968
1967
1966
1965
1964
1963

Kentucky Traffic Counts

Route: KY 15

Street:

District: 10

From MP: 20.735

At: KY 28

County: PERRY

To MP: 25.179

At: BREATHITT COUNTY LINE

City:

Station ID: 768

Station Cnty: PERRY

Last Actual Count:

8,711 in 2008

Station Type: Full Coverage

Functional Class: RURAL - Principal Arterial

New Road Year:

Impact Year:

<u>Year</u>	<u>Count</u>	<u>Type</u>
2009	8,950	Computer Estimate
2008	8,710	Actual Count
2007		
2006		
2005	8,040	Actual Count
2004		
2003		
2002	8,260	Actual Count
2001		
2000		
1999	8,920	Actual Count
1998		
1997		
1996	6,500	Actual Count
1995	6,640	Actual Count
1994		
1993		
1992	6,840	Actual Count
1991		
1990		
1989	5,930	Actual Count
1988		
1987	5,920	Actual Count
1986	5,270	Actual Count
1985		
1984	5,080	Actual Count
1983	4,950	Actual Count
1982	4,300	Actual Count
1981	4,170	Actual Count
1980		
1979	5,320	Actual Count
1978		
1977	4,020	Actual Count
1976		
1975	3,820	Actual Count
1974		
1973	3,430	Actual Count
1972		
1971	2,140	Actual Count
1970		
1969		

Kentucky Traffic Counts

4 768

1968

1967

1,330 Actual Count

1966

1965

1964

1963

Kentucky Traffic Counts

Route: KY 15 Street:

District: 10

From MP: 15.968 At: KY 267

County: PERRY

To MP: 20.735 At: KY 28

City:

Station ID: 780 Station Cnty: PERRY

Last Actual Count:

11,390 in 2009

Station Type: Rest Areas(RtSuffix=RA) & Ramps(RtSuffix=RP)

Functional Class: RURAL - Principal Arterial

New Road Year:

Impact Year:

<u>Year</u>	<u>Count</u>	<u>Type</u>
2009	11,400	Actual Count
2008	11,200	Computer Estimate
2007		
2006	10,500	Actual Count
2005		
2004		
2003	10,600	Actual Count
2002		
2001	9,560	Actual Count
2000		
1999	10,400	Actual Count
1998		
1997		
1996	9,760	Actual Count
1995	8,480	Actual Count
1994		
1993		
1992	8,590	Actual Count
1991		
1990		
1989	7,510	Actual Count
1988		
1987	6,210	Actual Count
1986	6,970	Actual Count
1985		
1984	5,910	Actual Count
1983	6,220	Actual Count
1982	5,410	Actual Count
1981	6,050	Actual Count
1980	6,050	Actual Count
1979		
1978	8,110	Actual Count
1977		
1976		
1975		
1974		
1973		
1972		
1971		
1970		
1969		

Kentucky Traffic Counts

780

1968
1967
1966
1965
1964
1963

Kentucky Traffic Counts

Route: KY 28

Street:

District: 10

From MP: 14.818

At: HADDOCK FORK ROAD

County: PERRY

To MP: 18.063

At: KY 15

City:

Station ID: 761

Station Cnty: PERRY

Last Actual Count:

4,059 in 2007

Station Type: Rest Areas(RtSuffix=RA) & Ramps(RtSuffix=RP)

Functional Class: RURAL - Major Collector

New Road Year:

Impact Year:

<u>Year</u>	<u>Count</u>	<u>Type</u>
2009	4,470	Computer Estimate
2008	4,310	Computer Estimate
2007	4,060	Actual Count
2006		
2005		
2004	4,480	Actual Count
2003		
2002		
2001	4,800	Actual Count
2000		
1999		
1998		
1997		
1996	4,820	Actual Count
1995		
1994		
1993	3,140	Actual Count
1992		
1991		
1990		
1989	3,470	Actual Count
1988		
1987		
1986		
1985		
1984	3,300	Actual Count
1983		
1982		
1981	3,060	Actual Count
1980		
1979	3,240	Actual Count
1978		
1977	2,420	Actual Count
1976		
1975		
1974		
1973	1,760	Actual Count
1972		
1971		
1970		
1969		

Kentucky Traffic Counts

761

1968
1967
1966
1965
1964
1963

EXHIBIT J9

Highway Weight Classes

May 5, 2008		EXTENDED WEIGHT COAL AND COAL BY-PRODUCTS HAUL ROAD SYSTEM						Page 1 of 28		
For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.										
2007 ANNUAL UPDATE										
County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Adair	LN-9008-	LOUIE B NUNN PKWY	36.159	57.791						
Anderson	BG-9002-	MARTHA LAYNE COLLINS-BLUEGRASS PKWY	44.807	52.315						
			56.287	61.947						
					61.897	003B00007L		68,000	76,000	
					61.895	003B00007R		68,000	76,000	
	US-127-	HARRODSBURG RD+S MAIN ST+N MAIN ST+FRANKFORT RD+BYPASS NORTH	0.000	1.900						
Barren	LN-9008-	LOUIE B NUNN PKWY	0.000	22.357						
					10.030	005B00070N		54,000	68,000	80,000
					10.015	005B00070N		54,000	68,000	80,000
					8.199	005B00068L				118,000
					8.188	005B00068R				118,000
Bell	CS-2149-	MACK AVE	0.000	0.300						
	CS-2184-	SALISBURY AVE	0.100	0.492						
					0.189	007C00088N	36,000	36,000	36,000	36,000
	KY-72-	HIGHWAY 72	0.000	3.371						
	KY-74-	HIGHWAY 74+W CUMBERLAND AVE	3.800	14.300						
					14.233	007B00095N		84,000	96,000	
					13.097	007B00096N		84,000	96,000	
					11.576	007B00112N		44,000	44,000	44,000
	KY-186-	GLENBORO RD+KY-186+40TH ST	2.300	2.977						
					2.414	007B00087N		70,000	80,000	
	KY-221-	HIGHWAY 221	10.400	12.633						
					12.629	007B00012N		70,000	90,000	
					10.530	007B00011N		48,000	70,000	96,000
	KY-441-	BELT LINE RD+HOLLYWOOD DR	4.500	4.897						
	KY-2012-	HEN WILDER BR CUT THROUGH RD+HIGHWAY 2012	0.700	1.950						
	KY-3085-	HIGHWAY 3085 S+HIGHWAY 3085 N	0.600	1.200						
					0.730	007B00001N		68,000	74,000	100,000
	US-25-E	US-25E+S 12TH ST+N 12TH ST+S US HIGHWAY 25E+S ROBERT L MADON BYP+N ROBERT L MADO	0.000	18.651						
					7.052	007B00022R		88,000	92,000	114,000
					7.036	007B00022L		88,000	92,000	114,000
					1.666	007B00126N		54,000	68,000	80,000
					1.663	007B00126N		54,000	68,000	80,000
	US-119-	US HIGHWAY 119	0.000	15.880						
Boone	I-75-	I-75	169.439	183.300						

May 5, 2008		EXTENDED WEIGHT COAL AND COAL BY-PRODUCTS HAUL ROAD SYSTEM						Page 2 of 28		
For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.										
2007 ANNUAL UPDATE										
County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Boyd	KY-757-	FRIENDSHIP RD+WHITES CRK+OLD US ROUTE 23	6.200	8.600						
	US-23-	US ROUTE 23+LOUISA RD+COURT ST+LOUISA ST+WALNUT ST+CENTER ST+WINCHESTER AVE+US 2	0.000	6.100						
			12.400	16.000						
	US-60-	US ROUTE 60 W+US ROUTE 60+13TH ST+WINCHESTER AVE+11TH ST+35TH ST	12.400	12.409						
			12.409	12.880						
					12.759	010B00062N		88,000	90,000	98,000
Breathitt	CR-1114-	RUSSELL BR RD	0.000	0.800						
	CR-1154-	FLINT RDG RD	0.000	2.600						
	KY-15-	KY-15+KY 15+KY-15	0.000	20.961						
					14.812	013B00030N		72,000	78,000	96,000
					7.676	013B00031N		76,000	84,000	102,000
					6.732	013B00032N		78,000	84,000	104,000
					6.520	013B00033N		76,000	82,000	100,000
					3.820	013B00034N		72,000	80,000	104,000
					3.082	013B00035N		74,000	80,000	106,000
					0.498	013B00037N		74,000	80,000	106,000
			24.475	26.441						
	KY-28-	KY-28	0.000	5.000						
					3.782	013B00023N		72,000	80,000	110,000
					3.521	013B00022N		72,000	80,000	110,000
	KY-30-	KY-30+HWY 30+KY-30	29.700	37.500						
	KY-476-	KY-476	5.800	11.400						
	KY-542-	KY-542	16.400	18.500						
					17.104	013B00042N		54,000	68,000	80,000
KY-1110-	KY-1110	15.000	15.666							
				15.583	013B00039N		64,000	74,000	104,000	
Butler	WK-9001-	WENDELL H FORD-WESTERN KENTUCKY PKWY	87.544	88.433						
	WN-9007-	WILLIAM H NATCHER PKWY	18.166	35.063						
					32.737	016B00061N		78,000	96,000	108,000
					32.733	016B00061N		78,000	96,000	108,000
Caldwell	WK-9001-	WENDELL H FORD-WESTERN KENTUCKY PKWY	5.610	21.764						
					21.759	017B00033L		84,000	92,000	
					21.754	017B00033R		84,000	92,000	
					11.359	017B00029R		76,000	84,000	116,000
					11.323	017B00029L		76,000	84,000	116,000
Christian	EB-9004-	EDWARD T BREATHITT PKWY	7.000	28.095						

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For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.										
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County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Christian	EB-9004-	EDWARD T BREATHITT PKWY			7.942	024B00104L		54,000	68,000	80,000
					7.936	024B00104R		54,000	68,000	80,000
Clark	I-64-	I-64	89.480	97.700						
	KY-418-	ATHENS-BOONESBORO RD+FORD RD	5.500	5.600						
	KY-627-	BOONESBORO RD+BOONE AVE+S MAPLE ST+N MAPLE ST+PARIS RD	0.000	9.600						
	KY-1924-	FORD RD	0.000	1.800						
	KY-1958-	WINCHESTER BYP+BYPASS RD	2.400	5.200						
	KY-9000-	BERT T COMBS-MOUNTAIN PKWY	0.000	11.913						
					3.795	025B00057L		84,000	92,000	114,000
					3.668	025B00057R		84,000	92,000	114,000
		0.322	025B00055N		80,000	84,000	98,000			
	US-60-	LEXINGTON RD+W LEXINGTON AVE+N MAIN ST+STERLING ST+MT STERLING RD	0.000	6.700						
Clay	HR-9006-	HAL ROGERS PKWY	10.593	35.929						
					33.609	026B00082N		84,000	90,000	114,000
					21.699	026B00073N			96,000	118,000
					16.149	026B00067N		82,000	90,000	
					13.914	026B00065N		82,000	94,000	
					10.837	026B00062N		82,000	94,000	
	KY-11-	KY-11	0.000	8.891						
					5.420	026B00089N		82,000	94,000	
					2.931	026B00090N		82,000	92,000	
					8.891	26.600				
			15.598	026B00007N	36,000	38,000	44,000	72,000		
	KY-66-	KY-66	18.500	18.516						
			18.516	19.200						
			18.645	026B00049N		64,000	72,000	102,000		
	KY-80-	KY-80	7.300	7.500						
	KY-484-	KY-484	0.000	1.652						
	KY-1482-	KY-1482	0.000	1.000						
	US-421-	US-421	0.000	1.800						
					0.100	026C00092N				
					15.800	22.900				
					21.208	026B00002N		56,000	64,000	112,000
					20.483	026B00001N		56,000	62,000	88,000
16.561					026B00009N		56,000	72,000	110,000	
Daviess	AU-9005-	AUDUBON PKWY	15.883	23.441						
					22.733	030B00059L		76,000	84,000	112,000
					22.702	030B00059R		76,000	84,000	112,000
	US-60-B	WENDELL FORD EXPY	0.700	10.200						
					9.795	030B00070R		72,000	74,000	88,000

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For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.										
2007 ANNUAL UPDATE										
County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Daviess	US-60-B	WENDELL FORD EXPY			9.793	030B00070L		72,000	74,000	88,000
					7.729	030B00069L		70,000	74,000	98,000
					7.727	030B00069R		70,000	74,000	98,000
					5.672	030B00078L		64,000	74,000	
					5.663	030B00078R		64,000	74,000	
					5.106	030B00076L		78,000	90,000	
					5.093	030B00076R		78,000	90,000	
					4.858	030B00077L		70,000	76,000	100,000
					4.847	030B00077R		70,000	76,000	100,000
					4.250	030B00075L		84,000	88,000	100,000
	4.237	030B00075R		84,000	88,000	100,000				
	US-60-	US-60+WEST 4TH ST+EAST 4TH ST+US-60	14.800	16.500						
					20.567	28.286				
	WN-9007-	WILLIAM H NATCHER PKWY	59.473	70.184						
					70.184	030B00085R				118,000
					70.183	030B00085L				118,000
Fayette	I-64-	E 64	81.037	89.400						
	I-75-	N 75	117.700	120.700						
					118.072	034B00078R		88,000	98,000	
					117.970	034B00078L		88,000	98,000	
					117.792	034B00085N			98,000	116,000
	KY-4-	E NEW CIRCLE RD+W NEW CIRCLE RD+E NEW CIRCLE RD	4.600	12.700						
					4.650	034B00022L		84,000	92,000	118,000
					4.627	034B00022R		84,000	92,000	118,000
	US-60-	VERSAILLES RD+W HIGH ST+W MAXWELL ST+MIDLAND AVE+WINCHESTER RD	0.000	4.700						
					1.347	034B00121N		54,000	68,000	80,000
					1.346	034B00121N		54,000	68,000	80,000
					10.200	19.273				
					14.392	034B00007N		54,000	68,000	80,000
Floyd	CR-1010-Q1	WILLIAMS FRK	0.000	0.087						
	CR-1019-	CECIL BRANCH RD	0.000	0.100						
	CR-1020-	CONN DR IN IVEL	0.000	0.100						
	CR-1048-	SUGARLOAF BRANCH RD	0.000	0.700						
	CR-1073-	ALLEN-BANNER RD	0.900	1.991						
	CR-1091-	MEADOWS BRANCH RD	0.000	0.400						
	CR-1138-	MINK BRANCH RD	0.000	1.000						
					0.045	036C00044N	36,000	36,000	36,000	36,000
CR-1139-	DRY BRANCH MUDDER RD	0.000	0.400							

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County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Floyd	CR-1196-	SIMPSON BRANCH RD	0.000	1.000						
	CR-1197-	LITTLE MUDDY CREEK RD	0.000	3.300						
	CR-1220-	HITE RD	1.600	1.900						
	CR-1659-	IVEL COAL COMPANY	0.000	0.186						
					0.043	036C00056N	36,000	36,000	36,000	36,000
	CR-1934-	HITE RD CONN	0.000	0.096						
	KY-7-	036 KY-7	0.000	12.600						
					9.358	036B00053N		44,000	44,000	44,000
					7.992	036B00054N		66,000	72,000	88,000
					2.653	036B00010N		54,000	62,000	62,000
	KY-80-	036 KY-80	0.000	14.435						
					9.526	036B00121N		54,000	68,000	80,000
					9.524	036B00121N		54,000	68,000	80,000
	KY-114-	KY-114	0.000	11.400						
					10.658	036B00140N		54,000	68,000	80,000
					10.657	036B00140N		54,000	68,000	80,000
					10.509	036B00139N		54,000	68,000	80,000
					10.504	036B00139N		54,000	68,000	80,000
					4.138	036B00023N		88,000		
	KY-122-	036 KY-122	8.500	8.520						
			8.520	15.600						
			16.900	18.700						
	KY-302-	036 KY-302+036 KY-80+036 KY-302	0.000	2.500						
					1.481	036B00080N		54,000	68,000	80,000
					1.260	036B00081N		54,000	68,000	80,000
	KY-404-	036 KY-404	0.000	8.160						
					8.085	036B00036N		80,000	82,000	102,000
					2.198	036B00034N		44,000	44,000	44,000
	KY-550-	036 KY-550	0.000	0.184						
					0.073	036B00017N		80,000	88,000	114,000
			0.184	4.575						
					2.052	036B00015N		62,000	70,000	112,000
					1.618	036B00144N		54,000	68,000	80,000
	KY-680-	036 KY-680	0.000	5.016						
			5.016	8.500						
	KY-777-	036 KY-777	4.200	4.247						
			4.247	5.700						
	KY-979-	036 KY-979	9.300	19.200						
					17.444	036B00091N		54,000	68,000	80,000
					11.382	036B00093N		44,000	44,000	44,000
	KY-1101-	036 KY-1101	0.000	1.000						
	KY-1426-	036 KY-1426	0.000	2.900						
					2.742	036B00067N		44,000	44,000	44,000

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For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.										
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County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Floyd	KY-1426-	036 KY-1426			0.141	036B00090N				116,000
			6.400	7.684						
			7.684	7.700						
	KY-1428-	036 KY-1428	10.700	12.500						
	KY-1929-	036 KY-1929	3.400	5.058						
	KY-2030-	036 KY-2030	0.000	1.500						
					0.117	036B00138N		44,000	44,000	44,000
			5.000	7.800						
	US-23-	036 US-23	0.000	21.986						
					15.701	036B00130N		54,000	68,000	80,000
					15.692	036B00130N		54,000	68,000	80,000
					12.805	036B00039N		54,000	68,000	80,000
					12.776	036B00039N		54,000	68,000	80,000
					10.872	036B00037R				118,000
					10.858	036B00037L				118,000
					10.696	036B00038R				116,000
					10.692	036B00038L				116,000
					0.141	036B00132N		54,000	68,000	80,000
Franklin	US-60-	LOUISVILLE RD+W 2ND ST+CAPITOL AVE+E MAIN ST+VERSAILLES RD	0.000	6.300						
			12.000	14.000						
					12.214	037B00008N			98,000	
Fulton	JC-9003-	JULIAN M CARROLL PKWY	0.000	3.434						
Grant	I-75-	I-75	143.239	166.200						
Graves	JC-9003-	JULIAN M CARROLL PKWY	8.352	34.487						
					14.152	042B00174N		54,000	68,000	80,000
					14.149	042B00174N		54,000	68,000	80,000
Grayson	WK-9001-	WENDELL H FORD-WESTERN KENTUCKY PKWY	88.433	119.649						
Hancock	KY-271-	KY-271	4.581	4.760						
	KY-334-	KY-334	14.660	15.161						
	KY-657-	KY-657	7.063	7.569						
	KY-3092-	KY-3092	0.000	2.039						
	US-60-	US-60	0.000	6.842						
Hardin	BG-9002-	MARTHA LAYNE COLLINS-BLUEGRASS PKWY	0.000	8.837						
	WK-9001-	WENDELL H FORD-WESTERN KENTUCKY PKWY	119.649	136.796						
					132.579	047B00092L		88,000		
					132.574	047B00092R		88,000		
					132.419	047B00093L		84,000	90,000	112,000

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For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.										
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County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Hardin	WK-9001-	WENDELL H FORD-WESTERN KENTUCKY PKWY			132.417	047B00093R		84,000	90,000	112,000
Harlan	CR-1087-	SAM ESTEP RD	0.000	0.300						
	KY-38-	HIGHWAY 38+ HWY 38+ KY 38+HIGHWAY 38	0.000	1.182						
					0.926	048B00166N		54,000	68,000	80,000
			4.855	16.355						
					12.825	048B00012N			98,000	
					8.560	048B00158N		54,000	68,000	80,000
					8.176	048B00086N			94,000	110,000
			26.755	28.055						
					28.028	048B00016N		44,000	44,000	44,000
	KY-72-	E HIGHWAY 72+W HIGHWAY 72+S MAIN ST+N MAIN ST+W HIGHWAY 72+N MAIN ST+W HIGHWAY 7	0.000	0.600						
					0.181	048B00036N		44,000	44,000	44,000
			4.700	8.600						
					6.559	048B00030N		44,000	50,000	68,000
					5.144	048B00031N		60,000	68,000	98,000
					4.853	048B00032N		60,000	68,000	98,000
	KY-160-	HIGHWAY 160+E MAIN ST+W MAIN ST+HIGHWAY 160+MAIN ST+HIGHWAY 160	11.000	14.584						
					11.832	048B00090N		58,000	74,000	86,000
	KY-179-	HIGHWAY 179	0.000	3.800						
					0.904	048B00096N		44,000	44,000	44,000
					0.084	048B00097N		44,000	44,000	44,000
			7.650	8.050						
	KY-219-	HIGHWAY 219	1.500	4.200						
					2.498	048B00045N	16,000	16,000	16,000	16,000
	KY-221-	W HIGHWAY 221+E HIGHWAY 221	0.000	2.700						
			5.900	8.859						
			8.859	16.700						
	KY-1137-	HIGHWAY 1137	0.000	3.200						
	KY-2006-	KY-2006	0.000	5.083						
					2.311	048B00079N		88,000	96,000	
	KY-2007-	HIGHWAY 2007	0.000	3.300						
					0.462	048B00075N		88,000	94,000	114,000
	KY-2425-	HIGHWAY 2425	0.000	0.352						
	KY-3449-	HIGHWAY 3449	0.000	1.976						
	KY-3462-	KY-3462	0.000	0.700						

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County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4	
Harlan	US-119-	S U S HIGHWAY 119+N U S HIGHWAY 119	0.000	39.182							
					38.441	048B00161N		54,000	68,000	80,000	
					37.269	048B00162N		54,000	68,000	80,000	
					33.325	048B00123N				114,000	
									96,000	110,000	
	US-421-	S U S HIGHWAY 421+S US HIGHWAY 421+S U S HIGHWAY 421+N U S HIGHWAY 421	0.000	17.107							
					16.881	048B00132N		86,000	90,000	102,000	
					10.947	048B00190N		54,000	68,000	80,000	
					10.144	048B00189N		54,000	68,000	80,000	
					7.651	048B00187N		54,000	68,000	80,000	
					2.758	048B00023N		56,000	60,000	86,000	
					1.676	048B00024N		54,000	68,000	80,000	
Harrison	US-27-	US HWY 27 S+S MAIN ST+N MAIN ST+US HWY 27 N	0.000	19.416							
					13.228	049B00006N		66,000	74,000	106,000	
					10.392	049B00005N		78,000	82,000	100,000	
					6.293	049B00002N		54,000	68,000	80,000	
					4.666	049B00023N		54,000	68,000	80,000	
					4.442	049B00022N		54,000	68,000	80,000	
Henderson	AU-9005-	AUDUBON PKWY	0.000	15.883							
					15.883	051B00072N		74,000	88,000	108,000	
					15.839	051B00072N		74,000	88,000	108,000	
					11.362	051B00070N		54,000	68,000	80,000	
					11.349	051B00070N		54,000	68,000	80,000	
	CR-1361-	INDUSTRIAL PARK DR	0.000	0.600							
	EB-9004-	EDWARD T BREATHITT PKWY	65.305	78.306							
	KY-136-	KY-136	18.860	19.548							
	KY-416-	KY-416	16.400	17.400							
	KY-425-	KY-425	0.000	5.522							
	KY-2096-	ALCAN-ALUMINUM RD	0.000	0.500							
	KY-2097-	QUINNS LANDING RD	0.000	0.800							
	US-41-	US-41	0.000	0.300							
	Hickman	JC-9003-	JULIAN M CARROLL PKWY	3.434	8.352						
Hopkins	CR-1314-	RICHLAND-MANITOU RD	1.100	2.753							

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Hopkins	CR-1393-	JOHN HARDY RD	0.000	2.302						
	EB-9004-	EDWARD T BREATHITT PKWY	28.095	55.003						
					29.559	054B00015N		54,000	68,000	80,000
	KY-70-	BEULAH RD+PRINCETON RD+WEST MCLAUGHLIN AVE+EAST CENTER ST+ANTON RD+CENTRAL CITY+	19.800	26.394						
	KY-109-	KY-109+HOSPITAL RD+HAMBY AVE+SOUTH MAIN ST+INDUSTRIAL PKWY+CHARLESTON RD+RABBIT	3.800	17.300						
					16.407	054B00077N		86,000		
					14.769	054B00076N		86,000		
					13.373	054B00074N		66,000		
					8.414	054B00078N		64,000	96,000	
					7.252	054B00073N		88,000		
					3.841	054B00070N		80,000	86,000	112,000
	KY-262-	LAFFOON TRL+WEST CENTER ST	0.000	0.100						
	KY-281-	ISLAND FORD RD	0.000	0.787						
	KY-630-	COLUMBIA SCHOOLHOUSE RD+MANITOU RD	0.000	2.040						
	KY-814-	CUTOFF RD	0.000	1.400						
	US-41-A	NEBO RD	0.000	13.278						
					8.254	054B00197N		52,000	74,000	108,000
	US-41-	HOPKINSVILLE RD+SOUTH HOPKINSVILLE ST+NORTH HOPKINSVILLE ST+HOPKINSVILLE RD+S LT	17.500	27.700						
					23.793	054B00004N		72,000		
					19.615	054B00002N		80,000		
	US-62-	WEST ARCADIA AVE+US-62 W+WEST ARCADIA AVE+EAST ARCADIA AVE+NORTONVILLE RD+PAN AM	4.952	11.000						
					10.214	054B00057N		66,000	98,000	
					10.073	054B00058N		66,000	98,000	
					9.083	054B00164N		54,000	68,000	80,000
					7.988	054B00059N		84,000	98,000	
					5.755	054B00060N		64,000	74,000	
	WK-9001-	WENDELL H FORD-WESTERN KENTUCKY PKWY	21.764	43.424						
					36.934	054B00144R			98,000	

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County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Hopkins	WK-9001-	WENDELL H FORD-WESTERN KENTUCKY PKWY			36.931	054B00144L			98,000	
					33.858	054B00143R			98,000	
					33.846	054B00143L			98,000	
					28.372	054B00140L			96,000	108,000
					28.368	054B00140R			96,000	108,000
					22.010	054B00138R			88,000	
					22.008	054B00138L			88,000	
Jackson	CR-1152-	BELLS FORK RD	0.000	0.395						
	CR-1153-	MAULDEN-OWSLEY RD	2.500	2.700						
Jefferson	CR-1002-F	RALPH AVE	1.600	2.371						
	CR-1003-E	RIVERPORT DR	0.000	0.700						
	CS-1003-E	PORT RD	0.000	0.400						
	I-264-	I-264 INTERSTATE	5.200	11.900	7.816	056B00265L		86,000	90,000	108,000
					7.331	056B00268N		88,000	94,000	110,000
	KY-1230-	WATSON LN+LOWER RIVER RD+CANE RUN RD+DOVER AVE	5.900	6.100						
	KY-1934-	GREENBELT HWY+CANE RUN RD	5.500	7.700						
			9.900	10.100						
	KY-2051-	ROCKFORD LN+LEES LN+CAMP GROUND RD	4.800	5.200						
	US-60-	FRANKFORT AVE+SHELBYVILLE RD	5.600	17.375	15.906	056B00008N		70,000	80,000	
13.699					056B00009N		80,000	88,000	116,000	
Johnson	CR-1128-	OLD RT-3 LOOP C	0.000	0.100						
	CR-1222-	MIDDLE FORK JENNYS CREEK RD	0.000	0.300						
	KY-3-	KY-3+KY-3 NC+KY-3	2.800	4.600						
	KY-3509-	OLD RT-3 LOOP C	0.000	0.026						
	US-23-	US-23	0.000	16.864						
					6.788	058B00075L		54,000	68,000	80,000
					6.785	058B00075R		54,000	68,000	80,000
					4.364	058B00070R		54,000	68,000	80,000
					4.363	058B00070L		54,000	68,000	80,000
					3.906	058B00069L		54,000	68,000	80,000
					3.896	058B00069R		54,000	68,000	80,000
					0.270	058B00077N		54,000	68,000	80,000
	US-460-	US-460	0.000	7.700						
	Kenton	I-75-	I-75	166.263	169.400					
188.300				191.777						
					191.539	059B00046N		78,000	86,000	
					191.536	059B00046N		78,000	86,000	
					191.157	059B00039N		70,000	82,000	

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For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.										
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County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Kenton	I-75-	I-75			190.527	059B00044R			96,000	
					190.475	059B00044L			96,000	
Knott	CR-1117-	BATES BRANCH RD	0.000	0.400						
	CR-1119-	PUNCHEON RD	0.000	2.200						
	CR-1134-	MALLET FORK RD	0.000	0.200						
	KY-7-	SOUTH HIGHWAY 7	0.000	2.500						
			3.700	16.095						
					8.064	060B00013N		44,000	44,000	44,000
					6.115	060B00014N		78,000	88,000	
					5.521	060B00015N		54,000	62,000	62,000
	KY-15-	RED FOX RD+SMITHBORO RD	0.000	9.300						
					5.686	060B00056N		74,000	88,000	
					4.004	060B00058N				114,000
	KY-80-	WEST HIGHWAY 80+EAST HIGHWAY 80	0.000	20.093						
	KY-160-	SOUTH HIGHWAY 160+HINDMAN BYP+OGDEN VEST RD	0.000	12.500						
					8.179	060B00018N		54,000	62,000	62,000
					1.895	060B00061N			98,000	116,000
	KY-550-	WEST HIGHWAY 550+WEST MAIN ST+EAST MAIN ST+EAST HIGHWAY 550	18.900	26.557						
					25.160	060B00011N		64,000	70,000	
					22.803	060B00010N		54,000	70,000	110,000
					21.353	060B00009N		70,000	76,000	
					20.483	060B00008N		64,000	76,000	
					19.695	060B00007N		54,000	68,000	80,000
					19.262	060B00006N		56,000	68,000	88,000
	KY-582-	HIGHWAY 582	0.000	12.729						
					12.716	060B00033N		56,000	62,000	88,000
					11.763	060B00032N		54,000	68,000	80,000
					5.693	060B00031N		54,000	68,000	80,000
					4.241	060B00030N		54,000	68,000	80,000
					3.736	060B00029N		44,000	44,000	44,000
					1.542	060B00028N		44,000	44,000	44,000
	KY-899-	HIGHWAY 899	10.400	14.160						
					13.904	060B00040N		72,000	84,000	
					10.844	060B00042N		68,000	74,000	96,000
	KY-1087-	VEST TALCUM RD+EAST HIGHWAY 1087	13.200	13.800						
	KY-1098-	ELMROCK DECOY RD+HIGHWAY 1098+POSSUM TROT RD	9.500	11.900						
	KY-1231-	BIG BRANCH RD	0.000	4.100						

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For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.										
2007 ANNUAL UPDATE										
County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Knox	KY-6-	KY 6+NORTH MAIN ST+COURT SQ+SOUTH MAIN ST	6.754	7.963						
					6.855	061B00074N		72,000	84,000	
	KY-11-	SOUTH KY 11+SOUTH MAIN ST+DANIEL BOONE DR+NORTH KY 11	0.000	8.500						
					2.179	061B00037N		76,000	84,000	112,000
					9.700	10.118				
					10.118	22.700				
					13.576	061B00016N		86,000		
					13.399	061B00015N		86,000		
					13.000	061B00014N		76,000	86,000	
	KY-223-	KY 223	0.000	3.900						
	KY-225-	KY 225+OLD 25 E	12.000	15.000						
	KY-229-	KY 229+KY-229+KY 229+KY-229+KY 229	0.000	8.572						
					3.947	061B00012N		74,000	84,000	
					3.436	061B00011N		54,000	62,000	62,000
	KY-233-	SOUTH KY 233+NORTH KY 233	0.000	6.154						
					1.341	061B00047N		48,000	54,000	92,000
	KY-459-	KY-459+DANIEL BOONE DR	0.000	2.038						
					0.945	061B00049N		80,000	90,000	
					0.114	061B00072N		86,000		
	KY-930-	KY 930	0.000	4.063						
					1.790	061B00036N		66,000	74,000	116,000
	KY-1809-	KY-1809	0.000	0.800						
	US-25-E	SOUTH US HIGHWAY 25 E+NORTH US HIGHWAY 25 E	0.000	26.197						
3.385					061B00091L		54,000	68,000	80,000	
Laurel	CR-1044-	P H YOUNG RD	0.916	0.945						
	HR-9006-	HAL ROGERS PKWY	0.000	10.593						
					8.586	063B00089N		80,000	90,000	
					7.662	063B00088N		80,000	82,000	98,000
					6.430	063B00087N		80,000	84,000	98,000
					4.187	063B00085N		86,000	94,000	
					3.409	063B00083N		80,000	96,000	
	KY-30-	HIGHWAY 30 BYP+HIGHWAY 30 E+GREENMOUNT BOND RD	0.000	5.675						
			5.675	8.215						
	KY-80-	RUSSELL DYCHE MEMORIAL HWY+HIGHWAY 80 W+E 4TH ST+E LAUREL RD	0.000	11.200						

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For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.										
2007 ANNUAL UPDATE										
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Laurel	KY-80-	RUSSELL DYCHE MEMORIAL HWY+HIGHWAY 80 W+E 4TH ST+E LAUREL RD			10.684	063B00107N		84,000	92,000	
	KY-229-	BARBOURVILLE RD+BARBOURVILLE RD X+BARBOURVILLE ST	0.000	11.522						
					10.648	063B00018N		84,000	98,000	
					6.877	063B00019N		80,000	90,000	
	KY-472-	HIGHWAY 472 E+JOHNSON RD	0.442	7.626						
					5.377	063B00065N		52,000	74,000	96,000
					3.487	063B00063N		44,000	44,000	60,000
					1.187	063B00064N		44,000	48,000	94,000
	KY-578-	HIGHWAY 578+ROY BLACK RD+MCWHORTER VICTORY RD+MCWHORTER RD+TERRELLS CREEK RD	3.900	5.978						
					5.154	063B00069N	20,000	20,000	20,000	20,000
					4.001	063B00068N		88,000		
	KY-638-	S MCWHORTER ST+N MCWHORTER ST+MCWHORTER RD+HIGHWAY 638	8.000	8.760						
			8.760	10.203						
	KY-830-	BEATTY AVE+HIGHWAY 830+ROBINSON CREEK RD+ROUGH CREEK RD	3.400	5.798						
					3.912	063B00028N		44,000	44,000	48,000
KY-1394-	HIGHWAY 1394	2.000	2.600							
KY-3435-	LANGNAU RD	0.000	3.766							
US-25-E	E CUMBERLAND GAP PKWY+W CUMBERLAND GAP PKWY	0.000	0.300							
US-25-	S US HIGHWAY 25+S LAUREL RD+S MAIN ST+N MAIN ST+N LAUREL RD+N US HIGHWAY 25	0.000	23.949							
				23.929	063B00051N		68,000	88,000		
				15.099	063B00006N		54,000	68,000	80,000	
				8.503	063B00025N		68,000	80,000		
				7.288	063B00022N		68,000	74,000	98,000	
				3.313	063B00024N		74,000	80,000	108,000	
Lawrence	KY-3-S	KY-3	0.000	0.100						
	KY-3-		14.900	15.500						
					14.953	064B00060N		54,000	68,000	80,000
	KY-32-C	CUT THRU TO HIGHWAY 23	0.000	0.100						
	KY-32-	KY-32	21.000	27.600						
			28.500	29.162						

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For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.										
2007 ANNUAL UPDATE										
County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Lawrence	KY-645-	KY-645	0.000	5.200						
	KY-1760-	KY-1760	8.400	9.600						
					9.237	064B00050N		76,000	88,000	
	KY-2033-	KY-2033+HUNTER DR+KY-2033	0.000	1.000						
	KY-2565-	KY-2565	0.000	2.887						
			2.887	2.900						
	US-23-	US-23	0.000	29.069						
Lee	CR-1115-	DUNIGAN BRANCH RD	0.000	0.100						
	KY-11-	KENTUCKY HIGHWAY 11+BROADWAY+KENTUCKY HIGHWAY 11	0.000	14.800						
					4.208	065B00005N			96,000	106,000
	KY-52-	KENTUCKY HIGHWAY 52	12.900	16.800						
Leslie	CR-1027-	BAILEY BRANCH RD	0.000	0.554						
	CR-1120-	YEADDISS RD	0.000	2.000						
					1.108	066C00037N				
					0.281	066C00014N				
	CR-1133-	ABNER BRANCH RD	0.000	0.159						
	CR-1449-	LEECO RD	0.000	2.700						
	HR-9006-	HAL ROGERS PKWY	35.929	51.026						
					45.745	066B00050N		54,000	68,000	80,000
					44.741	066B00048N		54,000	68,000	80,000
					43.912	066B00046N		64,000	70,000	90,000
					38.212	066B00044N		54,000	68,000	80,000
	KY-80-	HIGHWAY 80	3.600	6.200						
					5.162	066B00002N		50,000	58,000	88,000
			6.200	9.719						
					8.840	066B00068N		78,000		
	KY-699-	CUTSHIN RD	0.000	2.060						
					1.967	066B00033N		70,000	74,000	92,000
			3.200	15.993						
					11.425	066B00032N		64,000	96,000	
					8.136	066B00031N		44,000	44,000	44,000
	KY-1482-	BULLSKIN RD	0.000	7.460						
	KY-1807-	WOOTEN RD	0.000	1.800						
	KY-2008-	GREASY CREEK RD	3.100	6.800						
					3.133	066B00066N		44,000	44,000	44,000
KY-2057-	POLLS CREEK RD	0.000	2.300							
KY-3427-	WOLF CREEK RD+COON CREEK RD	0.000	11.693							
					0.018	066B00062N		70,000	78,000	

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For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.										
2007 ANNUAL UPDATE										
County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Leslie	US-421-	HIGHWAY 421	0.000	4.600						
					2.454	066B00011N		54,000	68,000	80,000
			33.100	35.300	0.538	066B00012N		54,000	68,000	80,000
Letcher	CR-1007-Q1	MARSHALL BR	0.000	0.268						
	CR-1082-	RAMEY FRK	0.000	0.500						
	CR-1096-	BEEFHIDE CRK RD	0.000	0.600						
	CR-1097-	JOES BR	0.000	1.000						
	CR-1487-	JOHNS FRK	0.000	0.553						
	KY-7-	HIGHWAY 7	13.500	27.564						
					27.256	067B00007N		54,000	62,000	62,000
					25.144	067B00061N		54,000	62,000	62,000
					24.782	067B00060N		66,000	74,000	100,000
					22.322	067B00059N		70,000	82,000	
					21.337	067B00058N		54,000	62,000	62,000
					18.657	067B00055N		54,000	62,000	62,000
	KY-15-	BYPASS 15+HAZARD RD+HIGHWAY 15	0.000	9.216						
					8.947	067B00011N		54,000	68,000	80,000
					1.350	067B00102N		78,000	96,000	
					1.342	067B00102N		78,000	96,000	
					0.714	067B00103N				118,000
					0.436	067B00104N			98,000	112,000
					0.145	067B00105N		82,000	84,000	94,000
					9.216	10.675				
					KY-160-	HIGHWAY 160	0.000	1.900		
	1.829	067B00046N		84,000					98,000	
	9.400	21.800								
			18.427	067B00029N				68,000		
			14.736	067B00031N				80,000	92,000	
			13.215	067B00032N				72,000	76,000	96,000
12.929			067B00033N	36,000			50,000	64,000	92,000	
12.227			067B00034N				62,000	64,000	78,000	
KY-317-	HIGHWAY 317	6.800	8.900							
KY-463-	HIGHWAY 463	0.000	3.300							
KY-588-	HIGHWAY 588	5.000	5.009							
		5.009	7.500							
				5.035	067B00063N		44,000	44,000	44,000	
KY-805-	HIGHWAY 805	5.254	8.600							
				5.257	067B00026N		62,000	70,000	118,000	
KY-931-	HIGHWAY 931+HIGHWAY 931 N	0.000	10.239							
		10.239	18.388							
				10.939	067B00001N		70,000	72,000	106,000	
KY-1469-	LONG FRK HWY 1469	0.000	0.500							
KY-1862-	HIGHWAY 1862	4.200	9.700							

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County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Letcher	US-23-	HIGHWAY 23	0.000	7.300						
	US-119-	HIGHWAY 119 S+US-119+HIGHWAY 119 S+US-119+HIGHWAY 119 S+HIGHWAY 119+HIGHWAY 119+	0.000	4.100						
			9.200	27.900						
					17.123	067B00081N			96,000	114,000
					16.863	067B00027N		80,000	86,000	112,000
Livingston	KY-453-	DOVER RD+IUKA RD+COURT ST	0.000	2.971	2.102	070B00046N			94,000	
					0.418	070B00045N		84,000	88,000	98,000
	US-62-	US-62	1.158	2.854	2.808	070B00065N		52,000	58,000	76,000
	Lyon		U S HIGHWAY 62 W+U S HIGHWAY 62 E	0.000	12.213					
WK-9001-		WENDELL H FORD-WESTERN KENTUCKY PKWY	0.000	5.610	3.700	072B00030R		88,000	96,000	
					3.675	072B00030L		88,000	96,000	
					3.407	072B00052R		80,000	88,000	114,000
					3.385	072B00052L		80,000	88,000	114,000
Madison	I-75-	I-75	73.408	89.800	85.096	076B00082N		54,000	68,000	80,000
					77.279	076B00045N		54,000	68,000	80,000
					77.253	076B00045N		54,000	68,000	80,000
	KY-627-	BOONESBORO RD	0.000	6.074	6.021	076B00090N		54,000	68,000	80,000
	US-25-	MT VERNON RD+CHESTNUT ST+ESTILL ST+RICHMOND RD+RICHMOND RD N+BEREA RD+EASTERN BY	25.400	28.000						
Magoffin	CR-1886-	PINE RIDGE RD	0.000	0.700						
	KY-7-	KY-7+GARDNER TRL	6.500	9.300						
			19.000	25.094						
					25.068	077B00081N		54,000	68,000	80,000
	KY-30-	KY-30	0.000	9.000	7.583	077B00012N		72,000	76,000	98,000
					1.885	077B00013N		54,000	68,000	80,000
	KY-114-	KY-114	0.000	5.000						
	KY-404-	HOWARDS BRANCH RD	0.000	2.688						
	KY-542-	KY-542	0.000	5.843	5.818	077B00060N		70,000	78,000	116,000
2.774					077B00019N		54,000	68,000	80,000	

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Magoffin	KY-867-	KY-867	4.655	5.700						
	KY-1635-	KY-1635	0.200	5.684						
	KY-9009-	BERT T COMBS-MOUNTAIN PKWY EXT	63.084	75.627	74.533	077B00040N		78,000	84,000	104,000
	US-460-	US-460+WEST MAPLE ST+SOUTH CHURCH ST+PARKWAY DR+US-460	11.500	20.400						
Marshall	JC-9003-	JULIAN M CARROLL PKWY	34.487	52.333						
					43.646	079B00076L		86,000	92,000	110,000
					37.141	079B00069N		54,000	68,000	80,000
Martin	CR-1205-	MIDDLE FRK OF WOLF RD	7.600	9.600						
	CR-1206-	SAWMILL RD	0.000	1.274						
	KY-3-	KY-3	0.000	10.000						
			11.300	11.400						
	KY-40-	KY-40+INEZ-WARFIELD RD+KY-40	9.200	10.180						
			10.180	19.486	10.153	080B00005N		82,000	94,000	
					18.249	080B00002N		54,000	62,000	62,000
					17.832	080B00001N		54,000	62,000	62,000
	KY-292-	KY-292+WARFIELD+KY-292+WARFIELD	0.000	13.160						
					12.130	080B00013N		66,000	72,000	90,000
			13.160	13.800						
	KY-645-	KY-645	0.000	6.105						
			6.105	7.695	7.672	080B00026N		54,000	68,000	80,000
	KY-1439-	KY-1439	2.500	10.700						
					6.668	080B00015N		60,000	62,000	86,000
	KY-1884-	MILO RD	2.500	2.800						
KY-2032-	KY-2032	0.000	4.000							
KY-2033-	SPENCE BR	0.000	1.090							
McLean	KY-85-	KY-85	10.100	12.451						
	US-431-	US-431+ADAMS AVE+US-431+HENTON ST+US-431	0.000	2.800	0.790	075B00019N		82,000	96,000	
Mercer	BG-9002-	MARTHA LAYNE COLLINS-BLUEGRASS PKWY	52.315	56.287						
					56.282	084B00014L		84,000	90,000	112,000
					56.276	084B00014R		84,000	90,000	112,000
	KY-33-	HIGHWAY 33 S+DANVILLE ST+PLEASANT HILL DR+SHAKERTOWN RD	6.400	7.700						
	KY-342-	CURDSVILLE RD+DIX DAM RD	3.200	4.600						

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County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Mercer	US-68-	PERRYVILLE RD+PERRYVILLE ST+MOORELAND AVE+S COLLEGE ST+W LEXINGTON ST+E LEXINGTO	8.400	14.500						
					12.462	084B00001N		42,000	44,000	80,000
	US-127-B	127 BYPASS N RD	2.900	4.483						
	US-127-	DANVILLE RD+S COLLEGE ST+N COLLEGE ST+LOUISVILLE RD	6.100	17.150						
Metcalfe	LN-9008-	LOUIE B NUNN PKWY	22.357	36.159						
Morgan	KY-9009-	BERT T COMBS-MOUNTAIN PKWY EXT	57.681	63.084						
Muhlenberg	CR-1206-D	BEECH CREEK RD	0.300	0.688						
	CR-1392-	HENRY OATES RD	3.300	5.600						
	KY-70-	KY-70+FRONT ST+W RESERVOIR AVE+W BROAD ST+E BROAD ST+KY-70	0.000	15.400						
					14.369	089B00047N		84,000	98,000	
					11.062	089B00048N		84,000	98,000	
					6.779	089B00046N				
					3.502	089B00049N		88,000		
	KY-176-	E MAIN CROSS ST+KY-176+W MOSE RAGER BLVD+E MOSE RAGER BLVD+KY-176	5.712	7.930						
					6.386	089B00022N		64,000	98,000	
				7.930	12.742					
	KY-181-	GREENVILLE RD+S MAIN ST+SOUTH MAIN ST+S MAIN ST+W DEPOT ST+KY-181+LUZERNE DR+KY-	15.100	19.000						
					18.263	089B00068N		84,000	98,000	
	KY-189-	KY-189+ROBERT L DRAPER WAY+KY-189+ROBERT L DRAPER WAY+KY-189+PHILLIP STONE WAY+K	12.800	13.962						
			13.962	17.700						
	KY-246-	MERLE TRAVIS HWY	0.000	1.232						
			1.232	2.400						
	US-62-	US-62+HOPKINSVILLE ST+S MAIN ST+N MAIN ST+W MAIN ST+E MAIN ST+US-62+EVERLY BROTH	14.700	17.900						
					17.782	089B00100N		84,000	94,000	
					16.507	089B00119N		54,000	68,000	80,000
					16.172	089B00120N		54,000	68,000	80,000
	US-431-	US-431+S JOHN PRINE AVE+N JOHN PRINE AVE+US-431+US 431+S 2ND ST+N 2ND ST+US-431+	11.500	18.300						

May 5, 2008		EXTENDED WEIGHT COAL AND COAL BY-PRODUCTS HAUL ROAD SYSTEM						Page 19 of 28		
For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.										
2007 ANNUAL UPDATE										
County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Muhlenberg	US-431-	US-431+S JOHN PRINE AVE+N JOHN PRINE AVE+US-431+US 431+S 2ND ST+N 2ND ST+US-431+	18.700	23.813						
					20.836	089R00601N		54,000	68,000	80,000
			24.592	27.761						
					27.737	089B00056N		80,000	94,000	
	WK-9001-	WENDELL H FORD-WESTERN KENTUCKY PKWY	43.424	65.675						
					65.582	089B00093L		68,000	78,000	
					65.553	089B00093R		68,000	78,000	
					57.631	089B00096L			96,000	
					57.622	089B00096R			96,000	
					55.584	089B00094L		86,000	90,000	
					55.569	089B00094R		86,000	90,000	
					43.620	089B00090R		76,000	90,000	
43.615					089B00090L		76,000	90,000		
Nelson					BG-9002-	MARTHA LAYNE COLLINS-BLUEGRASS PKWY	8.837	39.267		
Ohio	KY-245-	JOHN ROWAN RD+JOHN ROWAN BLVD+JOHN ROWAN RD	0.000	3.300						
Ohio	US-150-	EAST STEPHEN FOSTER AVE+SPRINGFIELD RD	1.700	2.000						
Ohio	KY-85-	KY-85	0.000	1.500						
	WK-9001-	WENDELL H FORD-WESTERN KENTUCKY PKWY	65.675	87.544						
					85.744	092B00130R		86,000	92,000	
					85.717	092B00130L		86,000	92,000	
					84.570	092B00131N		54,000	68,000	80,000
					84.561	092B00131N		54,000	68,000	80,000
					74.568	092B00132L			94,000	
					74.568	092B00132R			94,000	
					72.443	092B00133L		78,000	86,000	118,000
	72.438	092B00133R		78,000	86,000	118,000				
	WN-9007-	WILLIAM H NATCHER PKWY	35.063	59.473						
					49.414	092B00063L		88,000	92,000	108,000
					49.413	092B00063R		88,000	92,000	108,000
					40.013	092B00071N		54,000	68,000	80,000
	Owsley	CR-1239-	ALLEN RD	1.800	2.300					
Owsley	KY-11-	KY-11	0.000	10.800						
					6.238	095B00004N		66,000	68,000	94,000
					4.070	095B00005N		84,000	88,000	114,000
					1.789	095B00006N		78,000	84,000	110,000
Owsley	KY-28-	KY-28	3.000	10.700						
Owsley	KY-30-	KY-30	0.200	11.127						

For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.

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County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Owsley	KY-30-	KY-30			9.297	095B00033N		74,000	86,000	
					8.687	095B00034N		80,000	92,000	
					5.080	095B00013N	34,000	36,000	44,000	68,000
					4.812	095B00030N		74,000	86,000	
			11.127	11.181						
	KY-1071-	KY-1071	0.900	3.900						
	KY-1938-	KY-1938	1.700	2.481						
Pendleton	US-27-	US-27	0.000	19.340	15.849	096B00018N		78,000	86,000	
					8.213	096B00002N			98,000	
					4.416	096B00008N		78,000	92,000	
Perry	CR-1100-	BUCKEYE CRK RD	0.000	0.200						
	CR-1102-	KENMONT HOLW RD	0.000	0.700						
	CR-1114-	KENMONT RD	0.000	0.200						
					0.091	097C00005N	26,000	26,000	26,000	26,000
	CR-1115-	GEORGES BRANCH RD	0.000	0.009						
			0.009	0.100						
	CR-1123-	UPPER RIVER RD	0.000	0.900						
	CR-1319-	SAM CAMPBELL BR RD	2.800	3.582						
	CR-1320-	CLEAR FRK BR	0.000	2.279						
	CR-1333-	SPENCER FRK N RD	0.000	1.674						
	CR-1336-	CHAVIES DUNRAVEN RD	5.800	7.252						
	CR-1356-	DUSTY FORK RD	0.000	1.600						
	CR-1710-Q4	SPENCER FRK S RD	0.000	0.790						
	CR-1991-	RALEIGH LN	0.000	0.300						
	HR-9006-	HAL ROGERS PKWY	51.026	59.088						
	KY-7-	KENTUCKY HWY 7	0.000	11.400						
					2.467	097B00025N		76,000	78,000	108,000
					1.928	097B00024N		54,000	62,000	62,000
	KY-15-	SOUTH KENTUCKY HWY 15+NORTH KENTUCKY HWY 15	0.000	6.182						
					3.379	097B00014N				116,000
					0.281	097B00011N		80,000	88,000	114,000
			6.182	25.179						
					16.025	097B00056N		82,000	84,000	116,000
	KY-28-	KENTUCKY HWY 28	13.600	17.100						
					15.025	097B00035N		76,000	78,000	110,000

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For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.										
2007 ANNUAL UPDATE										
County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Perry	KY-80-	W KENTUCKY HWY 80+E KENTUCKY HWY 80	0.000	4.600						
					1.601	097B00032N		48,000	56,000	94,000
			4.600	7.910						
					7.134	097B00029N		46,000	52,000	80,000
			7.910	15.862						
	KY-267-	TYPO RD+HARVEYTON RD+SIXTEENMILE CRK RD+LOST CRK RD+ROWDY LOW GAP RD	8.800	10.200						
	KY-451-	CHRISTOPHER RD+KENTUCKY HWY 451+CHRISTOPHER RD+EAST MAIN ST+KENTUCKY HWY 451+EAS	7.700	7.791						
					7.778	097B00097N		88,000		
			7.791	7.800						
	KY-463-	KENTUCKY HWY 463	0.000	6.500						
					6.344	097B00063N		86,000	88,000	
					5.860	097B00062N		54,000	68,000	80,000
					5.190	097B00061N		54,000	68,000	80,000
					4.988	097B00060N		54,000	68,000	80,000
					4.553	097B00059N		54,000	68,000	80,000
	KY-476-	NORTH MAIN ST+KENTUCKY HWY 476	8.900	14.000						
					12.427	097B00007N		60,000	68,000	96,000
	KY-484-	KENTUCKY HWY 484	0.000	2.400						
	KY-699-	KENTUCKY HWY 699	0.000	1.600						
			1.600	6.300						
					4.802	097B00043N		68,000	80,000	
KY-1067-	FIFTEEN MILE BR RD	0.000	2.680							
KY-1095-	MONTGOMERY CRK RD+MAIN VICCO ST	2.100	2.869							
				2.563	097B00038N		44,000	44,000	44,000	
KY-1096-	BIG CRK RD+FOURSEAM BUFFALO RD	7.900	8.000							
KY-1146-	HARDBURLY RD+BULAN HINER RD+LOST CRK RD	4.000	4.600							
KY-2446-	LOST CRK RD	0.000	0.400							
KY-3197-	GEORGES BRANCH RD	0.000	0.026							
Pike	CR-1101-	KY-VIRGINIA ACCESS RD	0.000	0.269						
	CR-1141-	ISLAND CREEK RD	0.000	1.600						
	CR-1202-	DANIELS BR	0.000	0.200						
	CR-1204-	BIGGS BR	0.000	1.000						
	CR-1211-A	MILLARD LN	0.000	0.500						
					0.042	098C00162N	36,000	36,000	36,000	36,000
	CR-1215-	OLD RAILROAD RD	0.000	1.100						
CR-1233-Q3	LEFT FORK ISLAND CRK	0.000	0.600							

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For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.										
2007 ANNUAL UPDATE										
County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Pike	CR-1286-	ROAD FRK	0.000	0.200						
	CR-1288-	BILLY COMPTON BR	0.000	0.700						
	CR-1358-	GRASSY BR	0.000	0.600						
	CR-1359-	RAMEY FRK	0.000	0.400						
	CR-1444-	MEATHOUSE RD	0.000	2.000						
	CR-1526-	POUNDING MILL RD	0.000	1.500						
	CR-1635-	ADAMS BR	0.000	1.600						
	CR-1709-	ESCO RD	0.000	0.400						
	CR-1716-	BEAR FORK RD	0.000	2.200						
	CR-1726-	NEWSOME BRANCH RD	0.000	0.600						
	CR-1731-	ANDERSON FRK	0.000	1.100						
	CR-1839-	CARTER BR	0.000	0.300						
	CR-1955-	THREE MILE RD	0.000	0.400						
	CR-1964-	MARSHALLS BR	0.000	0.290						
			0.290	2.900						
	CR-1974-	UPPER PIGEON BR	0.000	1.600						
	CR-1981-	SYCAMORE RD	0.000	0.800						
	CR-1982-	RIGHT FORK SYCAMORE RD	0.000	0.800						
	CS-1221-	BILLUPS DR	0.000	0.800						
	CS-1229-	MARIONS BR	0.000	0.900						
	KY-80-	KY 80	0.000	3.200						
					3.097	098B00138N		84,000	88,000	116,000
					2.172	098B00052N		54,000	62,000	62,000
			3.200	3.844						
					3.669	098B00137N		66,000	76,000	116,000
	KY-122-	KY 122	3.300	10.400						
					8.328	098B00067N		72,000	78,000	
					6.789	098B00068N		68,000	76,000	108,000
	KY-194-	KY 194	1.200	16.853						
			16.853	72.800						
					72.180	098B00041N		44,000	44,000	44,000
					50.946	098B00039N		74,000	86,000	
					42.271	098B00038N		44,000	44,000	44,000
					41.142	098B00037N		56,000	58,000	84,000
					26.625	098B00109N		44,000	44,000	44,000
					25.162	098B00107N		54,000	64,000	104,000
	KY-197-	KY 197	0.000	6.700						
			10.922	16.620						
					13.927	098B00060N		64,000	70,000	102,000

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For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.										
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County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Pike	KY-199-	KY 199	0.000	0.200						
			7.800	11.461						
					11.218	098B00030N	36,000	42,000	48,000	84,000
					8.898	098B00032N		44,000	44,000	44,000
					8.638	098B00033N		48,000	52,000	68,000
					8.203	098B00034N		78,000	82,000	118,000
	KY-292-	KY 292+WILLIAMSON RD	5.100	12.780						
	KY-319-	TOLER RD	0.000	6.900						
					6.583	098B00169N	30,000	30,000	30,000	30,000
					5.057	098B00234N		44,000	44,000	44,000
	KY-468-	BIG CREEK RD	0.000	4.000						
	KY-610-	VIRGIE RD	0.000	2.700						
					1.607	098B00075N		76,000	78,000	
			2.700	7.969						
					7.849	098B00070N		54,000	68,000	98,000
					7.008	098B00071N		62,000	68,000	100,000
					5.947	098B00072N		68,000	68,000	
					2.727	098B00074N		54,000	68,000	80,000
			7.969	8.944						
					8.146	098B00069N		68,000	76,000	110,000
	KY-632-	KY 632	0.000	4.000						
					2.035	098B00112N		80,000	84,000	110,000
			6.700	10.500						
			11.900	14.019						
	KY-805-	KY 805	0.000	6.860						
					6.630	098B00204N		54,000	68,000	80,000
					6.575	098B00203N		54,000	68,000	80,000
					5.536	098B00078N		54,000	68,000	80,000
					0.002	098B00077N		54,000	68,000	80,000
KY-881-	KY 881	0.000	1.900							
KY-1056-	KY 1056	7.600	11.586							
				11.573	098B00171N		88,000	92,000	108,000	
				9.720	098B00155N		44,000	44,000	44,000	
				9.075	098B00148N		86,000			
				8.485	098B00115N			94,000		
				7.604	098B00116N		44,000	44,000	44,000	
KY-1426-	ISLAND CREEK RD+CEDAR HILLS RD+KY 1426	0.600	4.889							
		4.889	9.600							
KY-1441-	FISHTRAP RD	0.000	1.500							
		9.700	11.800							
				10.299	098B00093N		44,000	44,000	44,000	
				9.706	098B00235N		44,000	44,000	44,000	
KY-1469-	KY 1469	4.500	11.303							
				11.218	098B00090N		44,000	44,000	44,000	
KY-1499-	KY 1499	11.303	14.102							
		0.000	6.100							

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County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Pike	KY-1499-	KY 1499			6.042	098B00254N		54,000	62,000	62,000
	KY-1758-	LONG BRANCH RD	0.000	1.000						
			6.400	7.552						
					7.541	098B00170N		44,000	44,000	44,000
	KY-1789-	FISHTRAP RD	0.000	0.200						
	KY-2167-	KY 2167	0.000	0.252						
	KY-3154-	KY 3154	0.400	2.669						
					1.942	098B00216N		80,000	94,000	
					1.616	098B00217N		44,000	44,000	44,000
	KY-3218-	KY 3218	0.000	0.800						
	KY-3220-	KY 3220	0.000	2.600						
					2.202	098B00020N		44,000	44,000	44,000
	KY-3227-	STONE COAL CREEK RD	0.000	1.700						
			7.000	8.000						
					7.924	098B00223N		44,000	44,000	44,000
	KY-3414-	KY 3414	0.000	3.406						
	KY-3415-	LITTLE ROBINSON CREEK RD	0.000	2.800						
					1.204	098B00232N		44,000	44,000	44,000
					0.981	098B00188N		54,000	62,000	106,000
	KY-3416-	KY 3416	0.000	1.669						
	KY-3419-	SMITH FORK RD+CALLOWAY BRANCH - SENG CAMP RD	4.900	4.904						
			4.904	10.400						
					9.997	098B00221N		44,000	44,000	44,000
					5.520	098B00236N		44,000	44,000	44,000
	KY-3527-	KY 3527	0.000	0.600						
	US-23-	US 23	0.000	32.800						
					15.716	098B00210N		54,000	68,000	80,000
					15.714	098B00210N		54,000	68,000	80,000
					9.631	098B00206N		54,000	68,000	80,000
					9.629	098B00206N		54,000	68,000	80,000
					8.139	098B00205N		54,000	68,000	80,000
US-119-	US 119	0.000	3.386							
		3.386	27.300							
				11.820	098B00017N	24,000	24,000	24,000	24,000	
				11.067	098B00015N	24,000	24,000	24,000	24,000	
				10.404	098B00014N	26,000	26,000	26,000	26,000	
				10.181	098B00013N		68,000	68,000		
US-460-	US 460+FERRELLS CREEK RD	0.000	22.500							
				14.997	098B00103N		54,000	62,000	62,000	
				14.369	098B00102N		54,000	62,000	62,000	
				9.899	098B00049N		54,000	62,000	62,000	

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Powell	KY-11-	NATURAL BRIDGE RD+CAMPTON RD+E COLLEGE AVE+W COLLEGE AVE+STANTON RD+MAIN ST+BLAC	0.000	3.500						
	KY-9000-	BERT T COMBS-MOUNTAIN PKWY	11.913	36.000						
					32.197	099B00012L		86,000	86,000	112,000
					32.085	099B00012R		86,000	86,000	112,000
					32.075	099B00011L		72,000	76,000	94,000
					31.976	099B00011R		72,000	76,000	94,000
					26.210	099B00006L			92,000	
					26.132	099B00006R			92,000	
					24.954	099B00005L		80,000	80,000	100,000
					24.873	099B00005R		80,000	80,000	104,000
					18.299	099B00024L		70,000	76,000	94,000
					18.256	099B00024R		70,000	76,000	94,000
					15.007	099B00021N		80,000	80,000	108,000
					14.446	099B00020N		80,000	80,000	108,000
					14.436	099B00020N		80,000	80,000	108,000
					11.921	099B00018R		70,000	76,000	94,000
					11.914	099B00018L		74,000	76,000	90,000
Pulaski	CR-1349-	COOPER POWER PLANT RD	0.000	0.600						
	KY-80-	KY-80	22.000	40.100						
					31.428	100B00080N			98,000	114,000
	KY-914-	SOUTHEASTERN BYP+KY-914+SOUTHEASTERN BYP	0.000	7.100						
	KY-1247-	KY-1247+KY-2302+MURPHY AVE+KY-1247+KY 1247+KY-1247	0.000	0.500						
					0.097	100B00061N		84,000	86,000	106,000
	LN-9008-	LOUIE B NUNN PKWY	72.087	88.547						
					84.471	100B00074R		56,000	72,000	100,000
					84.466	100B00074L		56,000	72,000	100,000
	US-27-	US-27+US 27+US-27	9.800	12.200						
					10.131	100B00032R		70,000	80,000	110,000
					10.131	100B00107L		54,000	68,000	80,000
Rockcastle	I-75-	I-75 N	50.800	73.400						
					72.382	102B00041L		68,000	80,000	
					71.213	102B00042N		54,000	68,000	80,000
					71.197	102B00042N		54,000	68,000	80,000
					68.960	102B00043N		54,000	68,000	80,000
					68.942	102B00043N		54,000	68,000	80,000
					58.984	102B00038R			96,000	
					58.904	102B00038L			96,000	
	KY-1004-	BIG CAVE RD	0.000	3.545						
	KY-1912-	CLIMAX RD	0.000	3.600						
					0.265	102B00017N		48,000	56,000	86,000
	US-25-	S WILDERNESS RD+US HIGHWAY 25+RICHMOND	0.000	15.900						

May 5, 2008		EXTENDED WEIGHT COAL AND COAL BY-PRODUCTS HAUL ROAD SYSTEM							Page 26 of 28	
For Restricted Bridges, Load Limits Are Maximum For Extended Weight Vehicles. Unrestricted Bridges Are Not Listed.										
2007 ANNUAL UPDATE										
County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Russell	LN-9008-	LOUIE B NUNN PKWY	57.791	72.087						
Scott	I-75-	I-75	120.792	143.200						
Shelby	US-60-	SHELBYVILLE RD+MIDLAND TRL+MAIN ST+FRANKFORT RD	0.000	23.026						
					23.014	106B00086N			98,000	
					11.170	106B00007N		70,000	78,000	100,000
					8.362	106B00024N		54,000	68,000	80,000
Union	CR-1227-	DAVIS MINE RD	0.000	0.400						
	CR-1314-	HITE SPEECE RD	0.000	0.100						
	KY-56-	KY-56+WEST MAIN ST+KY-56+WEST MAIN ST+EAST MAIN ST+KY-56	0.000	7.800						
					1.683	113B00047N		54,000	68,000	80,000
					0.323	113B00045N		54,000	68,000	98,000
	KY-360-	KY-360+THIRD ST+UPPER MAIN ST+KY-360	0.000	0.500						
	KY-492-	KY-.492+KY-492	0.100	1.900						
	KY-871-	KY-871	0.000	2.400						
	KY-1508-	KY-1508	5.100	6.285						
6.285			6.300	5.608	113B00078N		80,000	92,000		
Warren	WN-9007-	WILLIAM H NATCHER PKWY	0.000	18.166						
					3.606	114B00051R		88,000	98,000	112,000
					3.601	114B00051L		88,000	98,000	112,000
					0.000	114B00049L			98,000	112,000
		0.000	114B00049R			96,000	108,000			
Washington	BG-9002-	MARTHA LAYNE COLLINS-BLUEGRASS PKWY	39.267	44.807						
Webster	CR-1029-	J Z SHELTON RD	0.000	0.700						
	CR-1034-	EASTWOOD FERRY RD	0.000	0.100						
	CR-1257-	SLOVER CRK RD	0.000	0.976						
	EB-9004-	EDWARD T BREATHITT PKWY	55.003	65.305						
	KY-56-	KY-56+MAIN ST+KY-56	5.300	5.332						
			5.332	12.470						
					11.623	117B00011N		74,000		
					6.999	117B00010N		74,000		
			12.470	14.500						
KY-270-	KY-270	8.400	13.000							

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County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Webster	KY-370-	KY-370	5.200	7.900						
	KY-494-	KY-494	0.800	2.200						
	KY-814-	KY-814	0.000	0.598						
	US-41-A	US-41A	0.000	19.500						
	US-41-	US-41	0.000	12.200						
					9.851	117B00096N		72,000		
					2.699	117B00016N		56,000	74,000	94,000
				1.683	117B00017N		60,000	76,000	112,000	
				1.550	117B00018N		60,000	76,000	112,000	
Whitley	KY-6-	HIGHWAY 6	0.000	1.647						
					1.641	118B00073N	24,000	24,000	24,000	24,000
					0.471	118B00074N		54,000	62,000	108,000
	KY-11-	HIGHWAY 11	0.000	2.579						
	KY-26-	HIGHWAY 26+SOUTH MAIN ST	0.000	14.319						
					13.460	118B00009N		54,000	68,000	82,000
					8.027	118B00099N		58,000	76,000	106,000
					7.444	118B00098N		54,000	62,000	90,000
					0.915	118B00003N		54,000	62,000	62,000
	KY-92-	HIGHWAY 92 W+HIGHWAY 92 E	16.700	29.000						
					27.892	118B00014N		60,000	68,000	106,000
					26.674	118B00013N		66,000	72,000	104,000
					22.072	118B00012N		54,000	62,000	88,000
	KY-904-	HIGHWAY 904 E	0.000	13.300						
					13.294	118B00071N		76,000	86,000	110,000
					8.155	118B00070N		74,000	86,000	
				0.115	118B00119N		44,000	44,000	44,000	
KY-1809-	HIGHWAY 1809	0.000	1.400							
				0.213	118B00064N		72,000	80,000	112,000	
US-25-W	U S HIGHWAY 25-W S+U S HIGHWAY 25-W N+CUMBERLAND FALLS HWY+18TH ST+SOUTH MAIN ST	8.133	14.127							
				11.031	118B00043N		74,000	86,000		
Wolfe	KY-11-	KY 11	0.000	5.300						
	KY-15-S	KY 15S+BERT T. COMBS MOUNTAIN PKWY	0.000	1.200						
					1.081	119B00054N			94,000	
	KY-15-	KY 15	0.000	9.500						
					2.968	119B00037N		54,000	68,000	80,000
					2.559	119B00038N		54,000	68,000	80,000
					1.796	119B00035N			92,000	
	KY-9000-	BERT T COMBS-MOUNTAIN PKWY	36.000	43.104						
KY-9009-	BERT T COMBS-MOUNTAIN PKWY EXT	43.104	57.681							

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County Name	Route	Road Description	Begin MP	End MP	Bridge MP	Bridge ID	Load 1	Load 2	Load 3	Load 4
Wolfe	KY-9009-	BERT T COMBS-MOUNTAIN PKWY EXT			57.213	119B00044N		86,000	86,000	
					55.188	119B00041N		82,000	82,000	108,000
					49.662	119B00051N			98,000	
					46.206	119B00047N			92,000	
					43.776	119B00046N		86,000	92,000	110,000
Woodford	BG-9002-	MARTHA LAYNE COLLINS-BLUEGRASS PKWY	61.947	71.134	65.396	120B00029N		54,000	68,000	80,000
					65.393	120B00029N		54,000	68,000	80,000
					63.734	120B00028N		54,000	68,000	80,000
					63.730	120B00028N		54,000	68,000	80,000
	US-60-X	FRANKFORT ST+N MAIN ST+LEXINGTON ST+LEXINGTON RD	1.000	1.790						
	US-60-	VERSAILLES RD+FRANKFORT RD+VERSAILLES BYP+LEXINGTON RD	0.000	13.000						
US-62-	TYRONE PIKE+ROSE HILL AVE+S MAIN ST+MIDWAY RD+S WINTER ST+N WINTER ST+MIDWAY RD+	0.100	7.000							
				0.173	120B00033N		54,000	68,000	80,000	

EXHIBIT J10

Coal Haul Extended Weight System

HIS

Kentucky Transportation Cabinet

11/04/2009

Truck Weight Limits on State-Maintained Routes

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<u>ROUTE</u>	<u>WEIGHT CLASS</u>	<u>COUNTY NAME</u>	<u>LOCATION DESCRIPTION</u>	<u>BEGIN MP</u>	<u>END MP</u>
KY 15	AAA	Letcher	From KY 15X/US 119 to KY 7	0.000	9.216
	AAA	Letcher	From KY 7 to Knott County line	9.216	10.675
	AAA	Knott	From Letcher County line to Perry County line	0.000	9.329
	AAA	Perry	From Knott County line to Breathitt County line	0.000	25.179
	AAA	Breathitt	FROM PERRY COUNTY LINE TO WOLFE COUNTY LINE	0.000	26.446
	AAA	Wolfe	From Breathitt County line to Powell County line	0.000	18.704
	AAA	Powell	From Wolfe County line to KY 11	0.000	3.493
	AAA	Powell	FROM KY 11 TO KY 9000 (MOUNTAIN PARKWAY)	3.493	4.083
	AA	Powell	From KY 9000 (Mountain Parkway) to Clark County line	4.083	8.871
	AA	Clark	From Powell County line to US 60 at Winchester	0.000	13.122
KY 15 C	AAA	Letcher	From KY 15 to KY 15X	0.000	0.240
KY 15 S	AAA	Wolfe	FROM KY 1191/KY 15 TO WB LANE KY 9000 (MOUNTAIN PARKWAY)	0.000	1.236
KY 15 X	AAA	Perry	From KY 15 to KY 15	0.000	2.306
	AA	Letcher	FROM US 119/KY 15 TO KY 15	0.000	2.838
	AA	Letcher	From KY 15X northbound via Bentley and Main Street to KY 15X (Webb Street)	1.805	1.955

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Kentucky Transportation Cabinet

11/04/2009

Truck Weight Limits on State-Maintained Routes

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<u>ROUTE</u>	<u>WEIGHT CLASS</u>	<u>COUNTY NAME</u>	<u>LOCATION DESCRIPTION</u>	<u>BEGIN MP</u>	<u>END MP</u>
KY 28	AAA	Owsley	From KY 30 in Booneville to Breathitt County line	0.000	10.739
	AAA	Breathitt	FROM OWSLEY COUNTY LINE TO PERRY COUNTY LINE	0.000	5.739
	AAA	Perry	From Breathitt County line to Breathitt County line	0.000	6.012
	AAA	Breathitt	FROM PERRY COUNTY LINE TO PERRY COUNTY LINE	5.739	7.415
	AAA	Perry	FROM BREATHITT COUNTY LINE TO KY 15	6.012	18.063

EXHIBIT K

Air Permit Application

**DEP 7007 AIR PERMIT APPLICATION FORMS
CONSTRUCTION OF AN AIR EMISSIONS SOURCE**

**ecoPOWER GENERATION, LLC
PERRY COUNTY, KENTUCKY**

JANUARY 2009

**Smith Management Group
1405 Mercer Road
Lexington, Kentucky 40511
859-231-8936**

DEP 7007 FORM

APPLICATION FOR
CONSTRUCTION OF AN AIR EMISSION SOURCE

ecoPOWER GENERATION, LLC

COAL FIELDS REGIONAL INDUSTRIAL PARK
PERRY COUNTY, KENTUCKY

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DEP 7007N	EMISSIONS, STACKS AND CONTROLS INFORMATION
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ATTACHED DISC – SUPPORTING INFORMATION

- HAP Representative Emission Factor Supporting Data
 - Main Boiler HAP Emissions Supporting Data (103009_R2)

- Other Technical Documents
 - ecoPower BPIP info.pdf
 - FAA Height Restriction Summary.pdf
 - preliminary_stack_height_1.pdf
 - TP_CFB_04_01_InitialOperatingExpBiomass_Germany.pdf
 - TP_CFB_08_05_Hiltunen_CombustionofBiomassinCFB.pdf
 - TP_CFB_09_15_Tillman_BiomassFuelSelectioninCFB.pdf

- Supporting Referenced Permits
 - PSNH, Schiller Station Unit 5 – Portsmouth, NH
 - 3301500012FY04-0331TypePermit
 - 3301500012FY04-0331TypeSummary
 - 3301500012FY05-0147TypeOrder
 - 3301500012FY06-0005TypePermit
 - 3301500012FY06-0005TypeSummary_SchillerStation
 - ADAGE Hamilton, LLC – Hamilton County, FL
 - adage_hamilton_co_Application
 - ADAGEDPERMIT
 - Fitzgerald Renewable Energy, LLC – Roswell, GA
 - Fitzgerald_Permit
 - Greenway Renewable Power, LLC – LaGrange, GA
 - Greenway SIP application
 - Greenway_Permit_Franklin,GA.pdf
 - GreenwayPower_Permit
 - GreenwayPower_PermitNarrative
 - Hertford Renewable Energy, LLC – Hertford County, NC
 - hertford_dft_10272009
 - hertford_psd_10272009

ecoPOWER GENERATION, LLC
PERRY COUNTY, KENTUCKY

1.0 INTRODUCTION

ecoPower Generation, LLC (ecoPower) proposes to construct a biomass-fired electric power generating facility approximately 10-miles north/northwest of Hazard, Perry County, Kentucky. It will be situated on 125-acres of a reclaimed coal mine in the newly developed Coal Fields Industrial Park located off US Highway 15. The proposed operation is located in an attainment area for all criteria pollutants, and is greater than 100-miles from a federally designated Class I Visibility Area.

The proposed site is delineated on **Figure 1 - Site Location Map**, **Figure 2 - Site Location Map – Aerial**, **Figure 3 - Detailed Site Layout**, **Figure 5 - Site Arrangement**, **Figure 6 - Site Location Property Development** and **Figure 7 - Transmission Line Routing**. A description of the proposed processes is shown on **Figure 4 - Process Flow Diagram**. Additional documents used to support methods and permitting approaches used for this permit application are available on the CD-ROM disc attached to this document labeled **Supporting Information**. As summarized below and demonstrated throughout the remainder of this package, the facility will be a new Synthetic Minor/Title V source. The proposed facility is included in the Standard Industrial Classification (SIC) Category for Electric, Gas, and Sanitary Services, SIC Code 4911.

Potential annual emissions of each New Source Review (NSR) regulated pollutant at the ecoPower facility will be below 250 tons per year (tpy). Therefore, emissions will not exceed the major stationary source thresholds in 401 KAR 51:001(120)(a)(2). The proposed ecoPower facility will not be subject to Prevention of Significant Deterioration (PSD) requirements under 401 KAR 51:017, and will be classified as a new Synthetic Minor and Title V source. To ensure federal enforceability of the physical and operational limitations taken into consideration to calculate potential emissions from the facility, including air pollution control equipment, ecoPower submitted an air construction permit application for a federally enforceable permit for non-major sources pursuant to the provisions in 401 KAR 52:030.

The proposed facility will include several buildings and the following equipment or air emission sources:

- One fluidized bed boiler (FBB) with a maximum heat input of 672 million British Thermal Units (BTU) per hour (mmBtu/hr) (fired exclusively on biomass with propane available as the startup fuel), and a steam turbine generator with a nominal gross output of 50 megawatts (MW);

- One propane fired auxiliary boiler;
- An air cooled condenser;
- Material handling systems that include, but are not limited to, two truck dumps, receiving hopper, conveyors, roads, storage piles, silos, screens, wood chipper, and wood hog;
- Ancillary equipment (i.e., emergency generator, fire water pump, and fuel tanks); and
- Several buildings including: a boiler building; a turbine building; a wood hog building; a chipper building; a warehouse/shop building; and a service building.

Figure 8 - Plant Elevation shows the relative elevations of the primary buildings associated with these emission sources. A more detailed discussion of these sources is summarized on the following pages.

The proposed operations have been included on **Application Form DEP7007**, with appropriate attachments. Sargent & Lundy, LLC of Chicago, Illinois as the design engineer has prepared the background documentation to support the facility's design and emissions information contained in this package. Sargent & Lundy's supporting technical document is included as **Attachment 3** to this application package.

Emissions are summarized in **Table 1 – Source-wide Criteria Pollutants**.

Table 1 — Source-wide Criteria Pollutants (tons/year)

Emission Source	PM ¹		PM ₁₀ ¹		PM _{2.5} ¹		CO		VOC		NO _x		SO ₂		O ₃		Pb	
Fluidized Boiler ¹	58.9	C	44.1	C	32.4	C	235.5	UC	58.9	UC	235.5	C	229.6	UC	N/A	N/A	0.1	UC
Auxiliary Boiler	0.3	C	0.3	C	0.3	C	5.1	C	0.2	C	5.5	C	0.01	C	N/A	N/A	N/A	N/A
Emergency Generator	0.2	C	0.2	C	0.2	C	3.2	C	0.2	C	5.6	C	0.2	C	N/A	N/A	N/A	N/A
Emergency Fire Pump	0.04	C	0.04	C	0.04	C	0.6	C	0.0	C	0.7	C	0.0	C	N/A	N/A	N/A	N/A
Wood Yard Transfer Points	24.6	C	12.4	C	12.4	C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fugitive Emission Sources	34.8	C	7.1	C	1.1	C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Totals	118.7		64.2		46.4		244.3		59.3		247.3		229.8		N/A		0.1	

Notes:

- 1) Particulate Matter (PM) values listed for the fluidized bed boiler are filterable PM.
- 2) Controlled = C / Uncontrolled = UC
- 3) Criteria pollutants: particulate matter (PM), carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxide (NO_x), sulfur dioxide (SO₂), ozone (O₃), and lead (Pb).

1.1 Boiler and Steam Turbine

The boiler and steam turbine generator will produce a nominal 50 MW-gross electrical output. The FBB will utilize either a bubbling fluidized bed (BFB) or a circulating fluidized bed (CFB), which are described in Section 2.4.2 of the Technical Support Document in **Attachment 3** provided by Sargent & Lundy. The FBB will be designed to generate 450,000 pounds per hour (lb/hr) of **steam** at 950°F and 1,800 psig, and have an air cooled condenser to reduce water use. The boiler will be fired by blended biomass that includes bark, wood chips, chipwood, and sawdust. Since these materials contain relatively low quantities of ash, sand will be utilized to provide additional bed material. A propane-fired auxiliary boiler will be utilized to provide steam during startup of the main boiler. Emissions from the main boiler will be controlled by a fabric filter baghouse (PM), combustion controls (NO_x, CO, VOC), and selective non-catalytic reduction (for NO_x). Due to the low sulfur content in the biomass, potential SO₂ emissions from the facility are below the major source thresholds in 401 KAR 51:001(120) and 40 CFR 52.21(b)(1), and SO₂ emissions from the main boiler are below the applicable NSPS standards in 40 CFR 60.42b(k)(1). Because of the inherently low sulfur content of the biomass fuel, the facility has no plans for post combustion SO₂ control. CO emissions are controlled in the combustion process. Boiler temperatures, excess oxygen, mixing, and residence time within the fluidized bed boiler will promote essentially complete combustion and minimize CO emissions. CO emissions from the main boiler are comparable to other biomass-fired power plants across the country. Information for the boiler design is shown on the following page in **Table 2 – Boiler Design Parameters**.

Emissions of NO_x, CO, SO₂, PM, PM₁₀, and PM_{2.5} from the main boiler were calculated based on a combination of fuel characteristics, boiler design parameters, and emission control technology effectiveness. Emissions of other air pollutants were estimated using a combination of fuel characteristics, expected control efficiencies, and representative AP-42 emissions data (AP-42 Emission Factors, Fifth Edition, Volume 1, Section 1.6, "*Wood Residue Combustion in Boilers*"). For example AP-42, Section 1.6 emission factors were used to estimate VOC and Trace metal emissions. Other pollutants, including speciated organic compounds, were estimated based upon the design specifications of the proposed boiler and AP-42 emissions data representative of the proposed boiler and air pollution control configuration.

Organic hazardous air pollutants (HAP) emissions were calculated based on emission factors derived from AP-42 supporting test data (AP-42 Table 1.6-3). This approach was used for the following reasons: (1) emission factors in AP-42 Table 1.6-3 represent average emission from biomass-fired boiler, including stokers, dutch ovens, and boilers with no particulate controls (AP-42 Table 1.6-3 footnote "b"); (2) emissions measured at facilities utilizing different combustion technologies (e.g. stoker or dutch oven) may not be representative of emission from the ecoPower FBB; and (3) emissions measured at units with no particulate

Table 2 — Boiler Design Parameters

672 mmBtu/hr Boiler		
Boiler Design		Fluidized Bed Combustion
Condenser Design		Air Cooled Condenser
Main Steam Conditions	psig/°F ¹	1,800 / 950
Gross Plant Output	kW-gross ²	52,835
Net plant heat rate	Btu/kWh ³	13,770
Auxiliary Power Requirements	kW ⁴	6,365
Turbine Heat Rate	Btu/kWh	9,003
Net Plant Output	Net-kW ⁵	46,470
Full Load Heat Input to Boiler	mmBtu/hr	672
Fuel Feed Rate	lb/hr ⁶	131,558
Annual Fuel Consumption	tons/year	576,000

Notes:

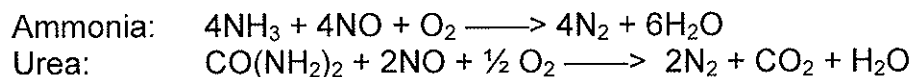
- 1 – pound-force per square inch gauge per degrees Fahrenheit (psig/°F)
- 2 – gross kilowatts (kW-gross)
- 3 – British Thermal Units per kilowatt hour (Btu/kWh)
- 4 – kilowatt (kW)
- 5 – net kilowatts (Net-kW)
- 6 – pounds per hour (lb/hr)

Controls will not be representative of emission from a fluidize bed boiler equipped with a fabric filter baghouse. Therefore representative emission factors were developed based on a review of the stack test data used by U.S. EPA to develop the Table 1.6-3 emission factors. Stack test data were organized by combustion configuration and pollution control system and the most representative data were used to estimate emissions from the ecoPower boiler. For example, stack tests most representative of the ecoPower configuration would be from a fluidized bed boiler equipped with a fabric filter (FF) or electrostatic precipitator (ESP). **Attachment 4** provides organic and HAP emission calculations for the proposed FBB. A more comprehensive explanation of the methodology used to develop organic HAP emission factors for the ecoPower biomass-fired boiler is provided in Section 4.5.2 of the Technical Support Document in **Attachment 3**.

Hydrogen Chloride (HCl) emissions, a HAP, were calculated assuming a conservatively high fuel chlorine concentration of 200 ppm (wt. dry), 100% conversion of fuel chlorine to HCl gas, and 90% removal in the fabric filter baghouse and associated filter cake. Other acid gases, including sulfuric acid mist, will also be effectively controlled in the boiler and baghouse. If necessary, a dry sorbent injection (DSI) control system will be installed to provide additional acid gas removal. The DSI injects alkaline based sorbent directly into the flue gases to neutralize HCl. The DSI system is described in Section 3.1.4.2 of the Technical Support Document in **Attachment 3**.

The fly ash generated from woody biomass will be rich in calcium (Ca) and potassium (K). The content of calcium oxide (CaO or lime) in wood and bark ash is expected to be in the range of 30% - 50%, and potassium oxide (K₂O) concentrations can be up to 15% or higher. Thus, fuels fired at ecoPower will generate an alkaline fly ash. Acid gases generated during the combustion process will react with the alkaline ash in the boiler. Extensive mixing and residence time within the boiler promotes flue gas/fly ash contact, and additional removal will be achieved as the flue gas passes through the alkaline baghouse filter cake. A DSI system will be provided if these post-combustion controls cannot be guaranteed effective within compliant emission limits. Further information from Sargent & Lundy regarding acid gas and fly ash alkalinity is provided in Section 3.1.4.1 of the Technical Support Document in **Attachment 3**.

Selective non-catalytic reduction (SNCR) will be used to further reduce NO_x emissions from the main boiler in addition to combustion controls designed to minimize the formation of NO_x, CO, and VOC, such as the fabric filter baghouse,. SNCR is a post-combustion NO_x control system that involves the direct injection of ammonia (NH₃) or urea (CO(NH₂)₂) at flue gas temperatures of approximately 1,600 – 1,750°F. The ammonia or urea reacts with NO_x in the flue gas to produce N₂ and water. The NO_x reduction reactions in an SNCR are driven by the thermal decomposition of ammonia or urea and the subsequent reduction of NO_x. SNCR systems do not employ a catalyst to promote these reactions. Simplified NO_x reduction reactions in an SNCR are shown below:



The effectiveness of an SNCR control systems depends on several site-specific factors, including the flue gas characteristics, NO_x concentration in the flue gas, reagent-to-NO_x ratio, fuel sulfur content, and the acceptable ammonia slip level. The application of SNCR to fluidized bed boiler is technically feasible because the normal operating temperature of a fluidized bed boiler is near the optimum temperature for NO_x reduction by NH₃. Extensive flue gas mixing and residence time within the boiler also promotes the effectiveness of an SNCR system.

The emissions for the startup of the 672 mmBtu/hr boiler have also been quantified. Startup emissions were calculated based on a “cold-start” sequence. The cold-start sequence requires the longest period of time and represents maximum emissions associated with boiler startup. Startup emissions were calculated by estimating heat input to the boiler during the startup period and assigning emission factors representative of NO_x, CO, and VOC emissions associated with initial and low-load firing. Propane will be used as the startup fuel to initiate boiler firing until sufficient heat is available to begin biomass firing. Additional information for the startup sequence can be found in Section 4.3 of the Technical Support Document in **Attachment 3– Startup Emissions**.

1.2 Material Handling Systems and Storage

Transfer operations to move and store raw biomass and byproducts of combustion will occur on site. Specifically, biomass will be delivered by truck and unloaded via two truck tippers into receiving hoppers. The biomass will be transferred from the receiving hopper onto a conveyor and conveyed to the wood hog building. The wood hog building will have various screens, conveyors and a wood hog. Chipwood, chipped in a building from wood and logs stored in the wood storage area, will also be added to the truck unloading conveyor prior to entering the wood hog building. Once all biomass is sized in the wood hog building it will be conveyed to a transfer tower and then to individual storage piles. Biomass from each storage pile will then be transferred by conveyors into one of four surge bins that feed the boiler. Due to the high moisture content of the biomass, and that fog mist and/or enclosures will be utilized for these activities, minimal particulate dust is anticipated. **Table 3 – Fuel Constituent Characteristics** on the following page provides the fuel characteristics for each of the wood types that will be utilized at the facility.

Sand, supplemental boiler bed material, will be unloaded by a pressure differential truck unloading system directly into a storage bin situated inside of the boiler building. Sand will be fed to the boiler at an approximate rate of 200 lb/hr or an equivalent consistent with make-up requirements.

Fly ash, a byproduct of the combustion process, collected in the boiler’s fabric filter baghouse will be transferred by an enclosed drag chain conveyor to a fly ash silo. Fly ash in the silo will either be wetted or loaded by a dry tanker telescopic loadout spout into covered haul trucks for disposal or beneficial reuse. Material in the telescopic spout will vent to the silo. A bin vent filter will be located on the silo to minimize particulate emissions.

Table 3 — Fuel Constituent Characteristics

Fuel	Sawdust	Chips	Bark	Chipwood*
% in Design Fuel ** (weight)	30	30	20	20
<i>Proximate Analysis</i>				
Ash %	0.40	0.95	6.09	0.95
Moisture %	35.48	38.69	33.61	38.69
Volatile Matter %	56.60	53.80	52.33	53.80
Fixed Carbon %	7.34	6.57	7.97	6.57
<i>Ultimate Analysis</i>				
Ash %	0.40	0.95	6.09	0.95
Moisture %	35.48	38.69	33.61	38.69
Carbon %	31.85	30.28	32.66	30.28
Hydrogen %	3.82	3.59	3.60	3.59
Nitrogen %	0.10	0.07	0.26	0.07
Sulfur %	0.03	0.01	0.03	0.01
Oxygen %	28.34	26.41	23.76	26.41
HHV, Btu/lb	5204	4945	5374	4945

*Assumption: chipwood will exhibit identical fuel characteristics as wood chips

**The weight percentages are anticipated long-term averages

Bed ash, another byproduct of combustion, will be removed by ash coolers and conveyed via two enclosed drag chain conveyors into a bed ash storage silo. Like the fly ash, the bed ash will either be wetted or loaded by a dry tanker telescopic loadout spout into covered haul trucks for disposal or beneficial reuse. Material in the telescopic spout will vent to the silo. A bin vent filter will be located on the silo to minimize particulate emissions.

The anticipated characteristics of the mixed fuel fed to the boiler are shown on the following page in **Table 4 – Mixed Fuel Characteristics**.

Table 4 — Mixed Final Fuel Characteristics*

	Biomass Fuel*
Proximate Analysis	
Ash %	1.81
Moisture %	36.72
Volatile Matter %	54.35
Fixed Carbon %	7.08
Ultimate Analysis	
Ash %	1.81
Moisture %	36.72
Carbon %	31.22
Hydrogen %	3.66
Nitrogen %	0.12
Sulfur %	0.02
Oxygen %	26.46
HHV, Btu/lb	5,108

* Fuel characteristics included in this table represent typical long-term as received values (wet basis), based on available fuel data and the expected fuel mix.

* Characteristics summarized in this table are not intended to limit the heating value, moisture content, or ash content of fuels utilized at the source as short term fuel characteristics may vary from the values summarized below.

* It is assumed that chipwood will exhibit identical fuel characteristics as wood.

Emissions from the aforementioned transfer points were calculated using EPA AP-42 Emission Factors, Fifth Edition, Volume 1, Section 11.8, "*Clay and Fly Ash Sintering*," engineering judgment, and from emission factors utilized by similar operations within the State of Kentucky.

As described, these handling operations will be comprised of various transfer and fugitive emission points subject to 401 KAR 59:010 and 401 KAR 63:010. The biomass has relatively high moisture content (37%) and fog mist will be used at many of the transfer and fugitive points to minimize particulate emissions. Many of the transfer points will be enclosed, and the storage silos will be equipped with bin-vent filters. **Figure 4 - Process Flow Diagram** provides a simplified schematic of material transfer operations.

Fugitive emission sources include truck traffic on paved surfaces, wind erosion from storage piles, and the manipulation of storage piles and logs in the wood storage area. Fugitive emissions were calculated using methodologies outlined in EPA AP-42 Emission Factors, Fifth Edition, Volume 1, Chapter 13, *"Miscellaneous Sources."*

1.3 Ancillary Equipment

A planned 1,600 kW, diesel-fired emergency generator and a 450 hp, diesel-fired emergency fire water pump will be used in emergency situations (i.e., interrupted electrical supply, wood fires) at the facility. Diesel storage tanks for these two units, as well as a tank to supply diesel fuel for facility heavy equipment will be located on site. Standing loss emissions for these tanks were calculated using EPA's Tanks 4.09d, and EPA AP-42 Emission Factors, Fifth Edition, Volume 1, Chapter 3, *"Stationary Internal Combustion Sources."*

DEP 7007 APPLICATION FORMS

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

Division for Air Quality
200 Fair Oaks Lane, 1st Floor
Frankfort, Kentucky 40601
(502) 564-3999
<http://www.air.ky.gov/>

DEP7007AI

Administrative
Information

Enter if known

AFS Plant ID#

Agency Use Only

Date Received

Log#

Permit#

PERMIT APPLICATION

The completion of this form is required under Regulations 401 KAR 52:020, 52:030, and 52:040 pursuant to KRS 224. Applications are incomplete unless accompanied by copies of all plans, specifications, and drawings requested herein. Failure to supply information required or deemed necessary by the division to enable it to act upon the application shall result in denial of the permit and ensuing administrative and legal action. Applications shall be submitted in triplicate.

1) APPLICATION INFORMATION

Note: The applicant must be the owner or operator. (The owner/operator may be individual(s) or a corporation.)

Name: ecoPower Generation, LLC

Title: _____ Phone: _____

(If applicant is an individual)

Mailing Address: 1256 Manchester Street
Company

Street or P.O. Box: _____

City: Lexington State: KY Zip Code: 40504

Is the applicant (check one): ☐ Owner ☐ Operator ☐ Owner & Operator ☒ Corporation/LLC* ☐ LP**

* If the applicant is a Corporation or a Limited Liability Corporation, submit a copy of the current Certificate of Authority from the Kentucky Secretary of State. (Certificate of Authority is included in Attachment 1 to the Application Package)

** If the applicant is a Limited Partnership, submit a copy of the current Certificate of Limited Partnership from the Kentucky Secretary of State.

Person to contact for technical information relating to application:

Name: John Kelley

Title: Senior Project Engineer Phone: 859-231-8936

2) OPERATOR INFORMATION

Note: The applicant must be the owner or operator. (The owner/operator may be individual(s) or a corporation.)

Name: Same as Applicant

Title: _____ Phone: _____

Mailing Address: _____
Company

Street or P.O. Box: _____

City: _____ State: _____ Zip Code: _____

3) TYPE OF PERMIT APPLICATION

For new sources that currently *do not* hold any air quality permits in Kentucky and are required to obtain a permit prior to construction pursuant to 401 KAR 52:020, 52:030, or 52:040.

☒ Initial Operating Permit (the permit will authorize both construction and operation of the new source)

Type of Source (*Check all that apply*): ☒ Major ☐ Conditional Major ☒ Synthetic Minor ☐ Minor

For existing sources that do not have a source-wide Operating Permit required by 401 KAR 52:020, 52:030, or 52:040.

Type of Source (*Check all that apply*): ☐ Major ☐ Conditional Major ☐ Synthetic Minor ☐ Minor

(*Check one only*)

☐ Initial Source-wide Operating Permit ☐ Modification of Existing Facilities at Existing Plant

☐ Construction of New Facilities at Existing Plant

☐ Other (explain) _____

For existing sources that currently have a source-wide Operating Permit.

Type of Source (*Check all that apply*): ☐ Major ☐ Conditional Major ☐ Synthetic Minor ☐ Minor

Current Operating Permit # _____

☐ Administrative Revision (describe type of revision requested, e.g. name change): _____

☐ Permit Renewal ☐ Significant Revision ☐ Minor Revision

☐ Addition of New Facilities ☐ Modification of Existing Facilities

For all construction and modification requiring a permit pursuant to 401 KAR 52:020, 52:030, or 52:040.

Proposed Date for Start of Construction or Modification: _____ May, 2010 _____
Proposed date for Operation Start-up: _____ 2012 _____

4) SOURCE INFORMATION

Source Name: ecoPower

Source Street Address: 1244 Coalfields Industrial Drive

City: Chavies Zip Code: 41727 County: Perry

Primary Standard Industrial Classification (SIC) Category: Electric Services Primary SIC #: 4911

Property Area (Acres or Square Feet): 125 acres (approximate) Number of Employees: 28

Description of Area Surrounding Source (*check one*):

☐ Commercial Area ☐ Residential Area ☐ Industrial Area ☒ Industrial Park ☐ Rural Area ☐ Urban Area

Approximate Distance to Nearest Residence or Commercial Property: > 0.5 miles

UTM or Standard Location Coordinates: (*Include topographical map showing property boundaries*)

UTM Coordinates: Zone _____ Horizontal (km) _____ Vertical (km) _____

Standard Coordinates: Latitude 37 Degrees 22 Minutes 19 Seconds

Longitude 83 Degrees 16 Minutes 36 Seconds

4) SOURCE INFORMATION (CONTINUED)Is any part of the source located on federal land? ☐ Yes ☒ No

What other environmental permits or registrations does this source currently hold in Kentucky?

None

What other environmental permits or registrations does this source need to obtain in Kentucky?

KPDES Construction Activity, KPDES Stormwater, Hazardous Waste Generator ID

5) OTHER REQUIRED INFORMATION

Indicate the type(s) and number of forms attached as part of this application.

<input checked="" type="checkbox"/> DEP7007A Indirect Heat Exchanger, Turbine, Internal Combustion Engine	<input type="checkbox"/> DEP7007R Emission Reduction Credit
<input checked="" type="checkbox"/> DEP7007B Manufacturing or Processing Operations	<input type="checkbox"/> DEP7007S Service Stations
<input type="checkbox"/> DEP7007C Incinerators & Waste Burners	<input type="checkbox"/> DEP7007T Metal Plating & Surface Treatment Operations
<input type="checkbox"/> DEP7007F Episode Standby Plan	<input checked="" type="checkbox"/> DEP7007V Applicable Requirements & Compliance Activities
<input type="checkbox"/> DEP7007J Volatile Liquid Storage	<input checked="" type="checkbox"/> DEP7007Y Good Engineering Practice (GEP) Stack Height Determination
<input type="checkbox"/> DEP7007K Surface Coating or Printing Operations	<input type="checkbox"/> DEP7007AA Compliance Schedule for Noncomplying Emission Units
<input type="checkbox"/> DEP7007L Concrete, Asphalt, Coal, Aggregate, Feed, Corn, Flour, Grain, & Fertilizer	<input type="checkbox"/> DEP7007BB Certified Progress Report
<input type="checkbox"/> DEP7007M Metal Cleaning Degreasers	<input type="checkbox"/> DEP7007CC Compliance Certification
<input checked="" type="checkbox"/> DEP7007N Emissions, Stacks, and Controls Information	<input checked="" type="checkbox"/> DEP7007DD Insignificant Activities
<input type="checkbox"/> DEP7007P Perchloroethylene Dry Cleaning Systems	

Check other attachments that are part of this application.

Required Data

- ☒ Map or Drawing Showing Location
- ☒ Process Flow Diagram and Description
- ☒ Site Plan Showing Stack Data and Locations
- ☒ Emission Calculation Sheets
- ☐ Material Safety Data Sheets (MSDS)

Supplemental Data

- ☐ Stack Test Report
- ☒ Certificate of Authority from the Secretary of State (for Corporations and Limited Liability Companies)
- ☐ Certificate of Limited Partnership from the Secretary of State (for Limited Partnerships)
- ☐ Claim of Confidentiality (See 400 KAR 1:060)
- ☐ Other (Specify) _____

Indicate if you expect to emit, in any amount, hazardous or toxic materials or compounds or such materials into the atmosphere from any operation or process at this location.

- | | |
|---|--|
| <input type="checkbox"/> Pollutants regulated under 401 KAR 57:002 (NESHAP) | <input checked="" type="checkbox"/> Pollutants listed in 401 KAR 63:060 (HAPS) |
| <input type="checkbox"/> Pollutants listed in 40 CFR 68 Subpart F [112(r) pollutants] | <input type="checkbox"/> Other |

Has your company filed an emergency response plan with local and/or state and federal officials outlining the measures that would be implemented to mitigate an emergency release?

☐ Yes ☒ No - Plan to be compiled

Check whether your company is seeking coverage under a permit shield. If "Yes" is checked, applicable requirements must be identified on Form DEP7007V. Identify any non-applicable requirements for which you are seeking permit shield coverage on a separate attachment to the application.

☐ Yes ☒ No ☐ A list of non-applicable requirements is attached

6)

OWNER INFORMATION

Note: If the applicant is the owner, write "same as applicant" on the name line.

Name: Same as Applicant

Title: _____ Phone: _____

Mailing Address: _____
Company _____

Street or P.O. Box: _____

City: _____ State: _____ Zip Code: _____

List names of owners and officers of your company who have an interest in the company of 5% or more.

NamePosition (owner, partner, president, CEO, treasurer, etc.)

See Attachment 2 to the Application Package

(attach another sheet if necessary)

7)

SIGNATURE BLOCK

I, the undersigned, hereby certify under penalty of law, that I am a responsible official, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.

BY: _____

(Authorized Signature)

1/6/2010

(Date)

Gary T. Crawford

(Typed or Printed Name of Signatory)

Chief Executive Officer

(Title of Signatory)

Emission Point 01

Fluidized Bed Boiler

DIVISION FOR AIR QUALITY

(Submit copies of this form for each individual unit.
Make additional copies as needed)

DEP7007A
**INDIRECT HEAT EXCHANGER,
TURBINE, INTERNAL
COMBUSTION ENGINE**

Emission Point # 01
Emission Unit # _____

1) Type of Unit (Make, Model, Etc.): Indirect Heat Exchanger - Fluidized Bed Boiler (Alstom, Babcock & Wilcox, Foster Wheeler, Energy Products of Idaho, Metso or equivalent)

Date Installed: May, 2010 Cost of Unit: _____
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Fluidized Bed Boiler

- 2a) Kind of Unit (Check one):
1. Indirect Heat Exchanger X
2. Gas Turbine for Electricity Generation _____
3. Pipe Line Compressor Engines:
 _____ Gas Turbine
 _____ Reciprocating engines
 (a) 2-cycle lean burn _____
 (b) 4-cycle lean burn _____
 (c) 4-cycle rich burn _____
4. Industrial Engine _____
- 2b) Rated Capacity: (Refer to manufacturer's specifications)
1. Fuel input (mmBTU/hr): 672
2. Power output (hp): _____
 Power output (MW): 50

SECTION 1. FUEL

3) Type of Primary Fuel (Check):

_____ A. Coal _____ B. Fuel Oil # (Check one) _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6
_____ C. Natural Gas _____ D. Propane _____ E. Butane X F. Wood _____ G. Gasoline
_____ H. Diesel _____ I. Other (specify) _____

4) Secondary Fuel (if any, specify type): Propane will be used as a startup fuel

5) Fuel Composition

Type	Percent Ash ^a	Percent Sulfur ^b	Heat Content Corresponding to: ^{c, d}	
	Maximum	Maximum	Maximum Ash	Maximum Sulfur
Primary	1.81	0.02	5108	5108
Secondary	None	None	None	None

- a. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
b. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
c. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
d. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.

6) Maximum Annual Fuel Usage Rate (please specify units)*: _____

7) Fuel Source or supplier: Various sources

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

8) MAXIMUM OPERATING SCHEDULE FOR THIS UNIT*

24 hours/day 7 days/week 52 weeks/year

9) If this unit is multipurpose, describe percent in each use category:

Space Heat _____ % Process Heat _____ % Power 100 %

10) Control options for turbine/IC engine (Check)

☐ (1) Water Injection ☐ (2) Steam Injection
☐ (3) Selective Catalytic Reduction (SCR) ☒ (3) Non-Selective Catalytic Reduction (NSCR)
☐ (5) Combustion Modification ☒ (5) Other (Specify) Baghouse

IMPORTANT: Form DEP7007N must also be completed for this unit.

SECTION II COMPLETE ONLY FOR INDIRECT HEAT EXCHANGERS

11) Coal-Fired Units

_____ Pulverized Coal Fired:

☐ Dry Bottom ☐ Wall Fired
☐ Wet Bottom ☐ Tangentially Fired

_____ Cyclone Furnace

_____ Overfeed Stoker

_____ Fluidized Bed Combustor:
 ☐ Circulating Bed
 ☐ Bubbling Bed

Fly Ash Rejection:

☐ Yes ☐ No

_____ Spreader Stoker

_____ Underfeed Stoker

_____ Hand-fed

_____ Other (specify) _____

12) Oil-Fired Unit

_____ Tangentially (Corner) Fired

_____ Horizontally Opposed (Normal) Fired

13) Wood-Fired Unit

Fly-Ash Reinjection: ☒ Yes ☐ No

_____ Dutch Oven/Fuel Cell Oven

_____ Stoker

_____ Suspension Firing

☒ Fluidized Bed Combustion (FBC)

14) Natural Gas-Fired Units

_____ Low NO_x Burners: ☐ Yes ☐ No

_____ Flue Gas Recirculation: ☐ Yes ☐ No

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

15) Combustion Air Draft: _____ Natural ☒ Induced

Forced Pressure _____ lbs/sq. in.

Percent excess air (air supplied in excess of theoretical air) _____ %

SECTION III

16) Additional Stack Data

- A. Are sampling ports provided? ☒ Yes ☐ No
 B. If yes, are they located in accordance with 40 CFR 60*? ☒ Yes ☐ No
 C. List other units vented to this stack _____

17) Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.

18) Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.

Biomass has a relatively high inherent moisture component (see Introduction for further discussion). Fly ash and bottom ash will be stored in silos prior to off-site shipment for disposal or beneficial re-use. Silos are equipped with bin vent filters .

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

DIVISION FOR AIR QUALITY

DEP7007N

Emissions, Stacks, and
Controls Information

Applicant Name: ecoPower Generation, LLC Log #

SECTION I. Emissions Unit and Emission Point Information

KyEIS ID #	Emissions Unit and Emission Point Descriptions	Maximum Operating Parameters		Permitted Operating Parameters		
		Hourly Operating Rate (SCC Units/hr)	Annual Operating Hours (hrs/yr)	Hourly Operating Rate (SCC Units/hr)	Annual Operating Rate (SCC Units/yr)	Annual Operating Hours (hrs/yr)
001	<p>Emission Unit Name: Fluidized Bed Boiler</p> <p>Date Constructed: May-10 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>HAPs present?</p> <p>Emission Point Name: Fluidized Bed Boiler</p> <p>Source ID:</p> <p>SCC Code: 10100912</p> <p>SCC Units: mm Btu/hr</p> <p>KyEIS Stack #:</p> <p>Fuel Ash Content: 1.81%</p> <p>Fuel Sulfur Content: 0.02%</p> <p>Fuel Heat Content Ratio: 5,108 HHV, Btu/lb; 4,500 HHV, Btu/lb</p> <p>Applicable Regulations: See DEP 7007 V Form</p>	672.00	8,760			8,760
	<p>Emission Point Name:</p> <p>Source ID:</p> <p>SCC Code:</p> <p>SCC Units:</p> <p>KyEIS Stack #:</p> <p>Fuel Ash Content:</p> <p>Fuel Sulfur Content:</p> <p>Fuel Heat Content Ratio:</p> <p>Applicable Regulations:</p>					

SECTION I. Emission Units and Emission Point Information (continued)

KyEIS ID #	Emission Factors			Control Equipment		Hourly (lb/hr) Emissions			Annual (tons/yr) Emissions		
	Pollutant	Emission Factor (lb/SCC Units)	Emission Factor Basis	Control Equipment Association	Pollutant Overall Efficiency (%)	Uncontrolled Unlimited Potential	Controlled Limited Potential	Allowable	Uncontrolled Unlimited Potential	Controlled Limited Potential	Allowable
	NOX	0.22		<u>1st control device</u>	63.6%	147.8	53.8		647.5	235.5	
	CO	0.08		KyEIS Control ID #:	0.0%	53.8	53.8		235.5	235.5	
	SO ₂	0.078		Collection efficiency:	0.0%	52.4	52.4		229.6	229.6	
	PM(filterable)	2.13	See Notes		99.1%	1431.4	13.4		6269.4	58.9	
	PM ₁₀ (filterable)	1.91		<u>2nd control device</u>	99.2%	1283.5	10.1		5621.8	44.1	
	PM _{2.5} (filterable)	1.62		KyEIS Control ID #:	99.3%	1088.6	7.4		4768.2	32.4	
	VOC	0.020		Collection efficiency:	0.0%	13.4	13.4		58.9	58.9	
	H ₂ SO ₄ (mist)	0.0020			90.0%	1.3	0.1		5.9	0.6	
	HCl	0.0255	Assume all Cl		90%	17.1	1.71		75.06	7.51	
	Chlorine	0	becomes HCl		0%	0.0	0.00		0.00	0.00	
	Benzene	0.0000255			0%	0.017	0.017		0.08	0.08	
	Formaldehyde	0.0000188			0%	0.013	0.013		0.06	0.06	
	CO ₂	223.9	See Note 3		0%	0.00	0.00		0.00	0.00	CO ₂
	N ₂ O	0.013 (GWP = 310)			0%	2710.7	2710.7		11873	11873	CO ₂ eq.
	CH ₄	0.021 (GWP = 21)			0%	296.4	296.4		1298	1298	CO ₂ eq.
									Total CO ₂ eq.	13171	CO ₂ eq.
Notes:	1) See Attachment 4 for entire list of Organic and HAP emissions.										
	2) Basis of emission factors included in technical document dated January 5, 2010, prepared by Sargent & Lundy, LLC titled, "ecoPower Generating Facility. Air Permit Application Technical Support Document." (See Section 3.0 and 4.0)										
	3) GHG Inventory, page 3-1, EPA indicates the CO ₂ from biomass fuels are not included in the national emissions totals because the fuel is of biogenic origin										

Notes: 1) See Attachment 4 for entire list of Organic and HAP emissions.

2) Basis of emission factors included in technical document dated January 5, 2010, prepared by Sargent & Lundy, LLC titled, "ecoPower Generating Facility: Air Permit Application Technical Support Document." (See Section 3.0 and 4.0)

3) GHG Inventory, page 3-1, EPA indicates the CO₂ from biomass fuels are not included in the national emissions totals because the fuel is of biogenic origin

SECTION II. Stack Information										
KyEIS Stack ID #	Stack Description	Stack Physical Data			Stack Geographic Data			Stack Gas Stream Data		
		Height (ft)	Diameter (ft)	Vent Height (ft)	Vertical Coordinate	Horizontal Coordinate	Coordinate Collection Method Code	Flowrate (acfm)	Temperature (°F)	Exit Velocity (ft/sec)
	EP 01 - Fluidized Bed Boiler	280	8		37-22-26.8	83-16-38.1		330,526	270	110
	EP 05 - Chipper Building		0.75X 1.67	28	37-22-27	83-16-39		1100	100	1.85
	EP 08 - Wood Hog Building		0.75X 1.67	28	37-22-27	83-16-39		1100	100	1.85
	EP 13 - Fly Ash Silo		0.75X 1.67	58	37-22-29.1	83-16-38.1		1100	100	1.85
	EP 14 - Bed Ash Silo		0.75X 1.67	58	37-22-29.1	83-16-36.3		1100	100	1.85
	EP 15 - Sand Storage Bin		0.75X 1.67	75	37-22-28.9	83-16-35.4	(horizontal vent)	1000	100	1.85

SECTION III. Control Equipment Information for Filter				
KyEIS Control ID #	Control Equipment Description	Manufacturer	Model Name and Number	Cost
001	Baghouse	Monroe Environmental (or equivalent)	Undetermined	May, 2010
Inlet Gas Stream Data				
Temperature: 275 ° F _____ ° C	Flowrate (scfm at 68°F): 283,000	Gas density (lb/ft ³): 0.041	Particle density (lb/ft ³) or Specific Gravity: 35 - 45 lb/ft ³	Average particle diameter (µm): (or attach a particle size distribution table) PM10 = 90% PM2.5 = 76% (Uncontrolled Distrib. AP-42, Table 1.6-5)
Equipment Physical Data				
The control equipment manufacturer's equipment specifications and recommended operating procedures may be submitted in place of this information.				
Type of filter unit:	Filter Bags (8m-length x 6inch-diam)	Dimensions of filter unit (specify units): Filtering area: 105,000 ft ² Unit total width: ~45 ft Unit total height: ~60 ft	Filtering material: Ryton, glass fiber or equivalent	
Cleaning method: <input type="checkbox"/> Shaker <input type="checkbox"/> Pulse Air <input type="checkbox"/> Reverse Air <input checked="" type="checkbox"/> Pulse Jet <input type="checkbox"/> Other (specify) _____	Gas cooling method: <input type="checkbox"/> Ductwork: Length _____ ft. Diameter _____ inches <input type="checkbox"/> Heat Exchanger <input type="checkbox"/> Bleed-in Air _____ scfm (@ 68° F) <input type="checkbox"/> Water Spray _____ gpm <input type="checkbox"/> Other (specify) _____			
Equipment Operational Data				
Pressure drop across unit (inches water gauge): ~8 inches water column (typical industry design)	Pollutants collected/controlled: PM, PM10, PM2.5 *Acid gases - 90%		Pollutant removal/destruction efficiency (%): 99.1% +	

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

DEP7007Y
Good Engineering
Practice (GEP) Stack
Height Determination

Complete only for stacks 65m or taller

EMISSIONS UNIT # EP01
EMISSIONS POINT # EP01

EXHAUST POINT INFORMATION

1) Flow diagram designation of exhaust point EP 01		
2) Description of exhaust point (stack, vent, roof monitor, indoors, etc.). If the exhaust point discharges indoors, complete items 3 through 11 for the building exhaust nearest to the process operations emission unit.		
3) Distance to nearest plant boundary from exhaust point discharge (ft): 200+ feet		
4) Discharge height above grade (ft): Approximately 280 feet		
5) Good engineering practice (GEP) height, if known (ft): Approximately 433.5		
6) Diameter (or equivalent diameter) of exhaust point (ft): Approximately 8.0		
7) Exit gas flow rate:	a) Maximum (ACFM): 330,526	b) Minimum (ACFM): 120,000
8) Exit gas temperature:	a) @ maximum flow rate (°F): 270	b) @ minimum flow rate (°F): 270
9) Direction of exhaust (vertical, lateral, downward): Vertical		
10a) Latitude: 37-22-19		b) Longitude: 83-16-36
11a) UTM zone:	b) UTM vertical (KM):	c) UTM Horizontal (KM):

NOTE: For a square or rectangular vent, the equivalent diameter is 1.128 times the square root of the stack's area

BUILDING DIMENSION INFORMATION

12) Dimensions of building on which exhaust point is located	a) Length (ft) No building, this is a free standing stack	b) Width (ft)	c) Height (ft)
13) Distance to nearest building (ft):			
14) Dimension of this nearest building	a) Length (ft):	b) Width (ft):	c) Height (ft): 175
15) List all emission units and control devices serviced by this exhaust point.			
Name		Flow Diagram Designation	
a) EP 01 - Fluidized Bed Boiler		EP 01	
b)			
c)			
d)			
e)			
f)			
g)			
h)			
i)			

Emission Point 02

Auxiliary Boiler

DIVISION FOR AIR QUALITY

(Submit copies of this form for each individual unit.
Make additional copies as needed)

DEP7007A
**INDIRECT HEAT EXCHANGER,
TURBINE, INTERNAL
COMBUSTION ENGINE**

Emission Point # 02
Emission Unit # _____

1) Type of Unit (Make, Model, Etc.): Indirect Heat Exchanger - Auxiliary Boiler

Date Installed: May, 2010 Cost of Unit: _____
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Auxiliary Boiler

- 2a) Kind of Unit (Check one):
1. Indirect Heat Exchanger X
 2. Gas Turbine for Electricity Generation _____
 3. Pipe Line Compressor Engines:
 - _____ Gas Turbine
 - _____ Reciprocating engines
 - (a) 2-cycle lean burn _____
 - (b) 4-cycle lean burn _____
 - (c) 4-cycle rich burn _____
 4. Industrial Engine _____
- 2b) Rated Capacity: (Refer to manufacturer's specifications)
1. Fuel input (mmBTU/hr): 92
 2. Power output (hp): _____
Power output (MW): _____

SECTION 1. FUEL

3) Type of Primary Fuel (Check):

_____ A. Coal _____ B. Fuel Oil # (Check one) _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6
_____ C. Natural Gas X _____ D. Propane _____ E. Butane _____ F. Wood _____ G. Gasoline
_____ H. Diesel _____ I. Other (specify) _____

4) Secondary Fuel (if any, specify type): None - Heat from Auxiliary Boiler will be used for start-up

5) Fuel Composition

Type	Percent Ash ^a	Percent Sulfur ^b	Heat Content Corresponding to: ^{c, d}	
	Maximum	Maximum	Maximum Ash	Maximum Sulfur
Primary		159 ppmvd as H ₂ S	2522 Btu/scf	
Secondary	None	None	None	None

- a. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
b. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
c. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
d. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.

6) Maximum Annual Fuel Usage Rate (please specify units)*: _____

7) Fuel Source or supplier: Local Propane Vendor

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

8) MAXIMUM OPERATING SCHEDULE FOR THIS UNIT*

_____ * hours/day _____ * days/week _____ * weeks/year *MAXIMUM 1,000 hrs/yr

9) If this unit is multipurpose, describe percent in each use category:

Space Heat _____ % Process Heat 100* % Power _____ % * For steam to startup main boiler

10) Control options for turbine/IC engine (Check)

___ (1) Water Injection ___ (3) Selective Catalytic Reduction (SCR) ___ (5) Combustion Modification	___ (2) Steam Injection ___ (3) Non-Selective Catalytic Reduction (NSCR) <u>X</u> (5) Other (Specify) <u>Combustion Controls and</u> <div style="text-align: right;">low ash and low sulfur</div>
---	--

of propane

IMPORTANT: Form DEP7007N must also be completed for this unit.

SECTION II COMPLETE ONLY FOR INDIRECT HEAT EXCHANGERS
11) Coal-Fired Units

_____ Pulverized Coal Fired:

___ Dry Bottom	___ Wall Fired
___ Wet Bottom	___ Tangentially Fired

_____ Cyclone Furnace

_____ Overfeed Stoker

 _____ Fluidized Bed Combustor:
 ___ Circulating Bed
 ___ Bubbling Bed

Fly Ash Rejection:

☐ Yes ☐ No

_____ Spreader Stoker

_____ Underfeed Stoker

_____ Hand-fed

_____ Other (specify) _____

12) Oil-Fired Unit

_____ Tangentially (Corner) Fired

_____ Horizontally Opposed (Normal) Fired

13) Wood-Fired Unit

 Fly-Ash Reinjection: ☐ Yes ☐ No

_____ Dutch Oven/Fuel Cell Oven

_____ Stoker

_____ Suspension Firing

_____ Fluidized Bed Combustion (FBC)

14) Natural Gas-Fired Units

 ___ Low NO_x Burners: ☐ Yes ☐ No

 ___ Flue Gas Recirculation: ☐ Yes ☐ No

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

15) Combustion Air Draft: _____ Natural X Induced

Forced Pressure _____ lbs/sq. in.

Percent excess air (air supplied in excess of theoretical air) _____ %

SECTION III

16) Additional Stack Data

A. Are sampling ports provided? ☐ Yes ☒ No

B. If yes, are they located in accordance with 40 CFR 60*? ☐ Yes ☐ No

C. List other units vented to this stack _____

17) Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.

18) Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.

Delivery by local propane dealer

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

Applicant Name: ecoPower Generation, LLC Log #

DEP7007N

Emissions, Stacks, and Controls Information

SECTION I. Emissions Unit and Emission Point Information						
KyEIS ID #	Emissions Unit and Emission Point Descriptions	Maximum Operating Parameters		Permitted Operating Parameters		
		Hourly Operating Rate (SCC Units/hr)	Annual Operating Hours (hrs/yr)	Hourly Operating Rate (SCC Units/hr)	Annual Operating Rate (SCC Units/yr)	Annual Operating Hours (hrs/yr)
002	Emission Unit Name: Auxiliary Boiler Date Constructed: May-10 HAPs present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		8,760			1,000
	Emission Point Name: Auxiliary Boiler Source ID: SCC Code: 10201002 SCC Units: lb/mmBtu KyEIS Stack #: Fuel Ash Content: Fuel Sulfur Content: Fuel Heat Content Ratio: 1 Applicable Regulations: See DEP 700 V Forms	92.00				
	Emission Point Name: Source ID: SCC Code: SCC Units: KyEIS Stack #: Fuel Ash Content: Fuel Sulfur Content: Fuel Heat Content Ratio: Applicable Regulations:					

SECTION I. Emission Units and Emission Point Information (continued)

[illegible]

Emission Point 03
Emergency Generator

DIVISION FOR AIR QUALITY

(Submit copies of this form for each individual unit.
Make additional copies as needed)

DEP7007A
INDIRECT HEAT EXCHANGER, TURBINE, INTERNAL COMBUSTION ENGINE

Emission Point # 03
Emission Unit # _____

1) Type of Unit (Make, Model, Etc.): Emergency Generator

Date Installed: May, 2010 Cost of Unit: _____
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Emergency Generator

2a) Kind of Unit (Check one):
1. Indirect Heat Exchanger _____
2. Gas Turbine for Electricity Generation _____
3. Pipe Line Compressor Engines: _____
 _____ Gas Turbine
 _____ Reciprocating engines
 (a) 2-cycle lean burn _____
 (b) 4-cycle lean burn _____
 (c) 4-cycle rich burn _____
4. Industrial Engine X _____

2b) Rated Capacity: (Refer to manufacturer's specifications)
1. Fuel input (mmBTU/hr): 14.9
2. Power output (hp): 2,206
 Power output (MW): 1.6

SECTION 1. FUEL

3) Type of Primary Fuel (Check):
_____ A. Coal _____ B. Fuel Oil # (Check one) _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6
_____ C. Natural Gas _____ D. Propane _____ E. Butane _____ F. Wood _____ G. Gasoline
X H. Diesel _____ I. Other (specify) _____

4) Secondary Fuel (if any, specify type): None

5) Fuel Composition

Type	Percent Ash ^a	Percent Sulfur ^b	Heat Content Corresponding to: ^{c, d}	
	Maximum	Maximum	Maximum Ash	Maximum Sulfur
Primary	Diesel	Low sulfur diesel	141,000 Btu/gal	141,000 Btu/gal
Secondary	None	None	None	None

- a. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
b. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
c. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
d. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.

6) Maximum Annual Fuel Usage Rate (please specify units)*: _____

7) Fuel Source or supplier: Local Diesel Vendor

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

15) Combustion Air Draft: _____ Natural X Induced

Forced Pressure _____ lbs/sq. in.

Percent excess air (air supplied in excess of theoretical air) _____ %

SECTION III

16) Additional Stack Data

A. Are sampling ports provided? ☐ Yes ☒ No

B. If yes, are they located in accordance with 40 CFR 60*? ☐ Yes ☐ No

C. List other units vented to this stack _____

17) Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.

18) Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.

Delivery by local diesel vendor

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

DEP7007N

Emissions, Stacks, and
Controls Information

Applicant Name: ecoPower Generation, LLC Log # _____

SECTION I. Emissions Unit and Emission Point Information

KyEIS ID #	Emissions Unit and Emission Point Descriptions	Maximum Operating Parameters		Permitted Operating Parameters		
		Hourly Operating Rate (SCC Units/hr)	Annual Operating Hours (hrs/yr)	Hourly Operating Rate (SCC Units/hr)	Annual Operating Rate (SCC Units/yr)	Annual Operating Hours (hrs/yr)
003	<p>Emission Unit Name: Emergency Generator Date Constructed: May-10 HAPs present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Emission Point Name: Emergency Generator Source ID: SCC Code: 20200107 SCC Units: mm Btu/hr KyEIS Stack #: Fuel Ash Content: Fuel Sulfur Content: Fuel Heat Content Ratio: 1 Applicable Regulations: See DEP 7007 V Forms</p> <p>Emission Point Name: Source ID: SCC Code: SCC Units: KyEIS Stack #: Fuel Ash Content: Fuel Sulfur Content: Fuel Heat Content Ratio: Applicable Regulations:</p>	14.90	8,760			500

SECTION I. Emission Units and Emission Point Information (continued)

KyEIS ID #	Emission Factors		Control Equipment Association	Pollutant Overall Efficiency (%)	Hourly (lb/hr) Emissions			Annual (tons/yr) Emissions		
	Pollutant	Emission Factor (lb/SCC Units)	Emission Factor Basis		Uncontrolled Unlimited Potential	Controlled Limited Potential	Allowable	Uncontrolled Unlimited Potential	Controlled Limited Potential	Allowable
	NOx	1.510			22.50	22.50		98.6	5.6	
	CO	0.85			12.70	12.70		55.6	3.2	
	S02	0.052			0.78	0.78		3.4	0.20	
	VOC	0.046	See Footnote		0.68	0.68		3.0	0.17	
	PM	0.049			0.73	0.73		3.2	0.18	
	PM10	0.048			0.72	0.72		3.1	0.18	
	PM2.5	0.048			0.71	0.71		3.1	0.18	
	Benzene	0.000776			0.01	0.01		0.05	0.0029	
	Ethylbenzene	0.00	No E.F. for EB		0.00	0.00		0.00	0.00	
	Toluene	0.000281			0.004	0.004		0.018	0.00105	
	Xylenes (total)	0.000193			0.003	0.003		0.013	0.00072	
	Lead	0.00	No E.F. for Lead		0.00	0.00		0.0	0.00	
	CO2	165	(GWP = 1)	0.00%	2458.50	2458.50		614.63	614.63	CO2
	N2O	0.0	(GWP = 310)	0.00%	0.00	0.00		0.0	0.00	CO2 eq.
	CH4	0.09	(GWP = 21)	0.00%	28.16	28.16		7.04	7.04	CO2 eq.
								Total CO2 eq.	621.67	CO2 eq.

Notes:

1) Basis of emission factors included in draft technical document dated January 5, 2010, prepared by Sargent & Lundy, LLC titled, "ecoPower Generating Facility: Air Permit Application Technical Support Document." (See Section 3.0 and 4.0)

2) Calculation of GHG emissions are generated from the GHG Inventory calculation method

Emission Point 04

Fire Water Pump

DIVISION FOR AIR QUALITY

(Submit copies of this form for each individual unit.
Make additional copies as needed)

DEP7007A
**INDIRECT HEAT EXCHANGER,
TURBINE, INTERNAL
COMBUSTION ENGINE**

Emission Point # 04
Emission Unit # _____

1) Type of Unit (Make, Model, Etc.): Fire Water Pump

Date Installed: May, 2010 Cost of Unit: _____
(Date unit was installed, modified or reconstructed, whichever is later.)

Where more than one unit is present, identify with Company's identification or code for this unit:
Fire Water Pump

- 2a) Kind of Unit (Check one):
1. Indirect Heat Exchanger _____
 2. Gas Turbine for Electricity Generation _____
 3. Pipe Line Compressor Engines:
 _____ Gas Turbine
 _____ Reciprocating engines
 (a) 2-cycle lean burn _____
 (b) 4-cycle lean burn _____
 (c) 4-cycle rich burn _____
 4. Industrial Engine X _____
- 2b) Rated Capacity: (Refer to manufacturer's specifications)
1. Fuel input (mmBTU/hr): 3.24
 2. Power output (hp): 450
 Power output (MW): _____

SECTION 1. FUEL

3) Type of Primary Fuel (Check):

_____ A. Coal _____ B. Fuel Oil # (Check one) _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6
_____ C. Natural Gas _____ D. Propane _____ E. Butane _____ F. Wood _____ G. Gasoline
X _____ H. Diesel _____ I. Other (specify) _____

4) Secondary Fuel (if any, specify type): None

5) Fuel Composition

Type	Percent Ash ^a	Percent Sulfur ^b	Heat Content Corresponding to: ^{c, d}	
	Maximum	Maximum	Maximum Ash	Maximum Sulfur
Primary	Diesel	Low sulfur diesel	141,000 Btu/gal	141,000 Btu/gal
Secondary	None	None	None	None

- a. As received basis. Proximate Analysis for Ash. (May use values in your fuel contract)
b. As received basis. Ultimate Analysis for Sulfur. (May use values in your fuel contract)
c. Higher Heating Value, BTU/Unit. (May use values in your fuel contract)
d. Suggested units are: Pounds for solid fuel, gallon for liquid fuels, and cu. Ft. for gaseous fuels. If other units are used, please specify.

6) Maximum Annual Fuel Usage Rate (please specify units)*: _____

7) Fuel Source or supplier: Local Diesel Vendor

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

8) MAXIMUM OPERATING SCHEDULE FOR THIS UNIT*

_____ * _____ hours/day _____ * _____ days/week _____ * _____ weeks/year *MAXIMUM 500 hrs/yr

9) If this unit is multipurpose, describe percent in each use category:

Space Heat _____ % Process Heat _____ % Power _____ 100* % * For Fire Water Pump

10) Control options for turbine/IC engine (Check)

☐ (1) Water Injection
 ☐ (2) Steam Injection
☐ (3) Selective Catalytic Reduction (SCR)
 ☐ (3) Non-Selective Catalytic Reduction (NSCR)
☐ (5) Combustion Modification
 ☒ (5) Other (Specify) _____ Combustion Controls and _____ low _____ sulfur

diesel

IMPORTANT: Form DEP7007N must also be completed for this unit.

SECTION II COMPLETE ONLY FOR INDIRECT HEAT EXCHANGERS

11) Coal-Fired Units

_____ Pulverized Coal Fired:

☐ Dry Bottom ☐ Wall Fired
☐ Wet Bottom ☐ Tangentially Fired

_____ Cyclone Furnace

_____ Overfeed Stoker

_____ Fluidized Bed Combustor:

☐ Circulating Bed
☐ Bubbling Bed

Fly Ash Rejection:

☐ Yes ☐ No

_____ Spreader Stoker

_____ Underfeed Stoker

_____ Hand-fed

_____ Other (specify) _____

12) Oil-Fired Unit

_____ Tangentially (Corner) Fired

_____ Horizontally Opposed (Normal) Fired

13) Wood-Fired Unit

Fly-Ash Reinjection: ☐ Yes ☐ No

_____ Dutch Oven/Fuel Cell Oven

_____ Stoker

_____ Suspension Firing

_____ Fluidized Bed Combustion (FBC)

14) Natural Gas-Fired Units

☐ Low NO_x Burners: ☐ Yes ☐ No

☐ Flue Gas Recirculation: ☐ Yes ☐ No

*Should be entered only if applicant requests operating restriction through federally enforceable limitations.

15) Combustion Air Draft: _____ Natural _____ X Induced

Forced Pressure _____ lbs/sq. in.

Percent excess air (air supplied in excess of theoretical air) _____ %

SECTION III

16) Additional Stack Data

A. Are sampling ports provided? ☐ Yes ☒ No

B. If yes, are they located in accordance with 40 CFR 60*? ☐ Yes ☐ No

C. List other units vented to this stack _____

17) Attach manufacturer's specifications and guaranteed performance data for the indirect heat exchanger. Include information concerning fuel input, burners and combustion chamber dimensions.

18) Describe fuel transport, storage methods and related dust control measures, including ash disposal and control.

Delivery by local diesel vendor

*Applicant assumes responsibility for proper location of sampling ports if the Division for Air Quality requires a compliance demonstration stack test.

DIVISION FOR AIR QUALITY

Applicant Name: ecoPower Generation, LLC Log #

SECTION I. Emissions Unit and Emission Point Information

KyEIS ID #	Emissions Unit and Emission Point Descriptions	Maximum Operating Parameters		Permitted Operating Parameters		
		Hourly Operating Rate (SCC Units/hr)	Annual Operating Hours (hrs/yr)	Hourly Operating Rate (SCC Units/hr)	Annual Operating Rate (SCC Units/yr)	Annual Operating Hours (hrs/yr)
004	Emission Unit Name: Fire Water Pump Date Constructed: May-10 HAPs present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Emission Point Name: Fire Water Pump - 450 hp Source ID: SCC Code: 20200107 SCC Units: mm Btu/hr KyEIS Stack #: Fuel Ash Content: Fuel Sulfur Content: Fuel Heat Content Ratio: 1 Applicable Regulations: See DEP 7007 V Forms	3.24	8,760			500
	Emission Point Name: Source ID: SCC Code: SCC Units: KyEIS Stack #: Fuel Ash Content: Fuel Sulfur Content: Fuel Heat Content Ratio: Applicable Regulations:					

SECTION I. Emission Units and Emission Point Information (continued)

KyEIS ID #	Emission Factors			Control Equipment	Pollutant Overall Efficiency (%)	Hourly (lb/hr) Emissions			Annual (tons/yr) Emissions		
	Pollutant	Emission Factor (lb/SCC Units)	Emission Factor Basis			Control Equipment Association	Uncontrolled Unlimited Potential	Controlled Limited Potential	Allowable	Uncontrolled Unlimited Potential	Controlled Limited Potential
	NOx	0.892		1st control device		2.89	2.89	12.66	0.72		
	CO	0.796		KyEIS Control ID #:		2.58	2.58	11.30	0.65		
	S02	0.052		Collection efficiency:		0.17	0.17	0.74	0.04		
	VOC	0.028 See Footnote				0.09	0.09	0.39	0.02		
	PM	0.046		2nd control device		0.15	0.15	0.66	0.04		
	PM10	0.046		KyEIS Control ID #:		0.15	0.15	0.65	0.04		
	PM2.5	0.046		Collection efficiency:		0.15	0.15	0.65	0.04		
	CO2	165 (GWP = 1)			0.00%	534.60	534.60	133.65	133.65	CO2	
	N2O	0.0 (GWP = 310)			0.00%	0.00	0.00	0.0	0.00	CO2 eq.	
	CH4	0.09 (GWP = 21)			0.00%	6.12	6.12	1.53	1.53	CO2 eq.	
								Total CO2 eq.	135.18	CO2 eq.	
				2nd control device							
				KyEIS Control ID #:							
				Collection efficiency:							
Notes:											
1) Basis of emission factors included in draft technical document dated January 5, 2010, prepared by Sargent & Lundy, LLC titled, "ecoPower Generating Facility: Air Permit Application Technical Support Document." (See Section 3.0 and 4.0)											

Notes:

1) Basis of emission factors included in draft technical document dated January 5, 2010, prepared by Sargent & Lundy, LLC titled, "ecoPower Generating Facility. Air Permit Application Technical Support Document." (See Section 3.0 and 4.0)

**Emission Point 05
through
Emission Point 12**

Wood Handling

ecoPower Generation, LLC

Calculations of Potential to Emit - Wood Yard Storage and Handling Emission Points

Calculations of Potential to Emit - Fly Ash Silo, Bed Ash Silo, and Sand Storage Bin Emission Points

Emission Point #	Emission Point	Production Rate (tons/hr)	Pollutant	Emission Factor (lb/ton)	Uncontrolled Emissions		Control Efficiency (%)	Controlled Emissions	
					Emission Rate (lb/hr)	Emission Rate (ton/yr)		Emission Rate (lb/hr)	Emission Rate (ton/yr)
5	Chipper Building ^{1,2,3} (250 tons per hour) (biomass moisture, enclosed, bin vent, fog mist)	250	PM	0.10	25.00	30.66	99.9	0.02	0.03
			PM 10	0.0473	11.825	14.50	99.9	0.01	0.01
			PM 2.5	0.0473	11.825	14.50	99.9	0.01	0.01
6	Oversize Reclaim Hopper ^{1,2,3,6} (250 tons per hour) (biomass moisture)	250	PM	0.10	25.00	30.66	85	3.75	4.60
			PM 10	0.0473	11.825	14.50	85	1.77	2.18
			PM 2.5	0.0473	11.825	14.50	85	1.77	2.18
7	Truck Dump ^{1,2,4,6} (250 tons per hour) (biomass moisture)	250	PM	0.00129	0.32	0.40	85	0.05	0.06
			PM 10	0.00129	0.3225	0.40	85	0.05	0.06
			PM 2.5	0.00129	0.3225	0.40	85	0.05	0.06
8	Wood Hog Building ^{1,2,3,7} (250 tons per hour) (biomass moisture, enclosed, bin vent, fog mist)	250	PM	0.10	25.00	30.66	99.9	0.025	0.03
			PM 10	0.0473	11.83	14.50	99.9	0.012	0.01
			PM 2.5	0.0473	11.83	14.50	99.9	0.012	0.01
9	Transfer Tower ^{1,2,3,6} (250 tons per hour) (biomass moisture, enclosed)	250	PM	0.10	25.00	30.66	85	3.750	4.60
			PM 10	0.0473	11.83	14.50	85	1.774	2.18
			PM 2.5	0.0473	11.83	14.50	85	1.774	2.18
10	Tripper Conveyor ^{1,2,3,6} (250 tons per hour) (biomass moisture, enclosed)	250	PM	0.10	25.00	30.66	85	3.750	4.60
			PM 10	0.0473	11.83	14.50	85	1.774	2.18
			PM 2.5	0.0473	11.83	14.50	85	1.774	2.18
11	Reclaim Conveyor ^{1,3,6} (70 tons per hour) (biomass moisture, enclosed)	70	PM	0.10	7.00	30.66	85	1.050	4.60
			PM 10	0.0473	3.31	14.50	85	0.497	2.18
			PM 2.5	0.0473	3.31	14.50	85	0.497	2.18
12	Chain Conveyor/Surge Bins ^{1,3,6} (70 tons per hour) (biomass moisture, enclosed)	70	PM	0.10	7.00	30.66	85	1.050	4.60
			PM 10	0.0473	3.31	14.50	85	0.497	2.18
			PM 2.5	0.0473	3.31	14.50	85	0.497	2.18
13	Fly Ash Silo ^{1,5,7} (1 ton per hour) (bin vent, enclosed)	1.0	PM	110	110.00	481.80	99.9	0.11	0.48
			PM 10	110	110.00	481.80	99.9	0.11	0.48
			PM 2.5	110	110.00	481.80	99.9	0.11	0.48
14	Bed Ash Silo ^{1,5,7} (1 ton per hour) (bin vent, enclosed)	1.0	PM	110	110.00	481.80	99.9	0.11	0.48
			PM 10	110	110.00	481.80	99.9	0.11	0.48
			PM 2.5	110	110.00	481.80	99.9	0.11	0.48
15	Sand Storage Bin ^{1,5,7} (1.0 tons per hour) (bin vent)	1.0	PM	110	110.00	481.80	99.9	0.11	0.48
			PM 10	110	110.00	481.80	99.9	0.11	0.48
			PM 2.5	110	110.00	481.80	99.9	0.11	0.48
							Total PM	13.78	24.56
							Total PM ₁₀	6.72	12.41
							Total PM _{2.5}	6.72	12.41

NOTES:

- 1 Production data obtained from Air Permit Application Technical Support Document, Figure 4, Fuel Handling System Flow Diagram.
- 2 The reclaim conveyor would act as a bottleneck at the facility, and limit the operation of emission points (EP) 5-10; thus, the maximum hours of operation assumed for EP 5-10 was 2,453 hours per year.
- 3 Emission factor for PM and PM10 taken from KYDAQ SOB dated June 17, 2008, for Kingsford Manufacturing Company in Burnside, KY. The facility operates wood handling operations similar to the proposed ecoPower facility. Note: No emission factor provided for PM2.5.
- 4 Emission factor for PM and PM10 taken from KYDAQ KYEIS Detailed Plant Information summary for Kingsford Manufacturing Company in Burnside, KY. The facility operates a truck dump with similar materials as the proposed plant. Kingsford has a sawdust truck dump. Note: No emission factor provided for PM2.5.
- 5 PM emission rate for the fly ash silo, bed ash silo, and sand storage bin based on AP-42, Chapter 11.8, "Clay and Fly Ash Sintering," Table 11.8-2. Note: No data provided for PM10 and PM 2.5.
- 6 Assumed a 85% control efficiency for material handling operations due to moisture in wood, enclosures, and use of wet suppression.
- 7 Control efficiencies for PM and PM10 from engineering judgment based on common bin vent control efficiency.

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

DEP7007B

MANUFACTURING OR
PROCESSING OPERATIONS

(Please read instructions before completing this form)

Emission Point # (1)	Process Description (2)	Continuous or Batch (3)	Maximum Operating Schedule (Hours/Day, Days/Week, Weeks/Year) (4)	Process Equipment (Make, Model, Etc.) (5)	Date Installed (6)
EP05	Chipper Building	B7	7 Hours/ Day, 2 Days/ Week, 52 Weeks/Year	Wood Chipper Conveyors	May 2010
EP06	Oversize Reclaim Hopper	B7	7 Hours/ Day, 2 Days/ Week, 52 Weeks/Year	Hopper	May 2010
EP07	Truck Dump	B7	7 Hours/ Day, 2 Days/ Week, 52 Weeks/Year	Truck scales, and two Truck Tipplers	May 2010
EP08	Wood Hog Building	B7	7 Hours/ Day, 2 Days/ Week, 52 Weeks/Year	Wood Hog, Conveyors, Screens	May 2010

Emission Point # (1)	List Raw Material(s) Used (7)	Maximum Quantity Input Of Each Raw Material (Specify Units/Hour) (8) See Item 18	Type of Products (9) See Item 18	Quantity Output* (Specify Units)	
				Maximum Hourly Rated Capacity (Specify Units) (10a)	Maximum Annual (Specify Units) (10b)
EP05	Logs (Hardwood Species)	250 tons/hr	Chipped wood	250 tons/hr	
EP06	Logs (Hardwood Species)	250 tons/hr	Chipped wood	250 tons/hr	
EP07	Wood chips, sawdust, bark	250 tons/hr	No product – raw materials	250 tons/hr	
EP08	Chipped wood, wood chips, sawdust, bark	250 tons/hr	Grinded wood chips, chipped wood, bark, sawdust	250 tons/hr	

*(10a) Rated Capacity of Equipment (10b) Should be entered only if applicant requests operating restrictions through federally enforceable limitations

DEP7007B (Continued)

IMPORTANT: Form DEP7007N, Emission, Stacks, and Controls Information must be completed for each emission unit listed below.

Emission Point # (1)	Fuel Type for Process Heat (11)	Rated Burner Capacity (BTU/Hour) (12)	Fuel Composition		Fuel Usage Rates		Note:
			% Sulfur (13a)	% Ash (13b)	Maximum Hourly (14a)	Maximum Annual* (14b)	
EP05	N/A	N/A	N/A	N/A	N/A	N/A	If the combustion products are emitted along with the process emissions, indicate so in this column by writing "combined." (15) N/A N/A N/A N/A
EP06	N/A	N/A	N/A	N/A	N/A	N/A	
EP07	N/A	N/A	N/A	N/A	N/A	N/A	
EP08	N/A	N/A	N/A	N/A	N/A	N/A	

16) Make a complete list of all wastes generated by each process (e.g. wastewater, scrap, rejects, cleanup waste, etc.). List the hourly (or daily) and annual quantities of each waste and the method of final disposal. (Use a separate sheet of paper, if necessary)

NONE

17) **IMPORTANT:** Submit a process flow diagram. Label all materials, equipment and emission point numbers.

18) Material Safety Data Sheets with complete chemical compositions are required for each process.

*(14b) Should be entered only if applicant requests operating restrictions through federally enforceable permit conditions.

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

DEP7007B

MANUFACTURING OR
PROCESSING OPERATIONS

(Please read instructions before completing this form)

Emission Point # (1)	Process Description (2)	Continuous or Batch (3)	Maximum Operating Schedule (Hours/Day, Days/Week, Weeks/Year) (4)	Process Equipment (Make, Model, Etc.) (5)	Date Installed (6)
EP09	Transfer Tower	B7	7 Hours/ Day, 2 Days/ Week, 52 Weeks/Year	Transfer Tower Conveyors	May 2010
EP10	Tripper Conveyor	B7	7 Hours/ Day, 2 Days/ Week, 52 Weeks/Year	Conveyor	May 2010

Emission Point # (1)	List Raw Material(s) Used (7)	Maximum Quantity Input Of Each Raw Material (Specify Units/Hour) (8) See Item 18	Type of Products (9) See Item 18	Quantity Output* (Specify Units)	
				Maximum Hourly Rated Capacity (Specify Units) (10a)	Maximum Annual (Specify Units) (10b)
EP09	Sawdust, bark, wood chips, chipped wood	250 tons/hr	No Products – Raw Material Transfer	250 tons/hr	
EP10	Sawdust, bark, wood chips, chipped wood	250 tons/hr	No Products – Raw Material Transfer	250 tons/hr	

*(10a) Rated Capacity of Equipment

(10b) Should be entered only if applicant requests operating restrictions through federally enforceable limitations

DEP7007B (Continued)

IMPORTANT: Form DEP7007N, Emission, Stacks, and Controls Information must be completed for each emission unit listed below.

Emission Point # (1)	Fuel Type for Process Heat (11)	Rated Burner Capacity (BTU/Hour) (12)	Fuel Composition		Fuel Usage Rates		Note:
			% Sulfur (13a)	% Ash (13b)	Maximum Hourly (14a)	Maximum Annual* (14b)	
EP09	N/A	N/A	N/A	N/A	N/A	N/A	If the combustion products are emitted along with the process emissions, indicate so in this column by writing "combined." (15)
EP10	N/A	N/A	N/A	N/A	N/A	N/A	

16) Make a complete list of all wastes generated by each process (e.g. wastewater, scrap, rejects, cleanup waste, etc.). List the hourly (or daily) and annual quantities of each waste and the method of final disposal. (Use a separate sheet of paper, if necessary)

NONE

17) **IMPORTANT:** Submit a process flow diagram. Label all materials, equipment and emission point numbers.

18) Material Safety Data Sheets with complete chemical compositions are required for each process.

*(14b) Should be entered only if applicant requests operating restrictions through federally enforceable permit conditions.

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

DEP7007B

MANUFACTURING OR
PROCESSING OPERATIONS

(Please read instructions before completing this form)

Emission Point # (1)	Process Description (2)	Continuous or Batch (3)	Maximum Operating Schedule (Hours/Day, Days/Week, Weeks/Year) (4)	Process Equipment (Make, Model, Etc.) (5)	Date Installed (6)
EP11	Reclaim Conveyor	C	24 Hours/ Day, 7 Days/ Week, 52 Weeks/Year	Conveyor	May 2010
EP12	Chain Conveyor/Surge Bins	C	24 Hours/ Day, 7 Days/ Week, 52 Weeks/Year	Conveyors / Surge Bins (x4)	May 2010

Emission Point # (1)	List Raw Material(s) Used (7)	Maximum Quantity Input Of Each Raw Material (Specify Units/Hour) (8) See Item 18	Type of Products (9) See Item 18	Quantity Output* (Specify Units)	
				Maximum Hourly Rated Capacity (Specify Units) (10a)	Maximum Annual (Specify Units) (10b)
EP11	Sawdust, bark, wood chips, chipped wood	70 tons/hr	No Products -- Raw Material Transfer	70 tons/hr	
EP12	Sawdust, bark, wood chips, chipped wood	70 tons/hr	No Products -- Raw Material Transfer	70 tons/hr	

*(10a) Rated Capacity of Equipment

(10b) Should be entered only if applicant requests operating restrictions through federally enforceable limitations

DEP7007B
(Continued)

IMPORTANT: Form DEP7007N, Emission, Stacks, and Controls Information must be completed for each emission unit listed below.

Emission Point # (1)	Fuel Type for Process Heat (11)	Rated Burner Capacity (BTU/Hour) (12)	Fuel Composition		Fuel Usage Rates		Note:
			% Sulfur (13a)	% Ash (13b)	Maximum Hourly (14a)	Maximum Annual* (14b)	
EP11	N/A	N/A	N/A	N/A	N/A	N/A	If the combustion products are emitted along with the process emissions, indicate so in this column by writing "combined." (15)
EP12	N/A	N/A	N/A	N/A	N/A	N/A	

16) Make a complete list of all wastes generated by each process (e.g. wastewater, scrap, rejects, cleanup waste, etc.). List the hourly (or daily) and annual quantities of each waste and the method of final disposal. (Use a separate sheet of paper, if necessary)

NONE

17) **IMPORTANT:** Submit a process flow diagram. Label all materials, equipment and emission point numbers.

18) Material Safety Data Sheets with complete chemical compositions are required for each process.

*(14b) Should be entered only if applicant requests operating restrictions through federally enforceable permit conditions.

**Emission Point 13
through
Emission Point 15**

Storage Silos

Fly Ash Storage Silo

Bed Ash Storage Silo

Sand Storage Silo

ecoPower Generation, LLC

Calculations of Potential to Emit - Wood Yard Storage and Handling Emission Points

Calculations of Potential to Emit - Fly Ash Silo, Bed Ash Silo, and Sand Storage Bin Emission Points

Emission Point #	Emission Point	Production Rate (tons/hr)	Pollutant	Emission Factor (lb/ton)	Uncontrolled Emissions		Control Efficiency (%)	Controlled Emissions	
					Emission Rate (lb/hr)	Emission Rate (ton/yr)		Emission Rate (lb/hr)	Emission Rate (ton/yr)
5	Chipper Building ^{1,2,3} (250 tons per hour) (biomass moisture, enclosed, bin vent, fog mist)	250	PM	0.10	25.00	30.66	99.9	0.02	0.03
			PM 10	0.0473	11.825	14.50	99.9	0.01	0.01
			PM 2.5	0.0473	11.825	14.50	99.9	0.01	0.01
6	Oversize Reclaim Hopper ^{1,2,3,6} (250 tons per hour) (biomass moisture)	250	PM	0.10	25.00	30.66	85	3.75	4.60
			PM 10	0.0473	11.825	14.50	85	1.77	2.18
			PM 2.5	0.0473	11.825	14.50	85	1.77	2.18
7	Truck Dump ^{1,2,4,6} (250 tons per hour) (biomass moisture)	250	PM	0.00129	0.32	0.40	85	0.05	0.06
			PM 10	0.00129	0.3225	0.40	85	0.05	0.06
			PM 2.5	0.00129	0.3225	0.40	85	0.05	0.06
8	Wood Hog Building ^{1,2,3,7} (250 tons per hour) (biomass moisture, enclosed, bin vent, fog mist)	250	PM	0.10	25.00	30.66	99.9	0.025	0.03
			PM 10	0.0473	11.83	14.50	99.9	0.012	0.01
			PM 2.5	0.0473	11.83	14.50	99.9	0.012	0.01
9	Transfer Tower ^{1,2,3,6} (250 tons per hour) (biomass moisture, enclosed)	250	PM	0.10	25.00	30.66	85	3.750	4.60
			PM 10	0.0473	11.83	14.50	85	1.774	2.18
			PM 2.5	0.0473	11.83	14.50	85	1.774	2.18
10	Tripper Conveyor ^{1,2,3,6} (250 tons per hour) (biomass moisture, enclosed)	250	PM	0.10	25.00	30.66	85	3.750	4.60
			PM 10	0.0473	11.83	14.50	85	1.774	2.18
			PM 2.5	0.0473	11.83	14.50	85	1.774	2.18
11	Reclaim Conveyor ^{1,3,6} (70 tons per hour) (biomass moisture, enclosed)	70	PM	0.10	7.00	30.66	85	1.050	4.60
			PM 10	0.0473	3.31	14.50	85	0.497	2.18
			PM 2.5	0.0473	3.31	14.50	85	0.497	2.18
12	Chain Conveyor/Surge Bins ^{1,3,6} (70 tons per hour) (biomass moisture, enclosed)	70	PM	0.10	7.00	30.66	85	1.050	4.60
			PM 10	0.0473	3.31	14.50	85	0.497	2.18
			PM 2.5	0.0473	3.31	14.50	85	0.497	2.18
13	Fly Ash Silo ^{1,5,7} (1 ton per hour) (bin vent, enclosed)	1.0	PM	110	110.00	481.80	99.9	0.11	0.48
			PM 10	110	110.00	481.80	99.9	0.11	0.48
			PM 2.5	110	110.00	481.80	99.9	0.11	0.48
14	Bed Ash Silo ^{1,5,7} (1 ton per hour) (bin vent, enclosed)	1.0	PM	110	110.00	481.80	99.9	0.11	0.48
			PM 10	110	110.00	481.80	99.9	0.11	0.48
			PM 2.5	110	110.00	481.80	99.9	0.11	0.48
15	Sand Storage Bin ^{1,5,7} (1.0 tons per hour) (bin vent)	1.0	PM	110	110.00	481.80	99.9	0.11	0.48
			PM 10	110	110.00	481.80	99.9	0.11	0.48
			PM 2.5	110	110.00	481.80	99.9	0.11	0.48
							Total PM	13.75	24.66
							Total PM ₁₀	6.72	12.41
							Total PM _{2.5}	6.72	12.41

NOTES:

- 1 Production data obtained from Air Permit Application Technical Support Document, Figure 4, Fuel Handling System Flow Diagram.
- 2 The reclaim conveyor would act as a bottleneck at the facility, and limit the operation of emission points (EP) 5-10; thus, the maximum hours of operation assumed for EP 5-10 was 2,453 hours per year.
- 3 Emission factor for PM and PM10 taken from KYDAQ SOB dated June 17, 2008, for Kingsford Manufacturing Company in Burnside, KY. The facility operates wood handling operations similar to the proposed ecoPower facility. Note: No emission factor provided for PM2.5.
- 4 Emission factor for PM and PM10 taken from KYDAQ KYEIS Detailed Plant Information summary for Kingsford Manufacturing Company in Burnside, KY. The facility operates a truck dump with similar materials as the proposed plant. Kingsford has a sawdust truck dump. Note: No emission factor provided for PM2.5.
- 5 PM emission rate for the fly ash silo, bed ash silo, and sand storage bin based on AP-42, Chapter 11.8, "Clay and Fly Ash Sintering," Table 11.8-2. Note: No data provided for PM10 and PM 2.5.
- 6 Assumed a 85% control efficiency for material handling operations due to moisture in wood, enclosures, and use of wet suppression.
- 7 Control efficiencies for PM and PM10 from engineering judgment based on common bin vent control efficiency.

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection

DIVISION FOR AIR QUALITY

DEP7007B

**MANUFACTURING OR
PROCESSING OPERATIONS**

(Please read instructions before completing this form)

Emission Point # (1)	Process Description (2)	Continuous or Batch (3)	Maximum Operating Schedule (Hours/Day, Days/Week, Weeks/Year) (4)	Process Equipment (Make, Model, Etc.) (5)	Date Installed (6)
EP13	Fly Ash Silo	C	24 Hours/ Day, 7 Days/ Week, 52 Weeks/Year	Silo with bin vent, conveyor	May 2010
EP14	Bed Ash Silo	C	24 Hours/ Day, 7 Days/ Week, 52 Weeks/Year	Silo with bin vent, conveyor	May 2010
EP15	Sand Storage Bin	C	24 Hours/ Day, 7 Days/ Week, 52 Weeks/Year	Storage bin with bin vent	May 2010

Emission Point # (1)	List Raw Material(s) Used (7)	Maximum Quantity Input Of Each Raw Material (Specify Units/Hour) (8) See Item 18	Type of Products (9) See Item 18	Quantity Output* (Specify Units)	
				Maximum Hourly Rated Capacity (Specify Units) (10a)	Maximum Annual (Specify Units) (10b)
EP13	Fly Ash	1.0 tons/hr	Fly Ash – Combustion Byproduct	1.0 tons/hr	
EP14	Bed Ash	1.0 tons/hr	Bed Ash – Combustion Byproduct	1.0 tons/hr	
EP15	Sand	1.0 tons/hr	No product – raw materials	1.0 tons/hr	

*(10a) Rated Capacity of Equipment

(10b) Should be entered only if applicant requests operating restrictions through federally enforceable limitations

DEP7007B (Continued)

IMPORTANT: Form DEP7007N, Emission, Stacks, and Controls Information must be completed for each emission unit listed below.

Emission Point # (1)	Fuel Type for Process Heat (11)	Rated Burner Capacity (BTU/Hour) (12)	Fuel Composition		Fuel Usage Rates		Note: If the combustion products are emitted along with the process emissions, indicate so in this column by writing "combined." (15)
			% Sulfur (13a)	% Ash (13b)	Maximum Hourly (14a)	Maximum Annual* (14b)	
EP13	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EP14	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EP15	N/A	N/A	N/A	N/A	N/A	N/A	N/A

16) Make a complete list of all wastes generated by each process (e.g. wastewater, scrap, rejects, cleanup waste, etc.). List the hourly (or daily) and annual quantities of each waste and the method of final disposal. (Use a separate sheet of paper, if necessary)

NONE

17) **IMPORTANT:** Submit a process flow diagram. Label all materials, equipment and emission point numbers.

18) Material Safety Data Sheets with complete chemical compositions are required for each process.

*(14b) Should be entered only if applicant requests operating restrictions through federally enforceable permit conditions.

DEP 7007 V FORM

**APPLICABLE REQUIREMENTS
AND
COMPLIANCE ACTIVITIES**

APPLICANT NAME: ecoPower Generation, LLC

SECTION I. EMISSION AND OPERATING STANDARD(S) AND LIMITATION(S)						SECTION II. MONITORING REQUIREMENTS			SECTION III. RECORDKEEPING REQUIREMENTS			SECTION IV. REPORTING REQUIREMENTS			SECTION V. TESTING REQUIREMENTS		
KYEIS No. ⁽¹⁾	Emission Unit Description ⁽²⁾	Contaminant ⁽³⁾	Origin of Requirement or Standard ⁽⁴⁾	Applicable Requirement, Standard, Restriction, Limitation, or Exemption ⁽⁵⁾	Method of Determining Compliance with the Emission and Operating Requirement(s) ⁽⁶⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Monitored ⁽⁷⁾	Description of Monitoring ⁽⁸⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Recorded ⁽⁹⁾	Description of Recordkeeping ⁽¹⁰⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Reported ⁽¹¹⁾	Description of Reporting ⁽¹²⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Tested ⁽¹³⁾	Description of Testing ⁽¹⁴⁾
EP01	Fluidized Bed Boiler	PM / Opacity	40 CFR 60.43b(h)(1), (e), (g); 40 CFR 60.43b(f)	PM in exhaust gas ≤ 0.030 lb/MMBtu; ≤20% (6-minute average), except for one 6- minute period per hour of not more than 27% opacity; < 0.10 lb/MMBtu heat input (Note: Facility will use a bag leak detection system to monitor the performance of a fabric filter baghouse instead of COM's).	Determine annual capacity factor; initial performance test; operate a bag leak detection system on the facility's baghouse	40 CFR 60.46b(b), (d), 60.48b(a), (e), 40 CFR 60.48b(j)(5), 40 CFR 64 (CAM), 401 KAR 52:020 See Footnote 1	Baghouse See Footnote 1	Initial performance test, and as requested by Administrator; operate with a bag leak detection leak system that meets manufacturer specifications, provides continuous output, alarms, etc.; visible emissions surveys, develop CAM monitoring plan for fabric filter baghouse See Footnote 1	40 CFR 60.49b(d), (f), (o), 60.48b(a), 40 CFR 60.48b(j)(5), 40 CFR 64 See Footnote 2	Amount of fuel combusted See Footnote 2	Monthly records of biomass combusted; opacity records; maintain records for 2 years; quarterly adjust the bag leak detection system - develop plan with approval from Administrator; maintain records to ensure compliance with CAM See Footnote 2	40 CFR 60.49b(a), (a)(1), (a)(3), (b), (h), (h)(3), (v), (w), 40 CFR 64 See Footnote 2	PM See Footnote 2	Initial startup notification identifying design heat capacity and types of fuels combusted and annual capacity factor; submit performance test results; submit semi- annual excess emission reports of opacity; periodically report CAM compliance status See Footnote 2	40 CFR 60.46b(b), (d), 60.48b(a)	PM	Initial performance test, and as requested by Administrator
EP01	Fluidized Bed Boiler	CO	401 KAR 50.020	401 KAR 50.020 401 KAR 50:055 §2	Recordkeeping, calculation and reporting	Permit Conditions See Footnote 1	CO See Footnote 1	Method acceptable to the cabinet 401 KAR 50:055 §2(2) See Footnote 1	Permit Conditions See Footnote 2	CO calculations See Footnote 2	Permit Recordkeeping See Footnote 2	Permit Conditions See Footnote 2	CO emissions See Footnote 2	Monthly calculations and annual reporting See Footnote 2	Permit Conditions	CO	Initial performance test, and as requested by Administrator

APPLICANT NAME: ecoPower Generation, LLC

SECTION I. EMISSION AND OPERATING STANDARD(S) AND LIMITATION(S)						SECTION II. MONITORING REQUIREMENTS			SECTION III. RECORDKEEPING REQUIREMENTS			SECTION IV. REPORTING REQUIREMENTS			SECTION V. TESTING REQUIREMENTS		
KYEIS No. ⁽¹⁾	Emission Unit Description ⁽²⁾	Contaminant ⁽³⁾	Origin of Requirement or Standard ⁽⁴⁾	Applicable Requirement, Standard, Restriction, Limitation, or Exemption ⁽⁵⁾	Method of Determining Compliance with the Emission and Operating Requirement(s) ⁽⁶⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Monitored ⁽⁷⁾	Description of Monitoring ⁽⁸⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Recorded ⁽⁹⁾	Description of Recordkeeping ⁽¹⁰⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Reported ⁽¹¹⁾	Description of Reporting ⁽¹²⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Tested ⁽¹³⁾	Description of Testing ⁽¹⁴⁾
EP01	Fluidized Bed Boiler	HCl	401 KAR 50.020	401 KAR 50.020 401 KAR 50:055 §2	Recordkeeping, calculation and reporting	Permit Conditions See Footnote 1	Wood consumed during boiler operation See Footnote 1	Method acceptable to the cabinet 401 KAR 50:055 §2(2) See Footnote 1	Permit Conditions See Footnote 2	HCl calculations See Footnote 2	Permit Recordkeeping See Footnote 2	Permit Conditions See Footnote 2	HCl emissions See Footnote 2	Monthly calculations and annual reporting See Footnote 2	Permit Conditions	HCl	Initial performance test, and as requested by Administrator
EP01	Fluidized Bed Boiler	NOx	42 CFR 60.44b(l)(1), 40 CFR 96.21(b)(ii)	Submit NO _x Budget permit application within 18 months of the units operation (Note: 60.44b does not contain NO _x emission limits for wood or energy crop combustion).	Develop NO _x budget and submit application; monitoring NO _x emissions utilizing CEMs	42 CFR 60.49b(d)(1), 40 CFR 96.70, 40 CFR 64 (CAM) See Footnote 1	Fuel Combusted; Operate CEMs See Footnote 1	Daily monitor each fuel combusted, operate CEMs - recording NO _x emission rate, concentration, unit heat input, and flow, develop CAM for CEMs and SCNR. See Footnote 1	42 CFR 60.49b(d)(1), 40 CFR 96.70, 40 CFR 75.72 and 75.76, 40 CFR 64 (CAM) See Footnote 2	Amount of fuel combusted; Operate CEMs See Footnote 2	Daily records of the amount of fuel combusted; record and calculate monthly individual annual capacity factor and maintain a 12-month rolling average; maintain records for two years; record monitoring parameters of the CEMs outlined in Section II of this form for EP 001, NO _x . Record parameters developed in CAM for CEMs and SCNR. See Footnote 2	42 CFR 60.49b(a), (a)(1), (a)(3), (b), (h), (h)(3), (v), (w), 40 CFR 96.74(d), 401 KAR 52:020 See Footnote 2	Annual Capacity Factor See Footnote 2	Initial startup notification identifying design heat capacity and types of fuels combusted and annual capacity factor; submit performance test results; periodically report CAM compliance status documenting any deviations; submit quarterly NO _x budget reports See Footnote 2	42 CFR 60.8, 40 CFR 96.71, 40 CFR 75	NOx	Initial performance test, and as requested by Administrator; meet initial and recertification test for CEMs

DIVISION FOR AIR QUALITY

DEP7007V

Applicable
Requirements
& Compliance

APPLICANT NAME: ecoPower Generation, LLC

SECTION I. EMISSION AND OPERATING STANDARD(S) AND LIMITATION(S)						SECTION II. MONITORING REQUIREMENTS			SECTION III. RECORDKEEPING REQUIREMENTS			SECTION IV. REPORTING REQUIREMENTS			SECTION V. TESTING REQUIREMENTS		
KYEIS No. ⁽¹⁾	Emission Unit Description ⁽²⁾	Contaminant ⁽³⁾	Origin of Requirement or Standard ⁽⁴⁾	Applicable Requirement, Standard, Restriction, Limitation, or Exemption ⁽⁵⁾	Method of Determining Compliance with the Emission and Operating Requirement(s) ⁽⁶⁾	Origin of Requirement or Standard ⁽⁶⁾	Parameter Monitored ⁽⁷⁾	Description of Monitoring ⁽⁸⁾	Origin of Requirement or Standard ⁽⁹⁾	Parameter Recorded ⁽⁹⁾	Description of Recordkeeping ⁽¹⁰⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Reported ⁽¹¹⁾	Description of Reporting ⁽¹²⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Tested ⁽¹³⁾	Description of Testing ⁽¹⁴⁾
EP01	Fluidized Bed Boiler	SO ₂	40 CFR 60.42b(k)(2)	<0.32 lb/MMBtu heat input	Exempted from SO ₂ standards since SO ₂ emission rates are <0.32 lb/MMBtu	N/A See Footnote 1	N/A See Footnote 1	N/A See Footnote 1	60.49b(r)(1) See Footnote 2	Sulfur Content See Footnote 2	Maintain records documenting sulfur concentration of the biomass See Footnote 2	40 CFR 60.49 See Footnote 2	Sulfur Content See Footnote 2	Semi-annually certify that the biomass contains insignificant amounts of sulfur See Footnote 2	40 CFR 60.8	SO ₂	Initial performance test, and as requested by Administrator

Footnote 1: Section II - Monitoring Requirements

Steam Parameters: In accordance with the manufacturer's recommendations, the permittee shall install, calibrate, operate and maintain continuous monitoring and recording devices for the following parameters: steam temperature (°F), steam pressure (psig) and steam production rate (lb/hour). Records shall be maintained on site and made available upon request. [401 KAR 52:020, §3(1)(h)], [401 KAR 50:050, §1]

Pressure Drop: The permittee shall maintain and calibrate a device which continuously measures and records the pressure drop across each baghouse compartment controlling the PM emissions from the steam generating unit. Records shall be maintained on site and made available upon request. [401 KAR 52:020, §3(1)(h)], [401 KAR 50:050, §1]

Bag Leak Detection: The permittee shall maintain continuous operation of bag leak detection systems on the steam generating unit baghouse including keeping records of the systems measurements. Baghouse leak detection records shall be kept on site and made available upon request. [401 KAR 52:020, §3(1)(h)], [401 KAR 50:050, §1]

SCR Ammonia Injection: In accordance with the manufacturer's specifications, the permittee shall install, calibrate, operate and maintain a flow meter to measure and record the ammonia injection rate for the SCR system for the steam generating unit. The permittee shall document the general range of NH3 flow rates required to meet the NOX standard over the range of load conditions by comparing NOX emissions with ammonia flow rates. During NOX CEMS downtimes or malfunctions, the permittee shall operate at an NH3 flow rate that is consistent with the documented flow rate for the given load condition. Records shall be maintained on site and made available upon request. [401 KAR 52:020, §3(1)(h)], [401 KAR 50:050, §1]

Footnote 2: Section III - Recordkeeping Requirements and Section IV - Reporting Requirements

Stack Test Reports: In addition to the information required in [401 KAR 52:020, §3] OR [401 KAR 50:045], each stack test report shall also include the following information: steam production rate (lb/hour), heat input rate (mmBtu/hour), calculated authorized fuels firing rate (tons/hour, cubic feet per minute or gallons per hour as appropriate), and emission rates (ammonia (NH3) slip in ppmvd @ 7% oxygen; PM, VOC, NOX, SO2, and CO and HCl in lb/hr). Initial compliance will be demonstrated no later than 180 days after start-up [401 KAR 52:020, §3(3)], [401 KAR 50:055, §2(1)(a)]

Monthly Operations Summary: By the tenth calendar day of each month, the permittee shall record the following for each fuel used in the BFB biomass boiler in a written or electronic log for the previous month of operation: hours of operation, tons of clean woody biomass, cubic feet of natural gas, cubic feet of propane, or gallons of ULSD FO; pounds of steam per month; total heat input rate; and the updated 12-month rolling totals for each of these operating parameters. In addition, the hourly heat input rate to the BFB biomass boiler shall be recorded and reported. The Monthly Operations Summary shall be maintained on site and made available for inspection when requested by the Department. [401 KAR 52:020, §3(1)(h)], [401 KAR 50:050, §1]

Semi-Annual CO, NOX, SO2, HCl and Opacity Emissions Report: Within 30 days following the end of the semi-annual period, the permittee shall submit a report to the Compliance Authority summarizing CO, NOX, SO2, HCl and opacity emissions including periods of startups, shutdowns, malfunctions, and CEMS and COMS systems monitor availability for the period. If opacity COMS data is excluded from a compliance determination during the period due to a malfunction, the permittee shall include a description of the malfunction, the actual emissions recorded, and the actions taken to correct the malfunction. [401 KAR 52:020]

APPLICANT NAME: ecoPower Generation, LLC

SECTION I. EMISSION AND OPERATING STANDARD(S) AND LIMITATION(S)						SECTION II. MONITORING REQUIREMENTS			SECTION III. RECORDKEEPING REQUIREMENTS			SECTION IV. REPORTING REQUIREMENTS			SECTION V. TESTING REQUIREMENTS		
KYEIS No. ⁽¹⁾	Emission Unit Description ⁽²⁾	Contaminant ⁽³⁾	Origin of Requirement or Standard ⁽⁴⁾	Applicable Requirement, Standard, Restriction, Limitation, or Exemption ⁽⁵⁾	Method of Determining Compliance with the Emission and Operating Requirement(s) ⁽⁶⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Monitored ⁽⁷⁾	Description of Monitoring ⁽⁸⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Recorded ⁽⁹⁾	Description of Recordkeeping ⁽¹⁰⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Reported ⁽¹¹⁾	Description of Reporting ⁽¹²⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Tested ⁽¹³⁾	Description of Testing ⁽¹⁴⁾
EP02	Auxiliary Boiler	PM / SO ₂	40 CFR 60.48c (a)(1) and (a)(3), 40 CFR 60.48c (g)(2), and 40 CFR 60.48c (i) (Note: Exempt from 40 CFR 60, Subpart D; 40 CFR 60, Subpart Da, 401 KAR 59:010. The propane startup boiler is rated at 92 MMBtu/hr).	Maintain fuel records, initial notification	Fuel records and initial notification	40 CFR 60.48c (g)(2)	PM / SO ₂	Record and maintain records of the amount of propane combusted during the calendar month.	40 CFR 60.48c(g)(2), (i)	Amount of fuel combusted	Monthly record the amount of fuel combusted and maintain records for two years	40 CFR 60.48c (a)(1), (a)(3)	PM / SO ₂	Initial startup notification identifying design heat capacity and annual capacity factor	None	None	None
EP03	Emergency Generator	PM	40 CFR 60.4202(a)(2), 40 CFR 89.112, 40 CFR 60.4206, 40 CFR 80.510(a), 40 CFR 63.6590(c) (Note: This facility is limiting the hours of operation to less than 500 per year, and the emissions associated with this unit are considered insignificant).	PM emissions in the internal combustion engine exhaust to 0.20 g/kW-hr; must meet diesel fuel requirements of 80.510(a) (i.e., sulfur content <500ppm, aromatic content 35% by volume, etc.), certify new stationary pump engine	Maintain emissions standards according to manufacturer specifications over the life of the engine	40 CFR 60.4211 (c), 40 CFR 60.4209(a)		Operate generator as instructed by manufacturer's operating manual, purchase engine certified to meet emissions limitations and equipped with non-resettable hour meter. Emergency and readiness testing <100 hours per year.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

APPLICANT NAME: ecoPower Generation, LLC

SECTION I. EMISSION AND OPERATING STANDARD(S) AND LIMITATION(S)						SECTION II. MONITORING REQUIREMENTS			SECTION III. RECORDKEEPING REQUIREMENTS			SECTION IV. REPORTING REQUIREMENTS			SECTION V. TESTING REQUIREMENTS		
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EP03	Emergency Generator	CO	40 CFR 60.4202(a)(2), 40 CFR 89.112, 40 CFR 60.4206, 40 CFR 80.510(a), 40 CFR 63.6590(c)	CO emissions in the internal combustion engine exhaust to 3.5 g/kVW-hr (Note: This facility is limiting the hours of operation to less than 500 per year, and the emissions associated with this unit are considered insignificant).	Maintain emissions standards according to manufacturer specifications over the life of the engine	40 CFR 60.4211 (c), 40 CFR 60.4209(a)		Operate generator as instructed by manufacturer's operating manual, purchase engine certified to meet emissions limitations and equipped with non- resettable hour meter. Emergency and readiness testing <100 hours per year.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EP03	Emergency Generator	NOx	40 CFR 60.4202(a)(2), 40 CFR 89.112, 40 CFR 60.4206, 40 CFR 80.510(a), 40 CFR 63.6590(c)	NOx emissions in the internal combustion engine exhaust to 6.4 g/kVW-hr (Note: This facility is limiting the hours of operation to less than 500 per year, and the emissions associated with this unit are considered insignificant).	Maintain emissions standards according to manufacturer specifications over the life of the engine	40 CFR 60.4211 (c), 40 CFR 60.4209(a)		Operate generator as instructed by manufacturer's operating manual, purchase engine certified to meet emissions limitations and equipped with non- resettable hour meter. Emergency and readiness testing <100 hours per year.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

DIVISION FOR AIR QUALITY

DEP7007V

Applicable
Requirements
& Compliance

APPLICANT NAME: ecoPower Generation, LLC

SECTION I. EMISSION AND OPERATING STANDARD(S) AND LIMITATION(S)						SECTION II. MONITORING REQUIREMENTS			SECTION III. RECORDKEEPING REQUIREMENTS			SECTION IV. REPORTING REQUIREMENTS			SECTION V. TESTING REQUIREMENTS		
KYEIS No. ⁽¹⁾	Emission Unit Description ⁽²⁾	Contaminant ⁽³⁾	Origin of Requirement or Standard ⁽⁴⁾	Applicable Requirement, Standard, Restriction, Limitation, or Exemption ⁽⁵⁾	Method of Determining Compliance with the Emission and Operating Requirement(s) ⁽⁶⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Monitored ⁽⁷⁾	Description of Monitoring ⁽⁸⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Recorded ⁽⁹⁾	Description of Recordkeeping ⁽¹⁰⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Reported ⁽¹¹⁾	Description of Reporting ⁽¹²⁾	Origin of Requirement or Standard ⁽⁴⁾	Parameter Tested ⁽¹³⁾	Description of Testing ⁽¹⁴⁾
EP04	Fire Water Pump	PM	40 CFR 60.4206, 40 CFR 80.510(a), 40 CFR 60.4202(d) and Table 4 of IIII, 40 CFR 63.6590(c)	PM emissions in the internal combustion engine exhaust to 0.15 g/HP-hr; must meet diesel fuel requirements of 80.510(a) (i.e., sulfur content <500ppm, aromatic content 35% by volume, etc.) (Note: This facility is limiting the hours of operation to less than 500 per year, and the emissions associated with this unit are considered insignificant).	Maintain emissions standards according to manufacturer specifications over the life of the engine	40 CFR 60.4211(c), (b), 40 CFR 60.4209(a)		Operate unit in accordance with written manufacturer specifications, and maintain manufacturers unit NFPA nameplate/certification, engine equipped with non-resettable hour meter, engine equipped with non-resettable hour meter	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EP04	Fire Water Pump	NOx	40 CFR 60.4202(d) and Table 4 of IIII, 40 CFR 60.4206, 40 CFR 80.510(a), 40 CFR 63.6590(c)	NOx emissions in the internal combustion engine exhaust to 3.0 g/HP-hr (Note: This facility is limiting the hours of operation to less than 500 per year, and the emissions associated with this unit are considered insignificant).	Maintain emissions standards according to manufacturer specifications over the life of the engine	40 CFR 60.4211(a), (b), 40 CFR 60.4209(a)		Operate unit in accordance with written manufacturer specifications, engine equipped with non- resettable hour meter, engine equipped with non-resettable hour meter	40 CFR 60.4211(a)		Operate unit in accordance with written manufacturer specifications, and maintain manufacturers unit NFPA nameplate/certification	40 CFR 60.4211(a)		Operate unit in accordance with written manufacturer specifications, and maintain manufacturers unit NFPA nameplate/certification	N/A	N/A	N/A

DIVISION FOR AIR QUALITY

DEP7007V

Applicable
Requirements
& Compliance

APPLICANT NAME: ecoPower Generation, LLC

SECTION I. EMISSION AND OPERATING STANDARD(S) AND LIMITATION(S)						SECTION II. MONITORING REQUIREMENTS			SECTION III. RECORDKEEPING REQUIREMENTS			SECTION IV. REPORTING REQUIREMENTS			SECTION V. TESTING REQUIREMENTS		
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EP05- EP015	Chipper Building; Reclaim Hopper; Truck Dump; Tipper Conveyor; Wood Hog Building; Transfer Tower; Reclaim Conveyor; Screw Conveyor/Surge Bins; Fly Ash Silo; Bed Ash Silo; Sand Bin	PM	401 KAR 59:010; 401 KAR 52:020, Section 26	<20% Opacity; 17.31P ^{0.16} , maintain bin vent filters and fog mist wet suppression equipment in accordance with manufacturer's specifications	Visual observations unless testing is required; initial performance test and monthly PM calculations	401 KAR 52:020, 401 KAR 59:010	Opacity/PM	Visible observations of emissions shall be performed on bin vents, enclosures, etc. If visible emissions are observed then opacity will be determined by Reference Method 9. Repairs will be initiated on control equipment if emissions are in excess of 20%. Monitor monthly processing rates and hours of operation of equipment.	401 KAR 52:020, 401 KAR 59:010	Opacity/PM	Maintain a log of qualitative visual observations of opacity, and Method 9 observations if applicable. Monthly calculations of hourly emission limit using monthly processing rates, emission factors and control efficiency described in the permit application, and monthly operating hours	401 KAR 52:020, 401 KAR 59:010	Opacity/PM	Semi-annual reports noting deviations of opacity standard or hourly PM emission rates	401 KAR 59:005 and 401 KAR 50:045	Opacity/PM	Method 5 for initial compliance demonstration, and as requested by the Cabinet
F01, F02, F03	Wind erosion from three biomass storage piles (saw dust, wood chips, bark)	PM	401 KAR 63:010	No fugitive dust emissions across property line	Reasonable precaution to prevent particulate matter from becoming airborne (i.e. wet suppression, control equipment, covered equipment, sweeping)	401 KAR 63:010, 401 KAR 50:055	PM	Maintain air pollution controls in accordance with good engineering practice and recommendations of respective manufacturers. Conduct daily observations of control equipment to determine if conditions are normal or abnormal.	401 KAR 63:010, 401 KAR 50:055	Maintenance Activities, Abnormal emissions	Maintain a log of routine and non-routine maintenance on each control device.	401 KAR 52:020	PM	Semi-annual reports noting deviations	N/A	N/A	N/A

DIVISION FOR AIR QUALITY

DEP7007V

Applicable
Requirements
& Compliance

APPLICANT NAME: ecoPower Generation, LLC

SECTION I. EMISSION AND OPERATING STANDARD(S) AND LIMITATION(S)						SECTION II. MONITORING REQUIREMENTS			SECTION III. RECORDKEEPING REQUIREMENTS			SECTION IV. REPORTING REQUIREMENTS			SECTION V. TESTING REQUIREMENTS		
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F04	Paved Roads	PM	401 KAR 63:010	No fugitive dust emissions across property line	Reasonable precaution to prevent particulate matter from becoming airborne (i.e. wet suppression, control equipment, covered equipment, sweeping)	401 KAR 63:010, 401 KAR 50:055	PM	Maintain air pollution controls in accordance with good engineering practice and recommendations of respective manufacturers. Conduct daily observations of control equipment to determine if conditions are normal or abnormal.	401 KAR 63:010, 401 KAR 50:055	Maintenance Activities, Abnormal emissions	Maintain a log of routine and non-routine maintenance on each control device.	401 KAR 52:020	PM	Semi-annual reports noting deviations	N/A	N/A	N/A
F05, F06	Manipulation of biomass storage piles (x3), and logs in the wood storage area	PM	401 KAR 63:010	65	Reasonable precaution to prevent particulate matter from becoming airborne (i.e. wet suppression, control equipment, covered equipment, sweeping)	401 KAR 63:010, 401 KAR 50:055	PM	Maintain air pollution controls in accordance with good engineering practice and recommendations of respective manufacturers. Conduct daily observations of control equipment to determine if conditions are normal or abnormal.	401 KAR 63:010, 401 KAR 50:055	Maintenance Activities, Abnormal emissions	Maintain a log of routine and non-routine maintenance on each control device.	401 KAR 52:020	PM	Semi-annual reports noting deviations	N/A	N/A	N/A

Notes:

Insignificant Activities

Diesel Storage Tank(s)
Mineral Spirits Cabinet

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection
DIVISION FOR AIR QUALITY

DEP7007DD

INSIGNIFICANT
ACTIVITIES

INSIGNIFICANT ACTIVITY CRITERIA

1. Emissions from insignificant activities shall be counted toward the source's potential to emit;
2. Emissions from the activity shall not be subject to a federally enforceable requirement other than generally applicable requirements that apply to all activities and affected facilities such as 401 KAR 59:010, 61:020, 63:010, and others deemed generally applicable by the Cabinet;
3. The potential to emit a regulated air pollutant from the activity or affected facility shall not exceed 5 tons/yr.
4. The potential to emit of a hazardous air pollutant from the activity or affected facility shall not exceed 1,000 pounds/yr., or the de minimis level established under Section 112(g) of the Act, whichever is less;
5. The activity shall be included in the permit application, identifying generally applicable and state origin requirements.

Description of Activity Including Rated Capacity	Generally Applicable Regulations Or State Origin Requirements	Does the Activity meet the Insignificant Activity Criteria Listed Above?
IA-1 10,000 gal. Horizontal Diesel Tank	None	Yes
IA-2 550 gal. Diesel Tank - Emergency Generator	None	Yes
IA-3 550 gal. Diesel Tank -Fire Water Pump	None	Yes
IA-4 35 gallon Mineral Spirits Tank	None	Yes

SIGNATURE BLOCK

I, THE UNDERSIGNED, HEREBY CERTIFY UNDER PENALTY OF LAW, THAT I AM A RESPONSIBLE OFFICIAL, AND THAT I HAVE PERSONALLY EXAMINED, AND AM FAMILIAR WITH, THE INFORMATION SUBMITTED IN THIS DOCUMENT AND ALL ITS ATTACHMENTS. BASED ON MY INQUIRY OF THOSE INDIVIDUALS WITH PRIMARY RESPONSIBILITY FOR OBTAINING THE INFORMATION, I CERTIFY THAT THE INFORMATION IS ON KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE OR INCOMPLETE INFORMATION, INCLUDING THE POSSIBILITY OF FINE OR IMPRISONMENT.

BY _____
Authorized Signature

Gary T. Crawford
Typed or Printed Name of Signatory

_____/_____/_____
Date

Chief Executive Officer
Title of Signatory

TANKS 4.09d

**10,000 GALLON HORIZONTAL DIESEL TANK
FOR
MOBILE EQUIPMENT**

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification	
User Identification:	Tank No. 1
City:	Hazard
State:	Kentucky
Company:	ecoPower
Type of Tank:	Horizontal Tank
Description:	10,000 Gallon Diesel for EcoPower mobile equipment
Tank Dimensions	
Shell Length (ft):	27.00
Diameter (ft):	8.00
Volume (gallons):	10,000.00
Turnovers:	12.00
Net Throughput(gal/yr):	120,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N
Paint Characteristics	
Shell Color/Shade:	White/White
Shell Condition	Good
Breather Vent Settings	
Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03
Meteorological Data used in Emissions Calculations: Jackson, Kentucky (Avg Atmospheric Pressure = 14.24 psia)	

TANKS 4.0.9d

Emissions Report - Detail Format

Liquid Contents of Storage Tank

Tank No. 1 - Horizontal Tank
Hazard, Kentucky

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight		Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.	Avg.	Max.				
Distillate fuel oil no. 2	All	57.32	52.48	62.16	55.69	0.0060	0.0050	0.0070	0.0070	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0065

TANKS 4.0.9d

Emissions Report - Detail Format

Detail Calculations (AP-42)

Tank No. 1 - Horizontal Tank Hazard, Kentucky

Annual Emission Calculations	
Standing Losses (lb):	1.4687
Vapor Space Volume (cu ft):	864.4382
Vapor Density (lb/cu ft):	0.0001
Vapor Space Expansion Factor:	0.0333
Vented Vapor Saturation Factor:	0.9987
Tank Vapor Space Volume:	864.4382
Vapor Space Volume (cu ft):	8.0000
Tank Diameter (ft):	16.5879
Effective Diameter (ft):	4.0000
Vapor Space Outage (ft):	27.0000
Tank Shell Length (ft):	
Vapor Density	0.0001
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0050
Daily Avg. Liquid Surface Temp. (deg. R):	516.9897
Daily Average Ambient Temp. (deg. F):	55.6708
Ideal Gas Constant R:	10.731
(psia cu ft / (lb-mol-deg R):	515.3608
Liquid Bulk Temperature (deg. R):	0.1700
Tank Paint Solar Absorptance (Shell):	
Daily Total Solar Insulation Factor (Btu/sqft day):	1,219.4167
Vapor Space Expansion Factor:	0.0333
Vapor Space Temperature Range (deg. R):	19.3454
Daily Vapor Pressure Range (psia):	0.0020
Breather Vent Press. Setting Range (psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0050
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0050
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0070
Daily Avg. Liquid Surface Temp. (deg R):	516.9897
Daily Min. Liquid Surface Temp. (deg R):	512.1531
Daily Max. Liquid Surface Temp. (deg R):	521.8263
Daily Ambient Temp. Range (deg. R):	18.8063
Vented Vapor Saturation Factor	0.9987
Vented Vapor Saturation Factor:	
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0050
Vapor Space Outage (ft):	4.0000
Working Losses (lb):	2.2152
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0050
Annual Net Throughput (gallyr.):	120,000.0000

Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	8.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	3.6838

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank No. 1 - Horizontal Tank
Hazard, Kentucky

Components	Losses(lbs)			Total Emissions
	Working Loss	Breathing Loss		
Distillate fuel oil no. 2	2.22	1.47		3.68

TANKS 4.09d

**550 GALLON DIESEL TANK
FOR
EMERGENCY GENERATOR**

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification	
User Identification:	Tank No. 2
City:	Hazard
State:	Kentucky
Company:	ecoPower
Type of Tank:	Horizontal Tank
Description:	550 Gallon Diesel tank for ecoPower's emergency generator
Tank Dimensions	
Shell Length (ft):	6.00
Diameter (ft):	4.00
Volume (gallons):	550.00
Turnovers:	12.00
Net Throughput(gal/yr):	6,600.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N
Paint Characteristics	
Shell Color/Shade:	White/White
Shell Condition	Good
Breather Vent Settings	
Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03
Meteorological Data used in Emissions Calculations: Jackson, Kentucky (Avg Atmospheric Pressure = 14.24 psia)	

TANKS 4.0.9d

Emissions Report - Detail Format

Liquid Contents of Storage Tank

Tank No. 2 - Horizontal Tank
Hazard, Kentucky

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.		Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.						
Distillate fuel oil no. 2	All	57.32	52.48	62.16	55.69	0.0060	0.0050	0.0070	130.0000				188.00	Option 1: VP50 = .0045 VP60 = .0065

TANKS 4.0.9d

Emissions Report - Detail Format

Detail Calculations (AP-42)

Tank No. 2 - Horizontal Tank Hazard, Kentucky

Annual Emission Calculations	
Standing Losses (lb):	0.0816
Vapor Space Volume (cu ft):	48.0243
Vapor Density (lb/cu ft):	0.0001
Vapor Space Expansion Factor:	0.0333
Vented Vapor Saturation Factor:	0.9994
Tank Vapor Space Volume:	48.0243
Vapor Space Volume (cu ft):	4.0000
Tank Diameter (ft):	5.5293
Effective Diameter (ft):	2.0000
Vapor Space Outage (ft):	6.0000
Tank Shell Length (ft):	0.0001
Vapor Density	130.0000
Vapor Molecular Weight (lb/lb-mole):	0.0080
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	516.9897
Daily Avg. Liquid Surface Temp. (deg. R):	55.6708
Daily Average Ambient Temp. (deg. F):	10.731
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	515.3608
Liquid Bulk Temperature (deg. R):	0.1700
Tank Paint Solar Absorptance (Shell):	1.219.4167
Daily Total Solar Insulation Factor (Btu/sqft day):	0.0333
Vapor Space Expansion Factor:	19.3464
Vapor Space Temperature Range (deg. R):	0.0020
Daily Vapor Pressure Range (psia):	0.0600
Breather Vent Press. Setting Range(psia):	0.0060
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0050
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0070
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	516.9897
Daily Avg. Liquid Surface Temp. (deg R):	512.1531
Daily Min. Liquid Surface Temp. (deg R):	521.8263
Daily Max. Liquid Surface Temp. (deg R):	18.8083
Daily Ambient Temp. Range (deg. R):	0.9994
Vented Vapor Saturation Factor	0.0060
Vented Vapor Saturation Factor:	2.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.1218
Vapor Space Outage (ft):	130.0000
Working Losses (lb):	0.0060
Vapor Molecular Weight (lb/lb-mole):	6,600.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	
Annual Net Throughput (gal/yr.):	

Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	4.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	0.2035

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank No. 2 - Horizontal Tank
Hazard, Kentucky

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.12	0.08	0.20

TANKS 4.09d

**550 GALLON DIESEL TANK
FOR
FIRE WATER PUMP**

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification

User Identification:

Tank No. 3

Hazard

Kentucky

ecoPower

Horizontal Tank

550 Gallon Diesel Tank for ecoPower's fire pump

Tank Dimensions

Shell Length (ft):

6.00

Diameter (ft):

4.00

Volume (gallons):

550.00

Turnovers:

12.00

Net Throughput(gal/yr):

6,600.00

Is Tank Heated (y/n):

N

Is Tank Underground (y/n):

N

Paint Characteristics

Shell Color/Shade:

White/White

Shell Condition

Good

Breather Vent Settings

Vacuum Settings (psig):

-0.03

Pressure Settings (psig)

0.03

Meterological Data used in Emissions Calculations: Jackson, Kentucky (Avg Atmospheric Pressure = 14.24 psia)

TANKS 4.0.9d

Emissions Report - Detail Format

Liquid Contents of Storage Tank

Tank No. 3 - Horizontal Tank
Hazard, Kentucky

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	57.32	52.48	62.16	55.69	0.0060	0.0050	0.0070	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0065

TANKS 4.0.9d

Emissions Report - Detail Format

Detail Calculations (AP-42)

Tank No. 3 - Horizontal Tank Hazard, Kentucky

Annual Emission Calculations	
Standing Losses (lb):	0.0816
Vapor Space Volume (cu ft):	48.0243
Vapor Density (lb/cu ft):	0.0001
Vapor Space Expansion Factor:	0.0333
Vented Vapor Saturation Factor:	0.9994
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	48.0243
Tank Diameter (ft):	4.0000
Effective Diameter (ft):	5.5293
Vapor Space Outage (ft):	2.0000
Tank Shell Length (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0001
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0060
Daily Avg. Liquid Surface Temp. (deg. R):	516.9897
Daily Average Ambient Temp. (deg. F):	55.6708
Ideal Gas Constant R (psia cuft / (lb-mol-deg R):	10.731
Liquid Bulk Temperature (deg. R):	515.3508
Tank Paint Solar Absorptance (Shell):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,219.4167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0333
Daily Vapor Temperature Range (deg. R):	19.3464
Daily Vapor Pressure Range (psia):	0.0020
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0060
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0050
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0070
Daily Avg. Liquid Surface Temp. (deg R):	516.9897
Daily Min. Liquid Surface Temp. (deg R):	512.1531
Daily Max. Liquid Surface Temp. (deg R):	521.8263
Daily Ambient Temp. Range (deg. R):	18.8063
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9994
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0060
Vapor Space Outage (ft):	2.0000
Working Losses (lb):	
Vapor Molecular Weight (lb/lb-mole):	0.1218
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	130.0000
Annual Net Throughput (gal/yr.):	0.0060
	6,600.0000

Annual Turnovers:
Turnover Factor:
Tank Diameter (ft):
Working Loss Product Factor:

12.0000
1.0000
4.0000
1.0000

Total Losses (lb):

0.2035

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank No. 3 - Horizontal Tank
Hazard, Kentucky

		Losses(lbs)	
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.12	0.08	0.20

Fugitive Emission Sources

Paved Road Vehicle Traffic – Fugitive Emissions

Stockpile Transfer - Fugitive Emissions

Storage Pile Wind Erosion – Fugitive Emissions

ecoPower Generation, LLC
ecoPower Generating Facility
Chavies, Kentucky
Paved Road PTE Calculations
January 2009

Type of Vehicle	Avg. Vehicle Weight ² (tons)	Mean Vehicle Weight ³ "W" (tons)	Avg. Vehicle Speed ⁴ (mph)	Silt Loading ⁵ "sL" (%)	Road Lengths ⁶		Average Number of Vehicles ⁷		Potential Vehicle Miles Traveled ⁸ "VMT"		Control ⁹ (%)	PM				PM10				PM2.5			
					Round Trip Road Segments							Emission Factor ¹⁰ (lb/VMT)	Emissions ¹¹			Emission Factor ¹⁰ (lb/VMT)	Emissions ¹¹			Emission Factor ¹⁰ (lb/VMT)	Emissions ¹¹		
					Miles	Feet	per day	per year	per day	per year			(lb/day)	(lb/hr)	(ton/yr)		(lb/day)	(lb/hr)	(ton/yr)		(lb/day)	(lb/hr)	(ton/yr)
Heavy Haul-Flatbed (@ Log Receiving)	32.50	77.98	10	7.1	0.307	1,620	41	14,965	13	4,592	75	34.46	108.37	4.52	19.8	6.72	21.14	0.88	3.9	1.01	3.17	0.13	0.6
Tanker Trucks (Delivering Diesel Fuel)	22.93	1.34			0.417	2,200	1	365	0	152			3.59	0.15	0.7		0.70	0.03	0.1		0.11	0.00	0.0
Transfer and Tractor Trailers (@ Fly Ash and Sand Silos)	33.60	11.80			0.417	2,200	6	2,190	3	913			21.54	0.90	3.9		4.20	0.18	0.8		0.63	0.03	0.1
Transfer and Tractor Trailers (@ Truck Tipper)	33.60	11.80			0.265	1,400	6	2,190	2	581			13.70	0.57	2.5		2.67	0.11	0.5		0.40	0.02	0.1
		102.92					54	19710	17	6,237					26.86				5.24				0.79
					PTE Multiplier: ¹²		125%		21						33.6				6.6				1.0

Potential Days of Operation¹ = 365 days
Hours of Operation per Day¹ = 24 hours

Notes and Sample Calculations:

1. The hours of operation are based upon a maximum operating schedule of 24 hours a day, 5 days a week, 52 weeks a year.
2. Average vehicle weights are based upon an assumed full vehicle weights. Vehicle weights are based upon engineering judgment, and typical DOT weights for hauling. For example, assumed 65,000 pounds for a flatbed at Log Receiving.
3. Per AP-42 Section 13.2.1.3, the mean vehicle weight represents the "fleet average vehicle weight. $W = \Sigma[(\text{vehicle weight} * \# \text{ trips per vehicle}) / \text{total trips by fleet}]$
4. Assumed facility speed limit.
5. Silt loading based upon AP-42 Table 13.2.1-4 Sand and gravel processing (11/06). This value was selected from this table as the most representative value of operations.
6. Road lengths based upon aerial photograph and Figure 3 of the Air Permit Application Technical Support Document prepared on October 20, 2009.
7. Numbers of each vehicle type estimated based upon average truck weight and listed storage load (i.e., 80,000 tons of logs stored for 60 days).
8. Potential vehicle miles traveled calculated based upon average vehicle trips * round trip distance around the entire facility (i.e., road to storage area and loop around the facility).
9. Assume the facility will use either a vacuum sweeper, a wheel wash, or truck covers to achieve 75% control of fugitive emissions on their haul roads.
10. Paved roads emission data were derived from AP-42, Fifth Edition, Compilation of Air Pollutant Emission Factor, Volume 1: Chapter 13: Miscellaneous Sources Chapter 13.2.1, "Paved Roads", November 2006.

$$E_{paved} = \left[k \left(\frac{sL}{2} \right)^{0.65} \left(\frac{W}{3} \right)^{1.5} - C \right] \left(1 - \frac{P}{4N} \right)$$

Where:

E = Particulate emission factor (lb/VMT)

k = Particle size multiplier (lb/VMT)

sL = Road surface silt loading (g/m²)

W = Average weight of the vehicles traveling the road (tons)

C = The paved road equation listed in AP-42 contains an emission factor "C." This factor reduces projected emission by taking into account 1980s vehicle fleet exhaust and brake wear and tear. This spreadsheet model deliberately leaves out this factor, because it is based on tests done on freely-flowing vehicles, not "stop" and "go" traffic as in the case with most landfill traffic.

P = Number of "wet" days with at least 0.01 in of precipitation during the averaging period = 120 days AP-42 Table 13.2.1-2

N = Number of days in the averaging period (365 days)

AP-42 Table 13.2.1-1		
Particle Size Multiplier "k"		
(lb/VMT)		
PM	PM10	PM2.5
0.082	0.016	0.0024

11. Pound per day PM emission values are calculated as follows:
PM Emissions lb/day = VMT * EF * (1-%Control)
12. Since much of daily operations, including truck traffic is still unknown at this time, a 125% multiplier was used to conservatively estimate emissions.

Stockpile Transfer PTE Calculations

Operation	Operational Description	Potential Material Usage ⁶	Mean Wind Speed ²	Average Moisture Content ³	PM		PM10		PM2.5			
					Emission Factor ⁴	Emissions ⁵	Emission Factor ⁴	Emissions ⁵	Emission Factor ⁴	Emissions ⁵		
		(tons/year)	(mph)	(%)	(lb/ton)	(ton/yr)	(lb/ton)	(ton/yr)	(lb/ton)	(ton/yr)		
Log transfer	To stockpile/storage location	480000	5	37	3.7E-05	9.0E-03	1.8E-05	4.2E-03	2.7E-06	6.4E-04		
	Vehicle unloading with crane					9.0E-03		4.2E-03		6.4E-04		
Wood chip, bark, sawdust transfer	Material movement from manipulation of piles	613200			3.7E-05	1.1E-02	1.8E-05	5.4E-03	2.7E-06	8.2E-04		
	Truck unloading/loading (if necessary)					1.1E-02		5.4E-03		8.2E-04		
Totals		1093200						4.1E-02		1.9E-02		2.9E-03
PTE Multiplier ⁷ :					125%	0.05		0.02		0.00		

Assumptions / Notes:

Potential Days of Landfill Operation = 365 days
Potential Hours of Operation per Day¹ = 24 hours

1. Daily hours of operation based upon 365 days per year.
2. 2008 and 2009 monthly average wind speed data was obtained from NOAA National Weather Service Forecast Office for the Jackson/London, Kentucky monitoring station at url, <http://www.weather.gov/cimate/index.php?wfo=jkl>. Raw monthly average wind speed was then averaged over a year.
3. Average moisture content taken from the Air Permit Application and Support Document, Table 2-1, prepared by Sargent & Lundy.
4. Pile transfer emission factors derived from:

AP-42, Fifth Edition, *Compilation of Air Pollutant Emission Factor, Volume 1: Stationary Point and Area Sources*. Chapter 13.2.4, "Aggregate Handling and Storage Piles", January 1995, Equation (1)

$$E = k \left(0.0032 \right) \left(\frac{U}{5} \right)^{1.3} \left(\frac{M}{2} \right)^{1.4}$$

Where:
E = Emission factor (lb/ton)
k = Particle size multiplier (dimensionless)
U = Mean wind speed (mph)
M = Material moisture content (%)

Aerodynamic Particle Size Multiplier ⁴		
PM	PM10	PM2.5
< 30 µm	< 10 µm	< 2.5 µm
0.74	0.35	0.053

5. Emissions in tons per year = Emission factor * Potential Material Used / 2000 (lbs/ton)
6. Assumed potential usage for log transfer at 80,000 tons over 60 days as base value, and 70 tons per hour for material throughput for the three other storage pile materials. Scaled up to 365 days.
7. Since much of daily operations, including material transfer is still unknown at this time, a 125% multiplier was used to conservatively estimate emissions.

Average Wind Speed ²	
Date	Average Monthly Speed (mph)
October 2008	3.50
November 2008	4.00
December 2008	6.40
January 2009	5.80
February 2009	6.90
March 2009	5.80
April 2009	6.40
May 2009	4.30
June 2009	3.60
July 2009	3.70
August 2009	3.30
September 2009	2.80
Average	4.7

ecoPower Generation, LLC
ecoPower Generating Facility
Chavies, Kentucky
Wind Erosion PTE Calculations
January 2009

Wind Erosion Calculations for Storage Piles

Stockpiles ¹	Duration ² (days/year)	Acreage	Threshold Friction Velocity ³ u _t [*] (m/s)	Sum of Erosion Potentials ^{4,5}			Emission Factors (g/m2) ^{6,7}									Total Emissions (g/year) ⁵			Total Emissions (ton/year) ^{8,9}			
				ΣPI (g/m2)			PM			PM10			PM2.5			Total Emissions (g/year) ⁵			Total Emissions (ton/year) ^{8,9}			
				u _g /u _t = 0.2	u _g /u _t = 0.6	u _g /u _t = 0.9	u _g /u _t = 0.2	u _g /u _t = 0.6	u _g /u _t = 0.9	u _g /u _t = 0.2	u _g /u _t = 0.6	u _g /u _t = 0.9	u _g /u _t = 0.2	u _g /u _t = 0.6	u _g /u _t = 0.9	PM	PM10	PM2.5	PM	PM10	PM2.5	
Wood Chips	365	0.7	1.02	0	96	645	0	96	645	0	48	323	0	7	48	824,020	412,010	61,802	0.91	0.45	0.07	
Bark		0.4																				
Saw Dust		0.6																				
2																PTE Multiplier ⁹ :			125%	1.14	0.57	0.09

- Notes:
- (1) Calculations assumed conical shaped. Height of the wood chip, bark and saw dust piles were assumed to be 50 feet in height per Table 4-6 of the Air Permit Application Technical Support Document.
- (2) Duration are the days of operation per year which is assumed to be equal to the number of days or frequency of disturbances that occur for the exposed stockpiles listed.
- (3) For Daily Cover Piles the Threshold Friction Velocity was assumed to be equal to the "Overburden" value, 1.02 m/s, found in EPA AP-42 Table 13.2.5-2. This seemed to be the most representative of the material types listed in the Table.
- (4) Calculations to the Determine the Erosion Potentials and the corresponding totals from EPA AP-42 Section 13.2.5 (see spreadsheet calculations in Wind-Erosion Potential worksheet).
- The calculations are based on monthly Fastest-Mile Wind data for October 2008 through September 2009 from the NOAA National Weather Service Forecast Office. The station chosen for wind data was Jackson, Kentucky.
- (5) Stockpiles were assumed to have conical shapes for the entire surface area of the piles and divided into exposed subareas according to EPA AP-42 Table 13.2.5-3 and Figure 13.2.5-2 for Pile A. The subarea designations and surface areas are summarize below.

Size of the summation of each of the subareas within the total pile area of 2 acres. Since close in area per Figure 3 accounted total summation.				
Subareas (u_g/u_t)	Percentage of pile area	Area (ac.)	Area (ft2)	Area (m2)
$u_g/u_t = 0.2$	40.00	0.66	28,749.60	2,670.93
$u_g/u_t = 0.6$	48.00	0.79	34,499.52	3,205.11
$u_g/u_t = 0.9$	12.00	0.20	8,624.88	801.28

- (6) Emissions factors were calculated using Equation (2), $EF = (k)(\Sigma Pi)$, found in EPA AP-42 Section 13.2.5, where k is the particle size multiplier and ΣPi is the sum of the erosion potentials.
- (7) The breakdown of particle sizes for the emission factor multiplier was taken from EPA AP-42 Section 13.2.5.3 and is summarized below.

Aerodynamic Particle Size Multiplier (k)		
PM	PM10	PM2.5
< 30 mm	< 10 mm	< 2.5 mm
1.00	0.50	0.075

Erosion Potential Calculations for Wind Erosion Calculations (Calculations Based on National Weather Service Data for 2008 and 2009)

Exposed Soil Site Activity	Threshold Friction Velocity ¹ u_{*c} (m/s)
Stockpiles (2 acres of piles total) (pile height 50 ft)	1.02

National Weather Service Data		Fastest Mile correction to 10 m, u_{10} ⁴ (mph)		Erosion Potential Calculations for Daily Storage Piles ⁵				
Date	Fastest Mile, u_{17} ³ (mph)	u_{10} ⁴ (mph)	u_{10} ⁴ (m/s)	Friction Velocity, u^* (m/s) ⁶	Threshold Friction Velocity, u_{*c} (m/s) ¹	Difference between Friction Velocity and Threshold Friction Velocity, $u^* - u_{*c}$ (m/s)	Erosion Potential, P (g/m ²) ⁷	
October 2008	26	27.44	12.27	$u_{10}/0.2 = 0.74$	$u_{*c}/0.2 = 0.9$	$u_{10}/0.2 - u_{*c}/0.2 = 0.8$	$u_{10}/0.2 = 0.74$	
27	26	27.44	12.27	0.25	1.10	-0.77	0.00	
National Weather Service Data		Fastest Mile correction to 10 m, u_{10} ⁴ (mph)		Erosion Potential Calculations for Daily Storage Piles ⁵				
Date	Fastest Mile, u_{17} ³ (mph)	u_{10} ⁴ (mph)	u_{10} ⁴ (m/s)	Friction Velocity, u^* (m/s) ⁶	Threshold Friction Velocity, u_{*c} (m/s) ¹	Difference between Friction Velocity and Threshold Friction Velocity, $u^* - u_{*c}$ (m/s)	Erosion Potential, P (g/m ²) ⁷	
November 2008	37	39.05	17.46	0.35	1.05	-0.67	0.00	
24	37	39.05	17.46	0.35	1.57	-1.22	0.00	
National Weather Service Data		Fastest Mile correction to 10 m, u_{10} ⁴ (mph)		Erosion Potential Calculations for Daily Storage Piles ⁵				
Date	Fastest Mile, u_{17} ³ (mph)	u_{10} ⁴ (mph)	u_{10} ⁴ (m/s)	Friction Velocity, u^* (m/s) ⁶	Threshold Friction Velocity, u_{*c} (m/s) ¹	Difference between Friction Velocity and Threshold Friction Velocity, $u^* - u_{*c}$ (m/s)	Erosion Potential, P (g/m ²) ⁷	
December 2008	48	50.66	22.65	0.45	1.36	-0.91	0.00	
14	48	50.66	22.65	0.45	2.04	-1.59	0.00	
National Weather Service Data		Fastest Mile correction to 10 m, u_{10} ⁴ (mph)		Erosion Potential Calculations for Daily Storage Piles ⁵				
Date	Fastest Mile, u_{17} ³ (mph)	u_{10} ⁴ (mph)	u_{10} ⁴ (m/s)	Friction Velocity, u^* (m/s) ⁶	Threshold Friction Velocity, u_{*c} (m/s) ¹	Difference between Friction Velocity and Threshold Friction Velocity, $u^* - u_{*c}$ (m/s)	Erosion Potential, P (g/m ²) ⁷	
January 2009	41	43.28	19.35	0.39	1.16	-0.77	0.00	
8	41	43.28	19.35	0.39	1.74	-1.35	0.00	
National Weather Service Data		Fastest Mile correction to 10 m, u_{10} ⁴ (mph)		Erosion Potential Calculations for Daily Storage Piles ⁵				
Date	Fastest Mile, u_{17} ³ (mph)	u_{10} ⁴ (mph)	u_{10} ⁴ (m/s)	Friction Velocity, u^* (m/s) ⁶	Threshold Friction Velocity, u_{*c} (m/s) ¹	Difference between Friction Velocity and Threshold Friction Velocity, $u^* - u_{*c}$ (m/s)	Erosion Potential, P (g/m ²) ⁷	
February 2009	59	62.26	27.84	0.56	1.87	-1.31	0.00	
11	59	62.26	27.84	0.56	2.57	-2.01	0.00	
National Weather Service Data		Fastest Mile correction to 10 m, u_{10} ⁴ (mph)		Erosion Potential Calculations for Daily Storage Piles ⁵				
Date	Fastest Mile, u_{17} ³ (mph)	u_{10} ⁴ (mph)	u_{10} ⁴ (m/s)	Friction Velocity, u^* (m/s) ⁶	Threshold Friction Velocity, u_{*c} (m/s) ¹	Difference between Friction Velocity and Threshold Friction Velocity, $u^* - u_{*c}$ (m/s)	Erosion Potential, P (g/m ²) ⁷	
March 2009	44	46.44	20.76	0.42	1.25	-0.83	0.00	
26	44	46.44	20.76	0.42	1.87	-1.45	0.00	
National Weather Service Data		Fastest Mile correction to 10 m, u_{10} ⁴ (mph)		Erosion Potential Calculations for Daily Storage Piles ⁵				
Date	Fastest Mile, u_{17} ³ (mph)	u_{10} ⁴ (mph)	u_{10} ⁴ (m/s)	Friction Velocity, u^* (m/s) ⁶	Threshold Friction Velocity, u_{*c} (m/s) ¹	Difference between Friction Velocity and Threshold Friction Velocity, $u^* - u_{*c}$ (m/s)	Erosion Potential, P (g/m ²) ⁷	
April 2009	41	43.28	19.35	0.39	1.16	-0.77	0.00	
5	41	43.28	19.35	0.39	1.74	-1.35	0.00	
National Weather Service Data		Fastest Mile correction to 10 m, u_{10} ⁴ (mph)		Erosion Potential Calculations for Daily Storage Piles ⁵				
Date	Fastest Mile, u_{17} ³ (mph)	u_{10} ⁴ (mph)	u_{10} ⁴ (m/s)	Friction Velocity, u^* (m/s) ⁶	Threshold Friction Velocity, u_{*c} (m/s) ¹	Difference between Friction Velocity and Threshold Friction Velocity, $u^* - u_{*c}$ (m/s)	Erosion Potential, P (g/m ²) ⁷	
May 2009	31	32.72	14.63	0.29	0.85	-0.56	0.00	
6	31	32.72	14.63	0.29	1.35	-1.06	0.00	

(Calculations Based on National Weather Service Data for 2008 and 2009)

Exposed Soil Site Activity	Threshold Friction Velocity ¹ u^*_c (m/s)
Stockpiles (2 acres of piles total) (Pile height 50 ft)	1.02

National Weather Service Data		Fastest Mile correction to 10 m, u_{10} ^a (mph)	Erosion Potential Calculations for Daily Storage Piles ^b									
Date	Fastest Mile, u_2 ^c (mph)		u_2 ^c (m/s)	Friction Velocity, u^* (m/s) ^d		Threshold Friction Velocity		Erosion Potential, P (g/m) ²				
June 2009				$u_{2,0.2}$	$u_{2,0.8}$	$u_{2,0.9}$	$u_{2,0.2}$	$u_{2,0.8}$	$u_{2,0.9}$	$u_{2,0.2}$	$u_{2,0.8}$	$u_{2,0.9}$
15	39	41.16	18.40	0.37	1.10	1.66	-0.65	0.08	0.64	0.00	2.51	28.36
National Weather Service Data		Fastest Mile correction to 10 m, u_{10} ^a (mph)	Erosion Potential Calculations for Daily Storage Piles ^b									
Date	Fastest Mile, u_2 ^c (mph)		u_{10} ^c (m/s)	Friction Velocity, u^* (m/s) ^d		Threshold Friction Velocity		Erosion Potential, P (g/m) ²				
July 2009				$u_{10,0.2}$	$u_{10,0.8}$	$u_{10,0.9}$	$u_{10,0.2}$	$u_{10,0.8}$	$u_{10,0.9}$	$u_{10,0.2}$	$u_{10,0.8}$	$u_{10,0.9}$
25	45	47.50	21.23	0.42	1.27	1.91	-0.60	0.25	0.89	0.00	10.09	68.32
National Weather Service Data		Fastest Mile correction to 10 m, u_{10} ^a (mph)	Erosion Potential Calculations for Daily Storage Piles ^b									
Date	Fastest Mile, u_2 ^c (mph)		u_{10} ^c (m/s)	Friction Velocity, u^* (m/s) ^d		Threshold Friction Velocity		Erosion Potential, P (g/m) ²				
August 2009				$u_{10,0.2}$	$u_{10,0.8}$	$u_{10,0.9}$	$u_{10,0.2}$	$u_{10,0.8}$	$u_{10,0.9}$	$u_{10,0.2}$	$u_{10,0.8}$	$u_{10,0.9}$
12	44	46.44	20.76	0.42	1.25	1.87	-0.60	0.23	0.85	0.00	8.60	62.95
National Weather Service Data		Fastest Mile correction to 10 m, u_{10} ^a (mph)	Erosion Potential Calculations for Daily Storage Piles ^b									
Date	Fastest Mile, u_2 ^c (mph)		u_{10} ^c (m/s)	Friction Velocity, u^* (m/s) ^d		Threshold Friction Velocity		Erosion Potential, P (g/m) ²				
September 2009				$u_{10,0.2}$	$u_{10,0.8}$	$u_{10,0.9}$	$u_{10,0.2}$	$u_{10,0.8}$	$u_{10,0.9}$	$u_{10,0.2}$	$u_{10,0.8}$	$u_{10,0.9}$
28	33	34.63	15.57	0.31	0.93	1.40	-0.71	-0.69	0.36	0.00	0.00	17.97
National Weather Service Data		Fastest Mile correction to 10 m, u_{10} ^a (mph)	Erosion Potential Calculations for Daily Storage Piles ^b									
Date	Fastest Mile, u_2 ^c (mph)		u_{10} ^c (m/s)	Friction Velocity, u^* (m/s) ^d		Threshold Friction Velocity		Erosion Potential, P (g/m) ²				
October 2009				$u_{10,0.2}$	$u_{10,0.8}$	$u_{10,0.9}$	$u_{10,0.2}$	$u_{10,0.8}$	$u_{10,0.9}$	$u_{10,0.2}$	$u_{10,0.8}$	$u_{10,0.9}$
1	33	34.63	15.57	0.31	0.93	1.40	-0.71	-0.69	0.36	0.00	0.00	17.97

Sum of Erosion Potentials for all twelve months (g/m²/year)

0.0000

95.80

646.19

Notes:

- (1) For stipules the Threshold Friction Velocity was assumed to be equal to the "Overturning" value, 1.02 m/s, found in EPA AP-42 Table 13.2-5.2.
(2) Monthly Fastest Mile data for 2008 and 2009 was obtained from data downloaded from NOAA National Weather Service Forecast Office for the Jackson/London, Kentucky metropolitan station at <http://www.weather.gov/jackson/obs/mile/hwy14>. This data set represents the instantaneous data recorded for monthly in from October 2008 through September 2009.
(3) Fastest Mile correction for anemometer elevation of 5,705 meters used to collect NCDC data to 10 meters according to EPA AP-42 Section 13.2.5.
$$V_{w,10} = (V_w)^{1.01} (10/5505)^{0.666}$$

(4) Daily stockpiles were assumed to have conical shapes for the entire surface area (assumed to be three piles at 2 acres of surface area for total area) of the piles and divided into exposed subareas according to EPA AP-42 Table 13.2.5-3 and Figure 13.2.5-2 for Pile A. The subarea designations are summarized below.

Subgroups	Percentage of
-----------	---------------

2007

Time (h)	Temperature (°C)	Conversion (%)
0	100	0
1	100	10
2	100	20
3	100	30
4	100	40
5	100	50
6	100	60
7	100	70
8	100	80
9	100	90
10	100	100

 $1/\alpha_i = 0.6$ 48.00(5) Friction velocity u^* is calculated from EPA AP-42 Section 13.2.5 using the following equations:

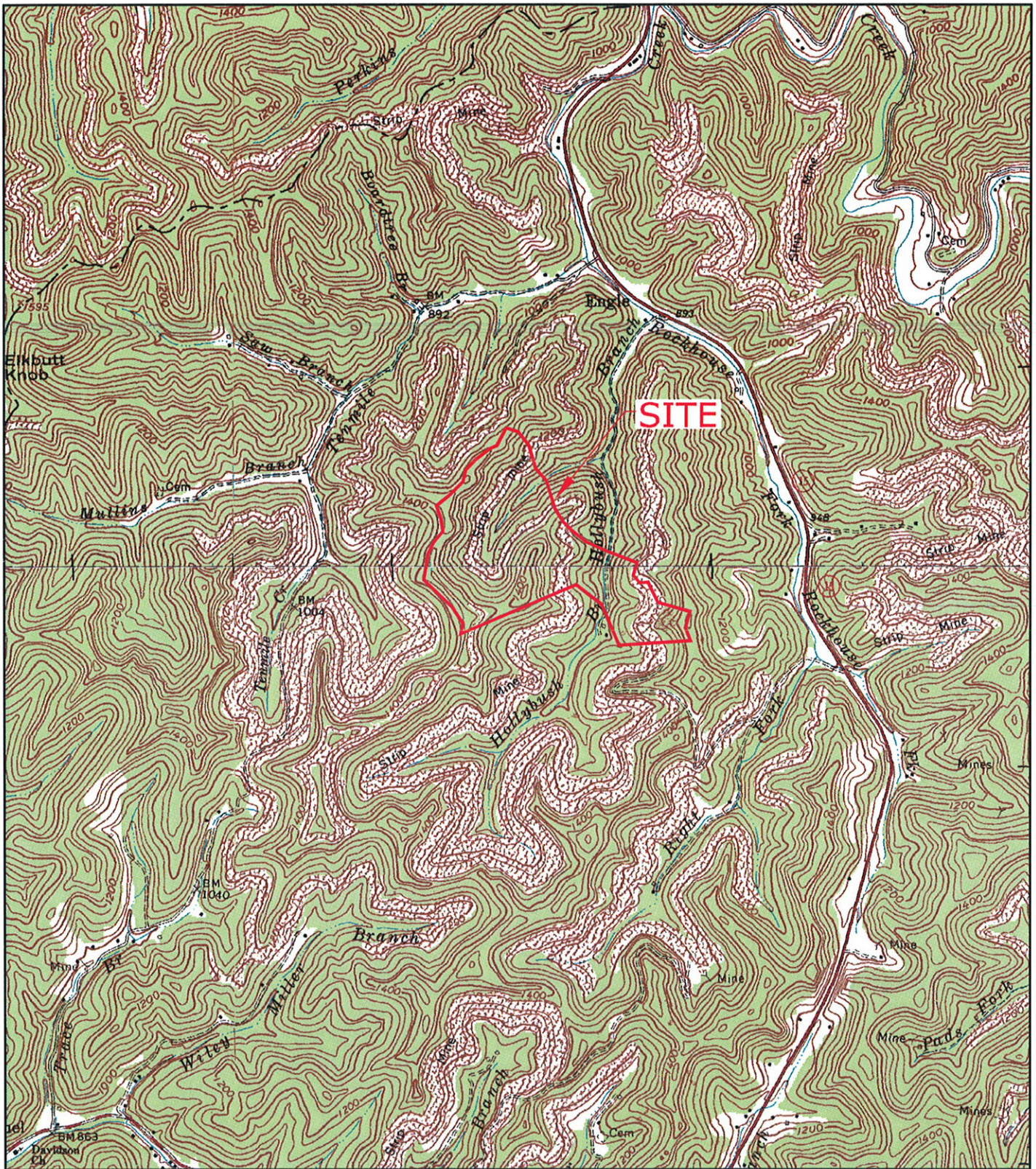
For each $v^* = 0.10 \times (v_1^*/v_2 \times v_3^*)$

(6) Erosion potential is calculated from EPA A-42 Section 13.2.5 using the following logical statement and equation:

if $(u^* - u^*)^2 > 0$ then $P = 58(u^* - u^*)^2 + 25(u^* - u^*)^2$ else $P = 0$

This [initial] statement is based on the fact that if the Friction Velocity u^* is less than the Threshold Friction Velocity u^*_{crit} , then no emissions will occur.

FIGURES



1405 Mercer Road
Lexington, KY 40511
1860 B Williamson Court
Louisville, KY 40223
www.smithmanage.com



QUADRANGLE INFORMATION
NORTHERN QUAD:
HADDIX, KY - 1972
SOUTHERN QUAD:
KRYPTON - 1972

SITE LOCATION MAP

ECOPOWER GENERATION, L.L.C.
PERRY COUNTY, KENTUCKY

SCALE: 1"=2000'
DATE: 11/4/09
PREPARED BY: KAF
CHECKED BY: JTK

JOB NO.
2009-47528

FIGURE
1

For reasons of Homeland Security, this document is not available on-line:

Case Number: 2009-00530

*Description of Document: Exhibit K, Air Permit, Figure 2 , Site Location –
Aerial, 8 1/2" x 11"*

Persons requiring access to this document may contact the Public Service Commission in person or in writing at:

Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602
Attn: GIS Coordinator
Phone (502) 564-3940

Written requests must include a signature, name, title of organization (if applicable), mailing address, phone number and optional e-mail address and the following statement: *I understand that since September 11, 2001, location data of critical utility structures is considered sensitive information for security reasons. I will not publish this map or any part of it on the World Wide Web. I will not redistribute this map to others, but shall refer requests by others for such information to the Kentucky Public Service Commission.*

Maps will be sent as pdf files by e-mail or on CD at no cost to the party. If printed "oversized" maps are requested, there will be a charge of \$8 per sheet.

Maps will be available for viewing at the Public Service Commission and at any public hearing.

For reasons of Homeland Security, this document is not available on-line:

Case Number: 2009-00530

Description of Document: Exhibit K, Air Permit, Figure 3, Detailed Site Layout, 8 1/2" x 11"

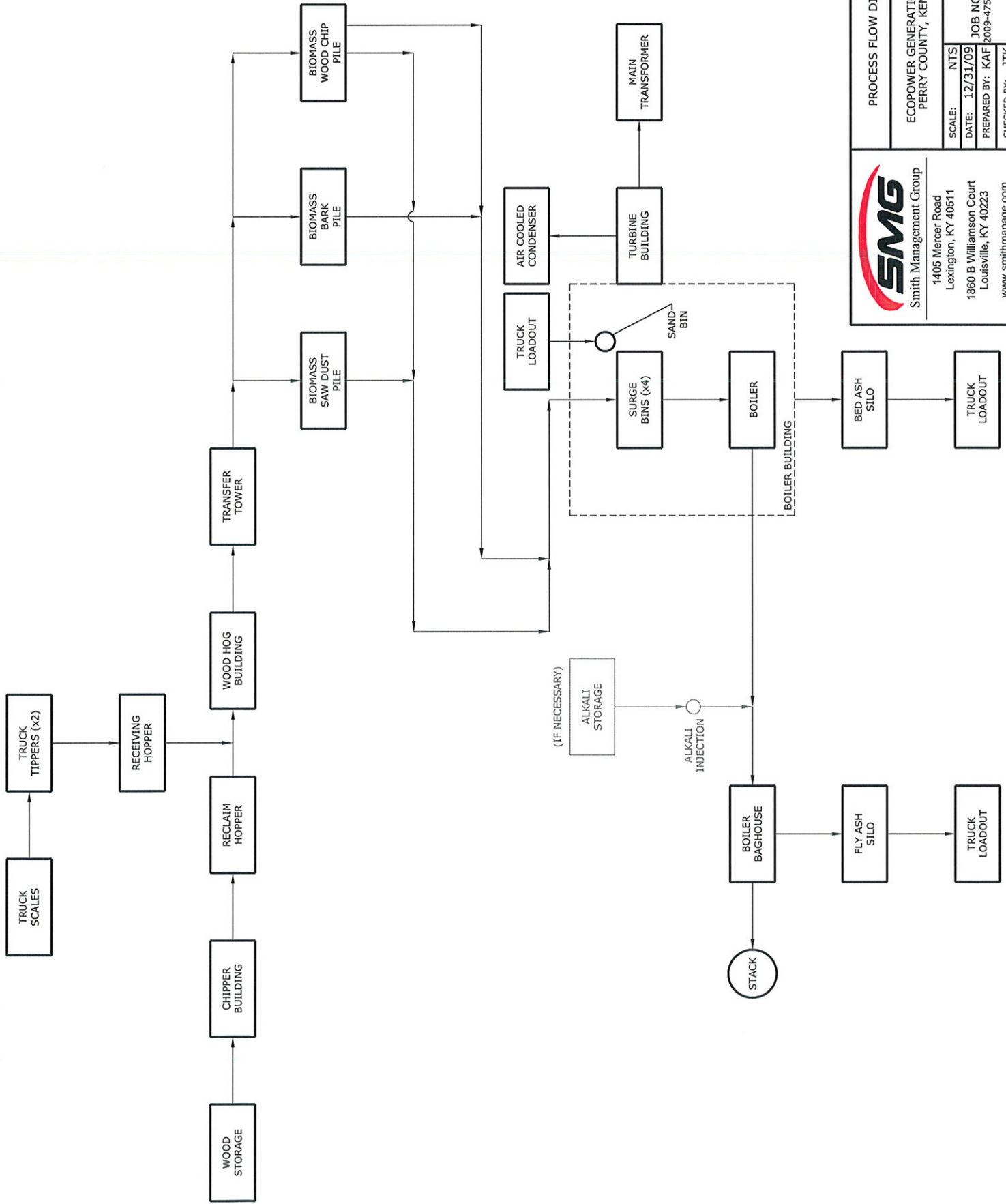
Persons requiring access to this document may contact the Public Service Commission in person or in writing at:

Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602
Attn: GIS Coordinator
Phone (502) 564-3940

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Maps will be sent as pdf files by e-mail or on CD at no cost to the party. If printed "oversized" maps are requested, there will be a charge of \$8 per sheet.

Maps will be available for viewing at the Public Service Commission and at any public hearing.



PROCESS FLOW DIAGRAM

ECOPOWER GENERATION, L.L.C.
PERRY COUNTY, KENTUCKY

SCALE: NTS
DATE: 12/31/09
JOB NO. 2009-4752B
PREPARED BY: KAF
CHECKED BY: JTK

FIGURE
4



1405 Mercer Road
Lexington, KY 40511
1860 B Williamson Court
Louisville, KY 40223
www.smithmanage.com

FIGURE 5
SITE ARRANGEMENT

For reasons of Homeland Security, this document is not available on-line:

Case Number: 2009-00530

*Description of Document: Exhibit K, Air Permit, Figure 5, Site Arrangement,
42" x 30"*

Persons requiring access to this document may contact the Public Service Commission in person or in writing at:

Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602
Attn: GIS Coordinator
Phone (502) 564-3940

Written requests must include a signature, name, title of organization (if applicable), mailing address, phone number and optional e-mail address and the following statement: *I understand that since September 11, 2001, location data of critical utility structures is considered sensitive information for security reasons. I will not publish this map or any part of it on the World Wide Web. I will not redistribute this map to others, but shall refer requests by others for such information to the Kentucky Public Service Commission.*

Maps will be sent as pdf files by e-mail or on CD at no cost to the party. If printed "oversized" maps are requested, there will be a charge of \$8 per sheet.

Maps will be available for viewing at the Public Service Commission and at any public hearing.

FIGURE 6
SITE LOCATION PROPERTY DEVELOPMENT
BIOMASS HANDLING SYSTEM

For reasons of Homeland Security, this document is not available on-line:

Case Number: 2009-00530

*Description of Document: Exhibit K, Air Permit, Figure 6, Site Location
Property Development, 42" x 30"*

Persons requiring access to this document may contact the Public Service Commission in person or in writing at:

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211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602
Attn: GIS Coordinator
Phone (502) 564-3940

Written requests must include a signature, name, title of organization (if applicable), mailing address, phone number and optional e-mail address and the following statement: *I understand that since September 11, 2001, location data of critical utility structures is considered sensitive information for security reasons. I will not publish this map or any part of it on the World Wide Web. I will not redistribute this map to others, but shall refer requests by others for such information to the Kentucky Public Service Commission.*

Maps will be sent as pdf files by e-mail or on CD at no cost to the party. If printed "oversized" maps are requested, there will be a charge of \$8 per sheet.

Maps will be available for viewing at the Public Service Commission and at any public hearing.

FIGURE 7
TRANSMISSION LINE ROUTING PROPERTY DEVELOPMENT
BIOMASS HANDLING SYSTEM

For reasons of Homeland Security, this document is not available on-line:

Case Number: 2009-00530

*Description of Document: Exhibit K, Air Permit, Figure 7, Transmission Line
Property Development, 42" x 30"*

Persons requiring access to this document may contact the Public Service Commission in person or in writing at:

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211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602
Attn: GIS Coordinator
Phone (502) 564-3940

Written requests must include a signature, name, title of organization (if applicable), mailing address, phone number and optional e-mail address and the following statement: *I understand that since September 11, 2001, location data of critical utility structures is considered sensitive information for security reasons. I will not publish this map or any part of it on the World Wide Web. I will not redistribute this map to others, but shall refer requests by others for such information to the Kentucky Public Service Commission.*

Maps will be sent as pdf files by e-mail or on CD at no cost to the party. If printed "oversized" maps are requested, there will be a charge of \$8 per sheet.

Maps will be available for viewing at the Public Service Commission and at any public hearing.

FIGURE 8
PLANT ELEVATION

For reasons of Homeland Security, this document is not available on-line:

Case Number: 2009-00530

Description of Document: Exhibit K, Air Permit, Figure 8, Plant Elevation, 42" x 30"

Persons requiring access to this document may contact the Public Service Commission in person or in writing at:

Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602
Attn: GIS Coordinator
Phone (502) 564-3940

Written requests must include a signature, name, title of organization (if applicable), mailing address, phone number and optional e-mail address and the following statement: *I understand that since September 11, 2001, location data of critical utility structures is considered sensitive information for security reasons. I will not publish this map or any part of it on the World Wide Web. I will not redistribute this map to others, but shall refer requests by others for such information to the Kentucky Public Service Commission.*

Maps will be sent as pdf files by e-mail or on CD at no cost to the party. If printed "oversized" maps are requested, there will be a charge of \$8 per sheet.

Maps will be available for viewing at the Public Service Commission and at any public hearing.

ATTACHMENT 1

CERTIFICATE OF EXISTENCE

Commonwealth of Kentucky
Trey Grayson, Secretary of State

10/30/2009

Division of Corporations
Business Filings
P. O. Box 718
Frankfort, KY 40602
(502) 564-3490
<http://www.sos.ky.gov>

Certificate of Existence

Authentication Number: 87680

Visit <http://apps.sos.ky.gov/business/obdb/certvalidate.aspx> to authenticate this certificate.

I, Trey Grayson, Secretary of State of the Commonwealth of Kentucky, do hereby certify that according to the records in the Office of the Secretary of State,

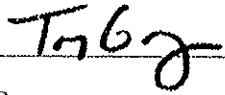
ECOPOWER GENERATION, LLC

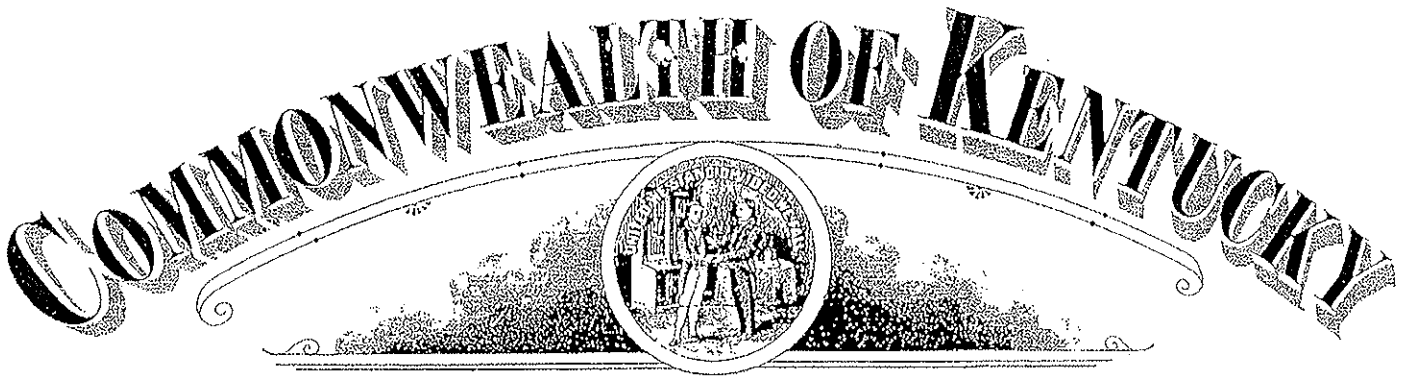
is a limited liability company duly organized and existing under KRS Chapter 275, whose date of organization is May 18, 2009.

I further certify that all fees and penalties owed to the Secretary of State have been paid; that articles of dissolution have not been filed; and that the most recent annual report required by KRS 275.190 has been delivered to the Secretary of State.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal at Frankfort, Kentucky, this 30th day of October, 2009.




Trey Grayson
Secretary of State
Commonwealth of Kentucky
87680/0730121



Trey Grayson
Secretary of State

Certificate

I, Trey Grayson, Secretary of State for the Commonwealth of Kentucky, do hereby certify that the foregoing writing has been carefully compared by me with the original thereof, now in my official custody as Secretary of State and remaining on file in my office, and found to be a true and correct copy of

ARTICLES OF ORGANIZATION OF

ECOPOWER GENERATION, LLC FILED MAY 18, 2009

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal at Frankfort, Kentucky, this 30th day of October, 2009.



T. Grayson
Trey Grayson
Secretary of State
Commonwealth of Kentucky
mmullins/0730121 - Certificate ID: 87683

0730121.06

mstratton
LAOO

**ARTICLES OF ORGANIZATION
OF
ECOPOWER GENERATION, LLC**

Trey Grayson
Secretary of State
Received and Filed
05/18/2009 2:46:45 PM
Fee Receipt: \$40.00

The undersigned, serving as the organizer, pursuant to KRS Chapter 275, hereby executes and files the following Articles of Organization for the purpose of forming a Kentucky limited liability company under the Kentucky Limited Liability Company Act:

ARTICLE I

NAME

The name of the limited liability company shall be EcoPower Generation, LLC.

ARTICLE II

INITIAL REGISTERED OFFICE AND INITIAL REGISTERED AGENT

The initial registered office of the company shall be located at 1256 Manchester Road, Lexington, Kentucky 40504-1129. The name of the company's initial registered agent at that office shall be Richard A. Sturgill.

ARTICLE III

INITIAL PRINCIPAL OFFICE

The mailing address of the initial principal office of the company shall be 1256 Manchester Road, Lexington, Kentucky 40504-1129.

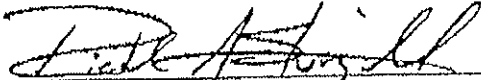
ARTICLE IV

STATEMENT OF MANAGEMENT

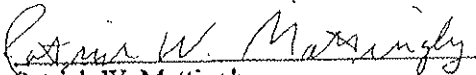
The affairs of the company are to be managed by a manager or managers, subject to the provisions of the company's Operating Agreement.

The undersigned hereby certifies that the foregoing constitutes the Articles of Organization of EcoPower Generation, LLC.

Executed by the undersigned this 14th day of May, 2009.


Richard A. Sturgill, Organizer

THIS INSTRUMENT PREPARED BY:


Patrick W. Mattingly
WYATT, TARRANT & COMBS, LLP
PNC Plaza
500 West Jefferson Street
Suite 2800
Louisville, Kentucky 40202-2898
(502) 589-5235

ATTACHMENT 2

OWNERS WITH 5% INTEREST OR MORE

Owners with 5% Interest or More

Burgess Carey

John E. Foley

Mary Bartrum Sturgill Hartley Irrevocable Trust

Mary S. Hartley

Roy M. Palk

Richard A. Sturgill

Richard A. Sturgill Irrevocable Trust

ATTACHMENT 3

**ecoPOWER GENERATING FACILITY: AIR PERMIT APPLICATION
TECHNICAL SUPPORT DOCUMENT**

**ecoPower Generating Facility
Air Permit Application Technical Support Document**

Prepared for ecoPower Generation, LLC.

**January 5, 2010
Project No. 12616-001**



**Prepared By:
Sargent & Lundy LLC**

55 East Monroe Street
Chicago, IL 60603-5780 USA

Air Permit Application Technical Support Document

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1. FACILITY AND PROJECT OVERVIEW

ecoPower Generation, LLC (ecoPower) proposes to construct a new biomass-fired electric power generating facility. The new facility, to be known as the ecoPower Generating Facility (eGF) will be located approximately ten miles north-northwest of Hazard, Kentucky. The facility will be located in an area of reclaimed coal mines. The area is zoned for industrial and commercial activities; however, there are no existing industrial or commercial activities on the property and no existing air emission sources. Therefore, eGF will be classified as a new source of air emissions.

Upon completion, eGF will include the following:

- one nominal 50-MW(gross output) fluidized bed boiler and steam turbine generator;
- one propane-fired auxiliary boiler;
- one diesel-fired emergency generator;
- one diesel-fired fire water pump;
- an air cooled condenser; and
- material handling systems.

Although the proposed new facility has the potential to emit at least one new source review (NSR) regulated pollutant in amounts above the major stationary source thresholds defined in 401 KAR 51:001(120)(a) and 40 CFR 52.21(b)(1), emission controls will effectively limit emissions from the facility to levels below the major stationary source thresholds.¹ Therefore, the facility will be classified as a “synthetic minor” emissions source.

This engineering report provides the basis for estimating emissions from the proposed facility, and includes technical information needed to prepare the air permit application. Emission data included in this report were obtained from publicly available sources, including the U.S. Environmental Protection Agency’s (EPA’s) Technology Transfer Network, Clearinghouse for Inventories & Emission Factors (CHIEF) and stack test data published by equipment vendors, where available. Preliminary design parameters for the main boiler

and air pollution control systems were developed by Sargent & Lundy LLC, using proprietary engineering design models. Boiler performance calculations were prepared using project-specific fuel specifications to model boiler performance, steam flow rates and temperatures, flue gas flow rates and temperatures, auxiliary power requirements, heat input, and gross- and net-output. The technical feasibility and effectiveness of potentially available air pollution control systems were evaluated based on a comprehensive review of published technical literature, as well as our in-house experience with the design of biomass-fired boilers and post-combustion control technologies.

Last page of Section 1.

¹ As used here, the term potential-to-emit refers to emissions from the facility calculated without taking into consideration control technologies and operational measures designed to limit emissions.

2. PROJECT DESCRIPTION

2.1 SITE LOCATION

The proposed facility will be located approximately 10 miles north-northwest of Hazard, Kentucky near the town of Engle. The station will be located in Perry County, Kentucky, on approximately 125 acres of unimproved land. The site location is within an area of reclaimed coal mines. The area is zoned for industrial and commercial activities, and is accessible via U.S. Highway 15. There are no existing industrial activities on the property and no existing emission sources; therefore, eGF will be classified as a new source of air emissions.

Perry County, and all counties adjacent to the proposed facility have been designated as attainment areas for all existing national ambient air quality standards (NAAQS), including the recently promulgated 8-hour ozone (O₃) and fine particulate matter (PM_{2.5}) NAAQS.

2.2 GENERAL APPLICANT INFORMATION

The individual most familiar with the proposed project and the permit application is identified below.

Project Owner Contact:

Mr. Gary Crawford, CEO
ecoPower Generation, LLC
1256 Manchester Street
Lexington, KY 0504

2.3 STANDARD INDUSTRIAL CLASSIFICATION (SIC)

The United States government has devised a method for grouping all business activities according to their participation in the national commerce system. The system is based on classifying activities into "major groups" defined by the general character of a business operation. For example, electric, gas, and sanitary services, which include power production, are defined as a major group. Each major group is given a unique two digit number for identification. Power production activities have been assigned a major group code "49." To provide more detailed identification of a particular operation, an additional two-digit code is appended to the major group code. In the case of electric power generating facilities, the two digit code is "11" in order to define the type of production involved. Thus, eGF is classified under the SIC system as:

- Major Group 49 – Electric, Gas, and Sanitary Services
- Electric Services – 4911

2.4 FACILITY EQUIPMENT

The proposed eGF will be a baseload steam electric generating facility. Major components of the proposed facility include the boiler and steam turbine generator. In addition to the boiler, other potential sources of emissions at eGF include the propane-fired auxiliary boiler, diesel-fired emergency generator, diesel-fired fire-water pump, and material handling equipment.

2.4.1 Fuel Characteristics

The ecoPower main boiler is being designed to fire biomass exclusively. The fuel portfolio for the facility will be a mixture of wood chips, bark chips, sawdust, and chipwood from a variety of hardwood species produced during logging and lumber operations. Designing the boiler to fire a blend of wood-based fuels is necessitated by the need to ensure an economical long-term supply of fuel to the facility.

Samples of several potential biomass fuels were analyzed at the University of Kentucky's Center for Applied Energy Research (CAER). Fuel analyses have been provided to the Kentucky Department of Environmental Protection Division of Air Quality (DAQ) under separate cover. Fuel characteristics for each of the major fuels, including carbon, moisture, ash, nitrogen and sulfur concentrations are summarized in Table 2-1. The design fuel composition, shown in Table 2-2, was developed based on an anticipated mixture consisting of approximately 30% wood chips, 20% bark, 20% chipwood, and 30% coarse saw dust. Although the actual fuel mixture will vary somewhat from the design fuel mixture, variability will not be so great as to impact boiler operation or boiler emissions.

Table 2-1 — Fuel Characteristics⁽¹⁾

Fuel	Sawdust	Chips	Bark	Chipwood ⁽²⁾
% in Design Fuel (weight)	30%	30.0%	20%	20%
Proximate Analysis				
Ash %	0.40	0.95	6.09	0.95
Moisture %	35.48	38.69	33.61	38.69
Volatile Matter %	56.60	53.80	52.33	53.80
Fixed Carbon %	7.34	6.57	7.97	6.57
Ultimate Analysis				
Ash %	0.40	0.95	6.09	0.95
Moisture %	35.48	38.69	33.61	38.69
Carbon %	31.85	30.28	32.66	30.28
Hydrogen %	3.82	3.59	3.60	3.59
Nitrogen %	0.10	0.07	0.26	0.07
Sulfur %	0.03	0.01	0.03	0.01
Oxygen %	28.34	26.41	23.76	26.41
HHV, Btu/lb	5204	4945	5374	4945

(1) Fuel samples, analyzed by University of Kentucky's CAER, have been provided to DAQ under separate cover.

(2) It is assumed that chipwood will exhibit identical fuel characteristics as wood chips.

Table 2-2 — Design Fuel Characteristics²

	Design Fuel
Proximate Analysis	
Ash %	1.81
Moisture %	36.72
Volatile Matter %	54.35
Fixed Carbon %	7.08
Ultimate Analysis	
Ash %	1.81
Moisture %	36.72
Carbon %	31.22
Hydrogen %	3.66
Nitrogen %	0.12
Sulfur %	0.02
Oxygen %	26.46
HHV, Btu/lb	5,108

In addition to performing proximate and ultimate analyses of potential biomass fuels, CAER analyzed fuel samples for chlorine and trace metals. A summary of the chlorine and trace metal concentrations detected in the biomass fuel samples is provided in Table 2-3. Biomass fuels proposed for the ecoPower facility had an average chlorine concentration of 66.0 ppm, with a standard deviation of 30.8 ppm. Based on these analyses, the chlorine content of biomass fired at eGF is expected to remain below 127.6 ppm (the average plus two standard deviation).

² Fuel characteristics included in this table represent typical long-term as received values (wet basis), based on laboratory analysis of available fuels and expected fuel mix. Characteristics summarized in this table are not intended to limit the heating value, moisture content, or ash content of fuels utilized at eGF as short-term fuel characteristics may vary from the values summarized above.

Table 2-3 — Biomass Fuel Chlorine and Trace Metal Concentrations⁽¹⁾

Sample ID	Chlorine ppm	Vanadium ppm	Chromium ppm	Manganese %	Cobalt ppm	Nickel ppm	Copper ppm
POP dust	45	15	226	0.22	2	26	226
POP chips	43	14	46	0.21	4.5	28	233
POP bark	36	28	21	0.12	5	8	70
HM dust	113	5	25	0.55	<1	46	159
HM chips	85	8	61	0.55	3	46	168
HM bark	60	6	4	0.55	<1	19	35
HIC dust	47	<1	10	1	2	526	170
HIC chips	54	<1	9	0.88	3	402	181
HIC bark	140	12	13	0.91	17	14	56
ROAK dust	63	35	59	0.6	12	70	275
ROAK chips	35	14	34	0.58	11	58	191
ROAK bark	50	<1	1.42	0.41	<1	15	19
WOAK dust	104	6	6	0.1	<1	15	280
WOAK chips	55	8	9	0.2	<1	30	182
Woak bark	60	6	9	0.46	1	4	39
Sample ID	Zinc ppm	Arsenic ppm	Molybdenum ppm	Cadmium ppm	Antimony ppm	Barium ppm	Lead ppm
POP dust	215	57	<1	1	<1	0.45	32
POP chips	354	46.9	<1	6	<1	0.27	37
POP bark	328	24	<1	1	<1	0.19	15
HM dust	439	16	<1	6	<1	0.1	26
HM chips	360	16	<1	6	<1	0.2	18
HM bark	169	18	<1	0.9	<1	0.27	4
HIC dust	2091	22	<1	10	<1	0.45	17
HIC chips	2315	14	<1	11	<1	0.43	12
HIC bark	1341	14	<1	10	<1	0.67	9
ROAK dust	498	15	<1	4	<1	0.18	24
ROAK chips	158	16	<1	7	<1	0.1	5
ROAK bark	14	7	<1	1	<1	0.04	5
WOAK dust	181	11	<1	1	<1	0.21	16
WOAK chips	178	10	<1	4	<1	0.22	17
Woak bark	45	6	<1	1	<1	0.24	6

(1) Fuel samples, analyzed by University of Kentucky's CAER, have been provided to DAQ under separate cover.

2.4.2 Boiler and Turbine Generator

The ecoPower Generating Facility will be designed to generate a nominal 50-MW gross electrical output utilizing biomass as its primary fuel. In general, two commercially available combustion technologies are available to fire 100% biomass – stoker and fluidized bed. Most early generation solid fueled boilers utilized stoker technology requiring manual fuel feeding and ash removal. The operation of stoker boilers has since evolved with the implementation of mechanical grates. As the fuel is moved through the combustion zone, combustion air is supplied at high velocities and the carbon combusts, leaving ash that can have as much as 5% carbon content. Ash can be re-injected back into the stoker to improve fuel conversion efficiency.

In a fluidized bed application, an inert medium, such as sand, is heated in the lower part of the boiler and high pressure air is introduced to “fluidize” the bed into a large mass of hot material. Fuel is introduced and combustion takes place within the combustion bed. High combustion efficiencies can be achieved with a fluidized bed boiler due to thorough mixing and contact between the fuel and bed material, uniform temperatures in the bed, and increased residence time within the combustion zone. Fuel conversion efficiencies of 99% or more are expected with a fluidized bed boiler.³

Given the nature of the improved combustion conditions in a fluidized bed, CO emissions are generally lower with fluidized bed combustion compared to other solid fuel combustion systems such as pulverized-fuel and stokers. CO emissions are a product of incomplete combustion, and the high combustion efficiencies achieved with a fluidized bed boiler will result in lower CO concentrations in the flue gas. Combustion conditions in a fluidized bed boiler also tend to reduce nitrogen oxide (NOx) emissions. Lower combustion temperatures in a fluidized bed boiler (compared to stoker or pulverized fuel-fired boiler) limit the formation of thermal NOx and reduce NOx concentrations in the flue gas. NOx emissions can be further reduced by staging the combustion air within the fluidized bed. Finally, fluidized bed boilers are generally more tolerant of variations in fuel quality. Based on experience at existing solid fuel-fired boilers (e.g., coal and petcoke fired units), the large fuel mass and residence time within a fluidized bed boiler provides for

³ See, “Combustion Fossil Power – A Reference Book on Fuel Burning and Steam Generation,” Combustion Engineering, Inc., Joseph G. Singer, P.E., editor, 4th ed., page 9-23.

thorough fuel mixing, making the boiler less susceptible of short-term emission spikes associated with fuel variability.

For these reasons, ecoPower determined that fluidized bed combustion was the preferred technology to stoker technology for the Project. Based on the review of available biomass combustion technologies, the eGF project includes one fluidized bed boiler and steam turbine generator capable of generating a nominal 50 MW-gross electrical output. The fluidized bed boiler will be rated at approximately 450,000 lb/hr steam at 950 °F and an operating pressure of approximately 1,800 psig. The unit is being designed with an air cooled condenser to minimize water consumption. Maximum heat input to the boiler at full load will be 672 mmBtu/hr.

There are two types of fluidized bed boiler, bubbling fluidized bed (BFB) and circulating fluidized bed (CFB). BFB and CFB technologies are both commercially available. While industry practice generally shows that the CFB technology is favored in larger implementations, it is likely that either technology could meet the emissions criteria developed in this report using the design fuel specifications. Vendor bids for either technology should be considered based on their economic, commercial, emission performance, and operability merits.

The main boiler will be designed to exclusively fire biomass. Because of the inherently low ash content in biomass fuel, sand will be added to the boiler, as necessary, to provide additional bed material (see, Table 2-2). Propane will be available for use as the start-up fuel for the boiler. Based on preliminary engineering calculations using the design fuel characteristics, boiler design parameters are summarized in Table 2-4.

Emissions from the boiler will be controlled using a combination of combustion controls, including staged combustion and overfire air to limit the formation of NO_x, CO, and VOC, selective non-catalytic reduction (SNCR) for NO_x control, and a fabric filter (FF) baghouse for particulate matter and organic compound control. The cleaned exhaust gas will be ducted through a 280-foot stack with a concrete shell and a steel liner.⁴ The stack height is based on preliminary design calculations and will be finalized during detailed design of the unit.

⁴ A stack height of 280 feet was determined based on preliminary GEP and downwash modeling. The actual stack height may differ based on final design of the boiler and air pollution control systems.

Table 2-4 — Boiler Design Parameters⁵

		Annual Average Conditions VWO with Operating Margin
Boiler Design		Fluidized Bed Combustion
Condenser Design		Air Cooled Condenser
Main Steam Conditions	psig/°F	1,800 / 950
Gross Plant Output	kW-gross	52,835
Net plant heat rate	Btu/kWh	13,770
Auxiliary Power Requirements	kW	6,365
Turbine Heat Rate	Btu/kWh	9,003
Net Plant Output	Net-kW	46,470
Full Load Heat Input to Boiler	mmBtu/hr	672
Fuel Feed Rate	lb/hr	131,558
Annual Fuel Consumption	tons/year	576,000

2.4.3 Auxiliary Boiler

In addition to the main boiler, eGF will have one propane-fired auxiliary boiler to generate steam for start-up of the main boiler. The auxiliary boiler will be designed to provide steam during start-up and low load operation for turbine gland seals, deaerator pegging, condensate drains tank sparging, combustion air preheating, and plant heating. Auxiliary steam generated by the auxiliary boiler will also be used to support boiler hydrostatic testing during startup. One auxiliary boiler, rated for 75,000 lb/hr steam at approximately 165 psig, will be provided. Heat input to the auxiliary boiler at full load will be approximately 92.0 mmBtu/hr. The auxiliary boiler will be designed to fire propane.

⁵ Boiler design parameters in Table 2-4 are based on preliminary design engineering calculations using the design flue characteristics summarized in this report and fluidized bed combustion.

Annual emissions from the auxiliary boiler will be minimized using combustion controls and limiting its hours of operation. The main boiler is expected to have an average annual capacity factor of approximately 85%; thus, operation of the auxiliary boiler is expected to be infrequent.

2.4.4 Emergency Generator

The facility will have an emergency diesel generator (EDG). The EDG will supply power to the essential service motor control centers during an interruption of the electrical power supply to the site. Typical essential service loads include turbine and boiler feed pump turning gear motors, critical oil pumps, air preheater recirculating pumps, building heat and fuel supply systems, plant communication systems, and essential emergency lighting.

Based on preliminary design calculations, the EDG will be designed to provide 1,600 kW power during emergency situations. The generator will be designed to fire low-sulfur diesel fuel, and will only be used in case of an emergency and for periodic testing. Heat input to the EDG at full load will be approximately 14.9 mmBtu/hr.

2.4.5 Fire Water Pump

The facility will also have an emergency fire-water pump (FWP). Based on preliminary design calculations, the FWP will be designed at approximately 450 hp to provide water at a rate of 2,500 to 3,000 gpm. The diesel-fired fire water pump engine will be designed to fire low-sulfur diesel fuel, and will only be used in case of an emergency and for periodic testing. Heat input to the FWP at full load will be approximately 3.24 mmBtu/hr.

2.4.6 Material Handling Systems

The ecoPower Generating Facility includes fuel, ash, and sand storage and handling systems.

Fuel will be delivered to the facility by truck to the site's fuel receiving station. Fuel receiving includes two truck tippers designed to unload biomass resources, including sawdust, wood chips, and bark into a receiving hopper. From the receiving hopper the fuel is transferred via covered conveyor to the Wood Hog Building. Oversize material and material that otherwise cannot be loaded into the truck hoppers will bypass the truck hoppers and be unloaded and transferred to an emergency feed hopper via mobile equipment.

In the Wood Hog Building the mixed fuel is screened and sized (or hogged) as needed for use in the boilers. The sized fuel is transferred from the Wood Hog Building via covered conveyor to the fuel storage area where it is segregated into storage piles designed to provide approximately 10 days of fuel storage. From the storage piles the fuels are automatically blended and transferred via one of two reclaim conveyors to surge bins located within the Boiler Building. Fuel is transferred via chain conveyors from the surge bins to the boiler.

The facility is also designed with a long-term fuel storage area to provide fuel to the boiler in the event daily fuel deliveries to the facility are interrupted. The long-term storage area is designed to provide additional wood storage, with a capacity of approximately 81,000 tons. Wood resources from the long-term storage area will be handled by mobile equipment and chipped on-site in the Chipper Building, transferred by conveyor to the fuel storage building, and handled as described above.

Particulate matter emissions from the eGF fuel handling system will be controlled using a combination of fuel characteristics, enclosures, and particulate filtering systems. Biomass, including wood residues, sawdust, and bark has a relatively high moisture content, and consequently generate relatively few fugitive dust emissions (see, Table 2-1). Particulate matter emissions from the fuel handling system will also be minimized by enclosing all conveyor-to-conveyor transfer points and enclosing the fuel screening, chipping, and hogging operations. Particulate emissions from the chipping and hogging operations will be controlled by fog type dust suppression systems and exhausted through bin-vent filters. Bin-vent filters will be designed to achieve controlled particulate matter emissions of 0.01 grains per dry standard cubic foot (gr/dscf) of exhaust.

Fly ash captured in the boiler's particulate control system (i.e., baghouse) will be transferred to the fly ash storage silo. From the storage silo, fly ash will be transferred to covered haul trucks for off-site disposal or beneficial reuse. Particulate emissions from the fly ash transport system will be controlled by using a fully enclosed screw type and drag chain type conveyor. The storage silo will be equipped with a bin-vent filter for controlling the particulate emission from the silo. In addition, fly ash will either be conditioned with water prior to being transferred to the off-site disposal trucks, or loaded in a dry state into dry tanker trucks via a telescopic spout that is vented back into the silo.

Bed ash from the boiler will be removed via ash coolers and then transported to a bed ash storage silo via fully enclosed drag chain conveyors. From the bed ash silo, bed ash will be transferred to covered haul

trucks for off-site disposal or beneficial reuse. Particulate emissions from the bed ash transport system will be controlled by using a fully enclosed drag chain type conveyor. The storage silo will be equipped with a bin-vent filter for controlling the particulate emission from the silo. In addition, bed ash will either be conditioned with water prior to being transferred to the off-site disposal trucks, or loaded in a dry state into dry tanker trucks via a telescopic spout that is vented back into the silo.

Sand will be delivered by self unloading trucks that will discharge the sand via a pneumatic transport system into a storage bin located inside the boiler building. From the storage bin the sand will be fed into the boiler as required.

2.5 EMISSION SOURCES

Emission sources at eGF include the main boiler, auxiliary boiler, emergency generator, diesel-fired fire water pump, and material handling sources. A list of the emission sources is included in Table 2-5.

Table 2-5 — eGF Emission Points

Emission Unit Description⁽¹⁾
Combustion Sources
eGF Main Boiler, 672 mmBtu/hr
eGF Auxiliary Boiler, 92 mmBtu/hr
eGF Emergency Generator, 14.9 mmBtu/hr
eGF Diesel Fire-Water Pump, 3.24 mmBtu/hr
Material Handling – Emission Points (EP)
Biomass active storage reclaim tunnel exhaust fan
Log chipper building ventilation fan
Wood hog building ventilation fan
Transfer tower ventilation fan
Surge bin vent filter exhaust
Fly ash storage silo bin-vent filter
Fly ash storage silo ventilation fan
Bed ash storage silo bin-vent filter
Bed ash storage silo ventilation fan
Sand storage bin-vent filter
Material Handling – Fugitive (F) Sources
Wind Erosion from the log storage piles.
Fugitive dust from ground equipment manipulation of logs.
Wind Erosion from the Wood Chip storage pile
Wind Erosion from the Saw Dust storage pile
Wind Erosion from the Bark storage pile
Fuel Delivery Haul Road
Fly Ash Haul Road
Bed Ash Haul Road
Sand Haul Road

(1) Emission point designations have been assigned to each emissions point in the air construction permit application.

Last page of Section 2.

3. EMISSION CONTROLS AND CONTROLLED EMISSION RATES

Emission controls and emission rates proposed for each source at eGF are discussed below.

3.1 MAIN BOILER EMISSIONS

Emissions from the main boiler will be controlled using a combination of the combustion controls and post-combustion control systems described below.

3.1.1 Main Boiler NO_x Emissions

NO_x emissions from the main boiler will be controlled using a combination of boiler design, combustion controls, and selective non-catalytic reduction (SNCR).

The formation of NO_x is determined by the interaction of chemical and physical processes occurring primarily within the combustion zone of the boiler. There are two principal forms of NO_x designated as “thermal” NO_x and “fuel” NO_x. Thermal NO_x formation is the result of oxidation of atmospheric nitrogen contained in the inlet gas in the high-temperature combustion zone. Fuel NO_x is formed by the oxidation of nitrogen in the fuel. NO_x formation can be controlled by adjusting the combustion process and/or installing post-combustion controls.

The major factors influencing thermal NO_x formation are temperature, the concentration of combustion gases (primarily nitrogen and oxygen) in the inlet air, and residence time within the combustion zone. Fluidized bed boiler technology offers the potential for the lowest NO_x emissions from commercially available boiler designs due to inherently lower combustion temperatures.⁶ In a fluidized bed boiler, fuel is burned in a bed of hot combustible particles (formed by the biomass fuel) suspended by an upward flow of combustion air. Bed temperature is usually maintained at a relatively low 1,550 – 1,750 °F. Efficient combustion in the fluidized bed boiler is achieved because of the relatively long residence time of the fuel in the bed and good gas/solids contact.

⁶ See, e.g., Combustion Fossil Power, pages 9-18 – 9-24.

At the relatively low combustion temperatures in a fluidized bed boiler, the formation of thermal NO_x is essentially eliminated; however, nearly all of the fuel nitrogen will be converted to NO_x. Therefore, fuel nitrogen content, and the availability of oxygen to react with fuel-nitrogen compounds released during the combustion process, will have a significant influence on the formation of NO_x. As summarized in Tables 2-1 and 2-2, the nitrogen content of the design flue will be in the range of 0.12 weight percent, ranging from 0.07% (chips and chipwood) to approximately 0.26 % (bark). By comparison, the nitrogen content of eastern bituminous coals is typically in the range of 1.3 to 2.0%, and the nitrogen content of western subbituminous coals typically range from 1.0 to 1.3%.⁷ Thus, the biomass fuels being considered for eGF are considered low nitrogen fuels, which will further limit NO_x production in the boiler.

Nitrogen compounds released during the combustion process will reduce to N₂ under fuel-rich conditions or to NO_x under air-rich conditions. Staged combustion can minimize air-rich conditions in the boiler and the formation of NO_x. In staging, a portion of the total air required to complete combustion is withheld from the initial combustion stage. The balance of air required for complete combustion is mixed with the incomplete products of combustion only after the oxygen content of the first-stage air is consumed. Staged combustion design of the boiler reduces air-rich combustion and NO_x formation. The degree of staging is limited by operational problems since the staged combustion could result in conditions that favor incomplete combustion.⁸

A limited amount of NO_x emissions data are available from biomass-fired fluidized bed boilers in the U.S. and Germany. U.S.EPA's Clearinghouse for Inventories & Emission Factors (CHIEF) website provides individual stack test results from emission sources in the U.S.⁹ Stack test results available on the CHIEF website are used by U.S.EPA to develop emission factors for emission source categories, and have been reviewed by EPA for representativeness and to ensure that the samples were collected using EPA approved methods. The CHIEF database includes NO_x emissions data from three wood-fired fluidized bed boilers equipped with no post-combustion NO_x controls.¹⁰ Uncontrolled NO_x emissions from the fluidized bed boilers ranged from 0.11 to 0.193 lb/mmBtu.

⁷ See, Combustion Fossil Power, page 2-16.

⁸ *Id.* at 9-26.

⁹ Clearinghouse for Inventories & Emission Factors (CHIEF); <http://www.epa.gov/ttn/chief/index.html>.

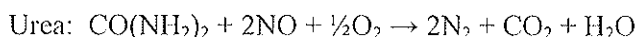
¹⁰ Emissions data for wood-fired boilers are available at: <http://www.epa.gov/ttn/chief/ap42/ch01/related/c01s06.html>.

Similar NO_x emission rates have been measured at biomass-fired units in Germany. Foster-Wheeler Energie GmbH (F-W) recently installed three biomass-fired fluidized bed boilers at the Kohler Kehl, Prokon Nord, and MVV Konigs Wusterhausen stations in Germany. The fluidized bed boilers were designed to fire wood wastes to produce a nominal 20 MWe output.¹¹ Typical NO_x emissions measured at 100% MCR were reported to be in the range of 71 to 79 mg/Nm³ @ 11% O₂ dry (or approximately 78 to 85 ppmvd @ 68 °F and 3% O₂). These NO_x concentrations equate to a NO_x emission rate of approximately 0.78 to 0.11 lb/mmBtu (calculated using U.S. EPA's F-Factor for wood combustion of 9,240 dscf/mmBtu). F-W noted in their technical report that these NO_x emission rates were achieved on biomass-fired units that were not equipped with any post-combustion controls.

The fluidized bed boiler proposed for eGF will be designed to fire 100% biomass and will be designed for staged combustion. Based on the low nitrogen content of the proposed biomass fuel (see, Table 2-1), low combustion temperatures in a fluidized bed boiler, and staged combustion design, and taking into consideration information from fluidized bed boiler vendors, stack test data from similar sources, and engineering judgment, it is anticipated that the boiler will consistently achieve NO_x emission levels in the range of 0.15 to 0.22 lb/mmBtu (approximately 120 to 170 ppmvd @ 3% O₂) under normal operating conditions without post-combustion controls.

3.1.2 Main Boiler NO_x Emission Control

SNCR is a post-combustion NO_x control system that involves the direct injection of ammonia (NH₃) or urea (CO(NH₂)₂) at flue gas temperatures of approximately 1,550 – 1,750 °F. The ammonia or urea reacts with NO_x in the flue gas to produce N₂ and water. The NO_x reduction reactions in an SNCR are driven by the thermal decomposition of ammonia or urea and the subsequent reduction of NO_x. SNCR systems do not employ a catalyst to promote these reactions. Simplified NO_x reduction reactions in an SNCR are shown below:



¹¹ Plant descriptions and emissions summarized in this report were obtained from: Siewert, A., Niemala, K., and Vilokki, H., "Initial Operating Experience of Three High-Efficiency Biomass Plants in Germany," Foster-Wheeler Energie GmbH, presented at the PowerGen Europe Conference, Barcelona, Spain, May 25-27, 2004.

Flue gas temperature at the point of reagent injection can greatly affect NOx removal efficiencies and the quantity of NH₃ that will pass through the SNCR unreacted (referred to as ammonia slip). At temperatures below the desired operating range, the NOx reduction reactions diminish and unreacted NH₃ emissions increase. Above the desired temperature range, NH₃ is oxidized to NOx resulting in low NOx reduction efficiencies.

Mixing of the reactant and flue gas within the reaction zone is also an important factor to SNCR performance. The SNCR system must be designed to deliver the reagent in the proper temperature window, and allow sufficient residence time of the reagent and flue gas in that temperature window. In addition to temperature, mixing, and residence time, several other factors influence the performance of an SNCR system including reagent-to-NOx ratio and fuel sulfur content.

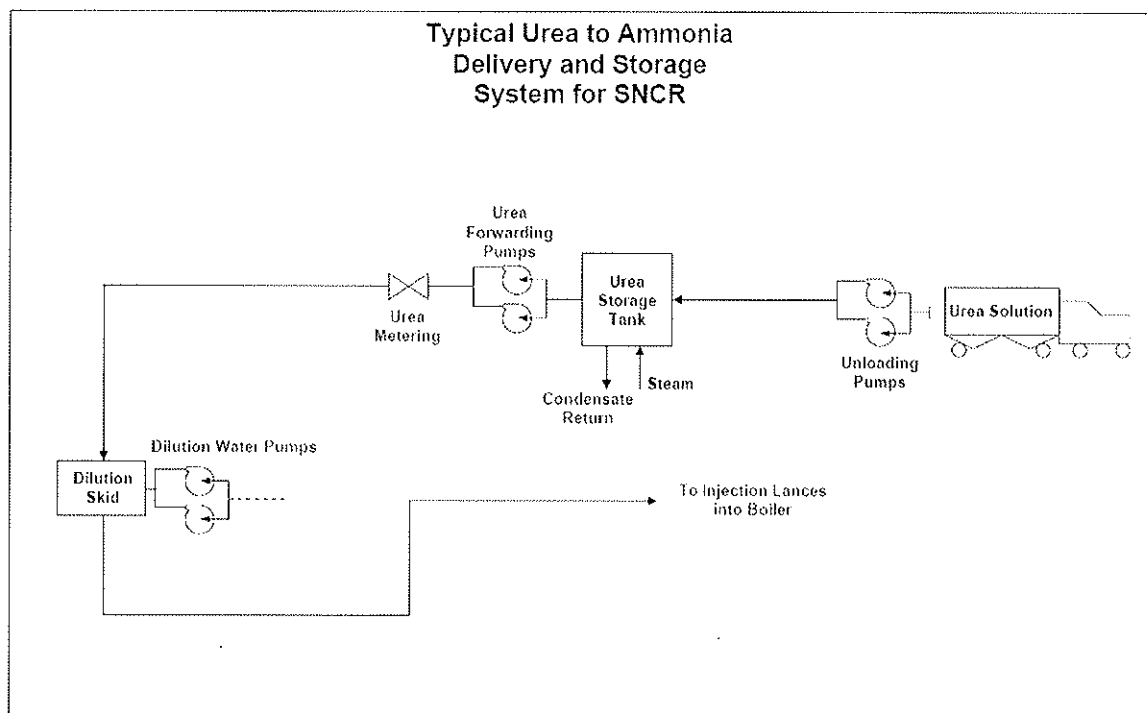
The application of SNCR to fluidized bed boilers is technically feasible because the normal operating temperature of a fluidized bed boiler is near the optimum temperature for NOx reduction by NH₃. Extensive flue gas mixing and residence time within the boiler also promotes the effectiveness of an SNCR system. Both urea- and ammonia-based SNCR systems have been applied to new biomass-fired boilers. Based on preliminary design considerations, it is expected that the ecoPower facility will be equipped with a urea-based injection system.¹² The handling and storage equipment for a urea-based system are described below.

Urea-based Ammonia Generation

Urea is the most common reagent used for SNCR technology. Typically urea is delivered as a 50% urea solution. The urea supply system consists of a truck unloading station, a urea solution storage tank, urea forwarding pumps, a dilution skid, and injection lances. The diluted urea solution is injected into the boiler, within the boiler the urea decomposes to ammonia and carbon monoxide which react in the steam generator to form N₂, CO₂ and H₂O. A process flow diagram for an ammonia system using dry urea is shown in Figure 3-1.

¹² Based on preliminary design, the ecoPower facility is being designed with a urea-based SNCR control system. Other ammonia delivery options include anhydrous and aqueous ammonia systems. All three systems are similar in design, and are closed-systems with no process-related emissions.

Figure 3-1: Urea to Ammonia Process Flow Diagram



SNCR systems have been designed to achieve NO_x reduction efficiencies of 20% to approximately 60% on coal-fired boilers. In general, higher control efficiencies are achievable on units firing a low-sulfur coal. The NO_x reduction efficiency on a biomass-fired unit will depend on several site-specific factors, including the flue gas characteristics, NO_x concentration in the flue gas, reagent-to-NO_x ratio, fuel sulfur content, and the acceptable ammonia slip level.

Controlled NO_x emission rates in the range of 0.08 lb/mmBtu have been demonstrated at large biomass-fired units in the U.S. with SNCR. The CHIEF database includes NO_x emissions data from two wood-fired fluidized bed boilers equipped with SNCR.¹³ The measured NO_x emission rate from the two units varied significantly, with one unit reporting a controlled NO_x emission rate of 0.059 lb/mmBtu and the other reporting an emission rate of 0.187 lb/mmBtu. The database does not include detailed descriptions of the unit operating parameters during the tests (e.g., boiler size, fuel nitrogen content, combustion controls such as

staging, or NH_3 -to- NO_x stoichiometric ratios) so, the reason for the difference in emission rates cannot not be determined.

More recently, one biomass-fired fluidized bed boiler equipped with SNCR has demonstrated the ability to achieve controlled NO_x emissions below 0.08 lb/mmBtu on a long-term basis. Public Service of New Hampshire's Schiller Unit 5 is a 50-MW biomass-fired unit located near Portsmouth, NH. The unit was converted from coal-firing to 100% biomass firing in 2006, and is designed as a fluidized bed boiler with SNCR for NO_x control. Unit 5 has been in operation as a biomass-fired unit since December 2006. Based on boiler size, fuel characteristics, combustion technology, and NO_x emission controls, Schiller Unit 5 should be considered a similar source to the proposed ecoPower boiler. Annual NO_x emissions from Schiller Unit 5 for the years 2007 through the third quarter 2009 are summarized in Table 3-1. Monthly NO_x emissions during 2008 are summarized in Table 3-2.¹⁴

Table 3-1 — Schiller Unit 5 – Annual Average NO_x Emissions

Parameter	Unit	2007	2008	2009 (Q1-Q3)
Heat Input	mmBtu	5,189,000	5,220,909	1,389,049
NO_x Mass Emissions	Tons	179.8	179.808	48.775
Average Controlled NO_x Emission Rate	lb/mmBtu	0.069	0.069	0.071

¹³ Emissions data for wood-fired boilers are available at: <http://www.epa.gov/ttn/chief/ap42/ch01/related/c01s06.html>.

¹⁴ Emissions data for Schiller Unit 5 are available from: <http://camddataandmaps.epa.gov/gdm/index.cfm>.

Table 3-2 — Schiller Unit 5 – Monthly Average NOx Emissions (2008)

Facility Name	Unit ID	Month	Operating Time (hours)	Heat Input (mmBtu)	NOx Tons	Avg. NOx Rate (lb/mmBtu)
Schiller	5	1	551	358,889	11.9	0.066
Schiller	5	2	514	322,855	10.4	0.064
Schiller	5	3	585	389,943	13.0	0.067
Schiller	5	4	720	478,258	16.6	0.069
Schiller	5	5	743	481,802	17.0	0.071
Schiller	5	6	717	462,996	15.9	0.069
Schiller	5	7	744	475,250	14.8	0.062
Schiller	5	8	744	471,432	16.8	0.071
Schiller	5	9	720	470,298	15.9	0.068
Schiller	5	10	533	341,530	11.8	0.069
Schiller	5	11	720	523,946	18.9	0.072

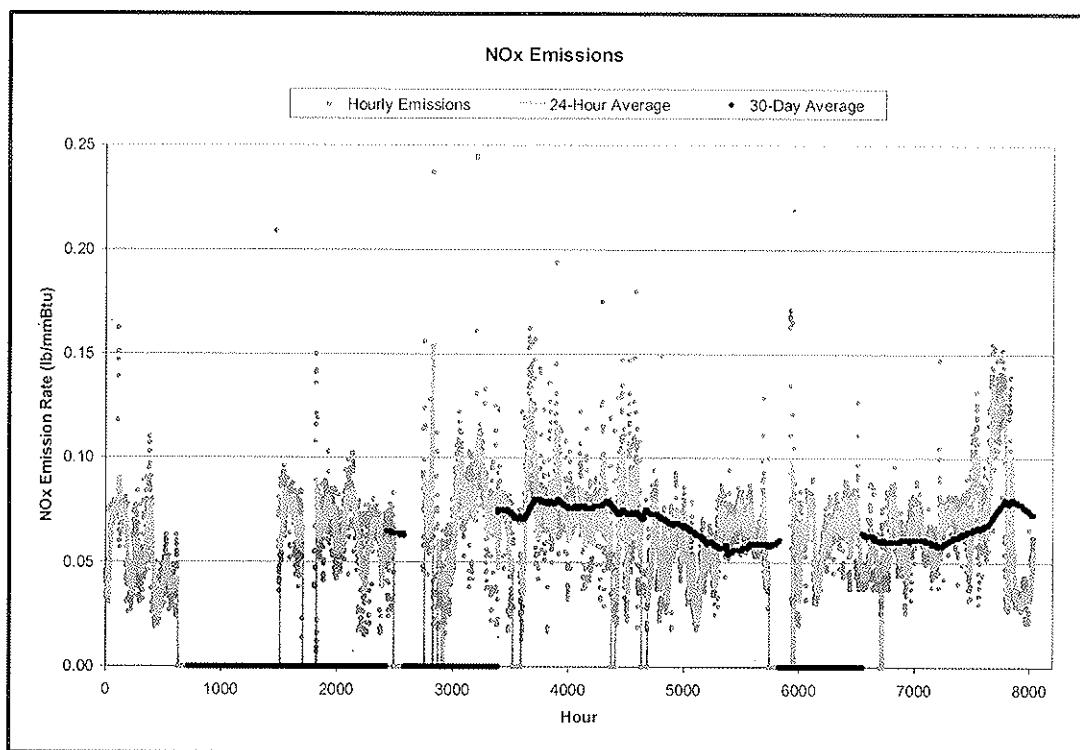
Based on controlled emissions achieved at Schiller Unit 5, SNCR should effectively control NOx emissions from a biomass-fired fluidized bed boiler. Schiller Unit 5 has demonstrated the ability to achieve controlled NOx emissions in the range of 0.062 to 0.072 lb/mmBtu on a 30-day block average.

From a compliance perspective, it is necessary to include a reasonable margin between the control technology design target and the enforceable permit limit.¹⁵ Emission control systems do not operate under steady-state conditions, and the controlled NOx emission rate tends to fluctuate around the system's design target. Operating variables that affect controlled NOx emissions include, but are not necessarily limited to, boiler load and load changes, excess oxygen, flue gas temperatures, reactant (urea) mixing, NOx-to-urea

¹⁵ For example, the U.S.EPA's Environmental Appeals Board (EAB) has held that the determination of an achievable emission rate under the PSD rules can include a reasonable margin between the design limits of the control technology and the enforceable PSD permit limit. EAB has recognized that "permitting agencies have the discretion to set BACT limits at levels that do not necessarily reflect the highest possible control efficiencies but, rather will allow permittees to achieve compliance on a consistent basis." See, Three Mountain Power, PSD Appeal No. 01-05 at 21 (May 30, 2001), citing: In re Masonite Corp., 5 E.A.D. 560-61 (EAB 1994) ("There is nothing inherently wrong with setting an emission limitation that takes into account a reasonable safety factor."); and In re Knauf Fiber Glass, GmbH, PSD Appeal Nos. 99-

stoichiometric ratio, and residence time within the required temperature window. These operating variables will continuously fluctuate during normal boiler operations. Figure 3-2 shows the NO_x emissions (lb/mmBtu) from a coal-fired circulating bed boiler equipped with SNCR for a one-year period. It can be seen that hourly NO_x emissions continually fluctuate around a design target. Similar NO_x control (i.e., fluctuation) is expected on the eGF main boiler.

**Figure 3-2: Hourly NO_x Emission Rate
(Coal-Fired CFB with SNCR)**



Furthermore, operating an SNCR control system to achieve lower controlled NO_x emissions will increase the risk of adverse balance-of-plant impacts. For example, one option available to achieve lower NO_x emissions is to flood the flue gas with excess reactant. However, increasing urea injection also increases the quantity of unreacted ammonia in the flue gas (i.e., ammonia slip) which can lead to downstream plugging of ductwork and emission controls (including the fabric filter bags), and result in excess ammonia in the fly ash. Excess

8 to -72, slip op. at 21 (EAB, Mar. 14, 2000) ("The inclusion of a reasonable safety factor in the emission limitation is a

ammonia in the fly ash can lead to ammonia off-gassing and worker exposure to ammonia during fly ash handling and disposal.

Taking into account normal fluctuations in operating variables, and assuming an NH_3 -to- NO_2 molar ratio of approximately 1.5 and a maximum NH_3 slip of 10 ppmvd @ 3% O_2 , and taking into consideration the low sulfur content of biomass fuel, it is expected that SNCR on the eGF biomass-fired boiler will consistently achieve a long-term controlled NO_x emission rate of 0.08 lb/mmBtu (30-day rolling average), or approximately 60 ppmvd @ 3% O_2 . This controlled NO_x emission rate is consistent with emissions achieved in practice at Schiller Unit 5, while provide a reasonable operating margin for compliance. Ammonia consumption rates to achieve this level of NO_x control would be approximately 380 lb/hr with a 50% urea solution. Controlling NO_x emissions to 0.08 lb/mmBtu represents an additional 47% to 64% reduction in NO_x emissions from the boiler (depending on the inlet NO_x rate), which is within the technical capabilities of SNCR on a fluidized bed boiler firing low sulfur fuel.

3.1.3 Main Boiler CO and VOC Emissions

Carbon monoxide (CO) and volatile organic compounds (VOC) are products of incomplete combustion. In order to minimize CO/VOC emissions, good combustion must be ensured. Boilers designed for complete combustion allow for maximum temperatures, maximum residence time, and enough excess air and turbulence to assure good mixing and availability of O_2 .

The fluidized bed boiler proposed for eGF will effectively function as a thermal oxidizer for the following reasons:

- temperature distribution is uniform throughout the fluidized bed;
- there is extensive mixing between the gas and solids within the bed;
- the hot fluidized bed material stabilizes combustion conditions;
- solids residence time in the furnace is sufficient for complete combustion; and
- staged combustion provides the oxygen needed to promote complete combustion.

Boiler temperatures, excess oxygen, mixing, and residence time all promote combustion within a fluidized bed boiler and minimize CO and VOC formation. Minimizing CO emissions is in the economical best interest of the boiler operator because CO represents unutilized energy exiting the process.

legitimate method of deriving a specific emission limitation that may not be exceeded.”).

There are limited CO emissions data available from existing biomass-fired fluidized bed boilers. The CHIEF database includes CO emissions data from nine (9) wood-fired fluidized bed boilers.¹⁶ CO emissions data for biomass-fired fluidized bed boilers are summarized in Table 3-3.

Table 3-3 — CHIEF CO Emissions Data – Biomass Fired Fluidized Bed Boilers

ID	FUEL TYPE	FIRING CONFIGURATION	NUMBER OF RUNS	RUN AVERAGE
B50	Wet Wood	FBC	1	0.025
CTC011	Wet Wood	Fluidized Bed	1	0.298
CTC045	Wet Wood	Fluidized Bed	1	0.036
CTC052	Wet Wood	Fluidized Bed	1	0.016
CTC057	Wet Wood	Fluidized Bed	1	0.036
CTC068A	Wet Wood	Fluidized Bed	1	0.054
CTC068B	Wet Wood	Fluidized Bed	1	0.050
CTC076	Wet Wood	Fluidized Bed	1	0.057
CTC082	Wet Wood	Fluidized Bed	1	0.943

Measured CO emission rate from the nine units varied significantly, ranging from 0.016 lb/mmBtu (approximately 20 ppmvd @ 3% O₂) to as high as 0.943 lb/mmBtu (approximately 1,200 ppmvd @ 3% O₂). The database does not include detailed descriptions of the unit operating parameters during the tests (e.g., boiler size, combustion temperature, excess oxygen, combustion staging, etc.) so, reasons for the difference in emission rates cannot not be determined. However, one unit (ID No. CTC082) had a significantly higher CO emission rate than the other units. Unit CTC082's emission rate of 0.943 lb/mmBtu (approximately 1,200 ppmvd @ 3% O₂) was almost 13 times higher than the CO emission rate measured at the other eight units. The average CO emission measured at the remaining eight fluidized bed boilers (excluding CTC082) is 0.072 lb/mmBtu (approximately 92 ppmvd @ 3% O₂).

¹⁶ Emissions data for wood-fired boilers are available at: <http://www.epa.gov/ttn/chief/ap42/ch01/related/c01s06.html>.

Low CO emission rates have also been measured at biomass-fired units in Germany. Typical CO emissions measured at full load at the three Foster-Wheeler units in Germany were reported to be in the range of 19 to 26 mg/Nm³ @ 11% O₂ dry (or approximately 35 to 47 ppmvd @ 68 °F and 3% O₂).¹⁷ These CO concentrations equate to a CO emission rate of approximately 0.03 to 0.04 lb/mmBtu (calculated using U.S.EPA's F-Factor for wood combustion of 9,240 dscf/mmBtu).

Available stack test data measuring CO emissions from biomass-fired fluidized bed boilers, support the conclusion that the fluidized bed boiler will achieve high combustion efficiencies and low CO emissions. Boiler temperatures, excess oxygen, mixing, and residence time all promote combustion within a fluidized bed boiler to minimize CO and VOC emissions from the boiler. This conclusion is supported by air construction permits recently issued for similar biomass units. Table 3-4 provides a summary of the CO emission limits included in recently issued permits for similarly sized biomass-fired units. Three of the units listed in Table 3-4 were permitted with a CO emission limit of 0.08 lb/mmBtu or lower. Because there are no technically feasible post-combustion CO emission controls, these rates would be reflectively of CO emissions which the permittees determined were achievable under normal boiler operating conditions.

Table 3-4 — CO Emission Rates in Recently Issued Biomass-Fired Unit Permits

Unit	Size	Unit Type	Wood Type	CO Emission
Adage	50 MW	Fluidized bed boiler	Pre-processed chips	0.08 lb/mmBtu (annual average)
Hertford Renewable Energy (2 Units)	2 x 50 MW	Stoker		0.25 lb/mmBtu (per boiler)
Fitzgerald Renewable Energy	60 MW	Fluidized bed type or stoker boiler	Clean wood waste	0.075 lb/mmBtu
Greenway Renewable Power	50 MW	Fluidized bed type or stoker boiler	Forestry and mill residue, urban wood waste	0.079 lb/MMBtu
Schiller Station	50 MW	Fluidized bed boiler	Whole-tree chips from harvesting, sawmill residue	Not Reported
Yellow Pine Energy	110 MW	Fluidized bed boiler	Wood waste chips or shredded timber harvesting	0.149 lb/MMBtu

¹⁷ Plant descriptions and emissions summarized in this report were obtained from: Siewert, A., Niemala, K., and Vilokki, H., "Initial Operating Experience of Three High-Efficiency Biomass Plants in Germany," Foster-Wheeler Energie GmbH, presented at the PowerGen Europe Conference, Barcelona, Spain, May 25-27, 2004.

Based on combustion efficiencies achievable with fluidized bed boiler design (based on boiler temperatures, mixing, residence, excess oxygen, and staged combustion), and taking into consideration information from boiler vendors, stack test data from a limited number of similar sources, and emission limits included in recently issued permits, it is anticipated that the eGF boiler will consistently achieve controlled CO emissions of 100 ppmvd @ 3% O₂ or less, while maintaining NO_x emissions of 120 to 170 ppmvd @ 3% O₂ (upstream of the SNCR). A CO concentration of 100 ppmvd @ 3% O₂ corresponds to a controlled emission rate of 0.08 lb/mmBtu.

VOC emissions are also a function of incomplete combustion, and combustion controls designed to limit CO formation will also limit VOC formation. Because there are no stack test data available measuring VOC emissions from biomass-fired fluidized bed boilers, VOC emissions from the main boiler will be calculated based on the AP-42 emission factor of 0.017 lb/mmBtu for wood-fired boilers (AP-42 Table 1.6-3).

3.1.4 Main Boiler Sulfur Dioxide and Acid Gas Emissions

Sulfur oxide (SO_x) emissions from solid-fuel combustion consist primarily of sulfur dioxide (SO₂), with a much lower quantity of sulfur trioxide (SO₃) and gaseous sulfates. These compounds form as sulfur in the fuel is oxidized during the combustion process. The generation of SO₂ is directly related to the sulfur content and heating value of the fuel burned. Boiler size, firing configuration and boiler operations generally have little effect on the percent conversion of fuel sulfur to SO₂.

Acid gases, including sulfuric acid mist (H₂SO₄) and hydrogen chloride (HCl) will also be generated during the combustion process. Sulfuric acid mist is generated when SO₃ in the flue gas, reacts with water to form sulfuric acid. Small quantities of SO₂ will oxidize to SO₃ during the combustion process and be available to react with water to form H₂SO₄. Based on experience at existing solid fuel-fired boilers, approximately 2.0% of the fuel SO₂ will convert to SO₃ in the boiler. Similarly, trace levels of chlorine in the fuel will convert to HCl gas during the combustion process. HCl emissions will be a function of the fuel chlorine content.

Table 3-5 provides a summary of the heating value, sulfur content, and chlorine content of the design fuel proposed for eGF. Values in Table 3-5 were developed based on fuel data available for individual fuels anticipated to be utilized at eGF (summarized in Tables 2-1, 2-2, and 2-3).

Table 3-5 — Biomass: Sulfur and Chlorine Content

Fuel Characteristic	Design Fuel Characteristics
Higher Heating Value	5,108 Btu/lb
Sulfur Content	0.02% by weight
Chlorine Content	0.02% by weight

The sulfur content of biomass varies, but is typically very low. The sulfur content of woody biomass is expected to be in the range of less than 0.01% to approximately 0.03% (by weight). Based on analyses conducted by CAER of the fuels expected to be used at eGF, the maximum sulfur content of the blended fuels will be less than 0.02% by weight (see, Table 2-3). Based on a maximum fuel sulfur content of 0.02% and assuming a heating value of 5,108 Btu/lb and 100% conversion of fuel sulfur to SO₂, potential SO₂ emissions from the eGF boiler will be 0.078 lb/mmBtu. Assuming 2% conversion of boiler SO₂ to SO₃, and 100% conversion of SO₃ to H₂SO₄, potential uncontrolled H₂SO₄ emissions will be 0.002 lb/mmBtu.

Calculating SO₂ emissions based on the assumption that 100% of the fuel sulfur will be emitted as SO₂ provides a conservatively high estimate of emissions from the boiler. The CHIEF database includes SO₂ emissions data from twenty-eight (28) wood-fired boilers. Because SO₂ emissions are a function of fuel sulfur content, and not necessarily a function of the boiler design or firing configuration, SO₂ emissions data from other types of boilers are representative of SO₂ emission from the ecoPower fluidized bed boiler. SO₂ emissions from wood-fired boilers averaged 0.0248 lb/mmBtu. Furthermore, CHIEF stack test data suggest that at least some of the SO₂ generated during the combustion process will be captured in the fluidized bed boiler and fabric filter baghouse. SO₂ emissions from three (3) fluidized bed boiler emission tests included in the CHIEF database averaged 0.018 lb/mmBtu, which was approximately 70% less than the average SO₂ emission rate on non-fluidized bed boilers (0.0256 lb/mmBtu).

3.1.4.1 Hydrogen Chloride (HCl) Emissions and Control

HCl emissions from the ecoPower boiler will be a function of the fuel chlorine content and acid gas control in the boiler and air pollution control systems. The chlorine content of biomass fuels can vary significantly. The chlorine content in trunk wood is generally low, in the range of 0.01% to 0.02% in the dry wood. In bark, the chlorine content is generally in the range of 0.02% to 0.03% (by weight). Chlorine concentrations

in forest residues are generally at the same levels as bark.¹⁸ Other biomass resources can have significantly higher chlorine contents. For example, switchgrass typically has a chlorine content in the range of 0.18% (by weight) and corn stover has chlorine content in the range of 0.24% (by weight).¹⁹ However, ecoPower has no plans to fire these higher-chlorine biomass resources at eGF.

Based on laboratory analyses summarized in Section 2, chlorine concentrations in fuels proposed for use at eGF vary between 35 ppm and 140 ppm. The average chlorine concentration of all fuel samples was 66.0 ppm, with a standard deviation of 30.8 ppm. Based on these analyses, the maximum chlorine content of the blended fuels is expected to be in the range of 100 to approximately 125 ppm. To provide a conservatively high estimate of uncontrolled HCl emissions, HCl emissions were calculated based on a fuel chlorine content of 200 ppm, an average heating value of 5,108 Btu/lb, and assuming 100% conversion of fuel chlorine to HCl, potential. Based on these assumptions, uncontrolled HCl emissions from the eGF boiler will be 0.026 lb/mmBtu.

Acid gases, including sulfuric acid mist and HCl, generated during the combustion process will be effectively controlled in the fluidized bed boiler, duct work downstream of the boiler, and fabric filter baghouse. Biomass combustion generates a highly alkaline fly ash (see, Table 3-6), and, based on engineering judgment and experience at existing coal-fired fluidized bed boilers, alkaline species in the biomass-generated fly ash will react with acid gases formed during the combustion process. Extensive mixing and good solids/gas contact within the fluidized bed will promote acid gas removal. The alkaline filter cake associated with biomass combustion will provide additional acid gas removal as the flue gas passes through the filter cake. Alkalinity provided by the biomass-generated filter cake will reduce, or eliminate, the need to add alkaline species to the system through the addition of limestone to the boiler bed or a sorbent injection system (see, subsection 3.1.4.2 below).

Fly ash associated with woody biomass will be rich in calcium (Ca) and potassium (K). The content of calcium oxide (CaO or lime) in wood and bark ash is typically in the range of 30 – 50%, and potassium oxide

¹⁸ See, Hiltunen, M., *Combustion of Different Types of Biomass in CFB Boilers*, Foster-Wheeler, Presented at the 16th European Biomass Conference, Valencia, Spain, June 2-6, 2008.

¹⁹ See, Tillman, D., Conn, R., and Duong, D., *Biomass Fuel Selection for Cofiring in Circulating Fluidized Bed Boilers*, Foster-Wheeler, Presented at Coal Gen 2009, Charlotte, North Carolina, August 18-21, 2009.

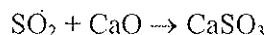
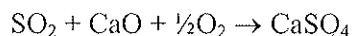
(K₂O) concentrations can be up to 15% or higher.²⁰ Table 3-6 summarizes the ash characteristics of several fuels that will be utilized at eGF. Fuels fired at eGF are expected to generate an alkaline fly ash, with CaO and K₂O concentrations of approximately 70% and 10%, respectively.

Table 3-6 — Biomass Ash Characteristics⁽¹⁾

	Sawdust	Chips	Bark	Chipwood	Design Fuel
% in Design Fuel (weight)	30%	30.0%	20%	20%	
Ash Analysis					
SiO ₂ %	6.87	5.29	3.77	5.29	5.46
Al ₂ O ₃ %	3.22	2.10	2.76	2.10	2.57
Fe ₂ O ₃ %	2.17	4.55	1.66	4.55	3.26
CaO %	66.65	67.00	80.48	67.00	69.58
MgO %	4.07	4.32	1.97	4.32	3.78
Na ₂ O %	0.26	0.23	0.15	0.23	0.22
K ₂ O %	11.87	11.20	4.32	11.20	10.03
P ₂ O ₅ %	1.22	2.00	0.80	2.00	1.53
TiO ₂ %	0.15	0.13	0.26	0.13	0.16
SO ₃ %	1.47	0.92	0.48	0.92	1.00
Other %	0.87	0.84	0.91	0.84	0.86
Undetermined %	1.17	1.42	2.44	1.42	1.55
Total	100	100	100	100	100

(1) Fuel samples, analyzed by University of Kentucky's CAER, have been provided to DAQ under separate cover.

In a coal-fired fluidized bed boiler, crushed limestone (CaCO₃) is typically added to the combustion bed for SO₂ and acid gas control. Within the combustion zone, lime (CaO) is formed by calcining the limestone. SO₂ formed during the combustion process combines with the calcined lime to form gypsum (CaSO₄), a stable byproduct, as shown in the following reactions:



²⁰ Hiltunen, M., *Combustion of Different Types of Biomass in CFB Boilers*, Foster-Wheeler, Presented at the 16th European Biomass Conference, Valencia, Spain, June 2-6, 2008.

Similarly, acid gases in the flue gas will react with alkaline species in the flue gas. For example, HCl will react with hydrated lime to form calcium chloride solids as shown below:



The HCl removal equation shows that one mole of calcium is required to capture two moles of chlorine. However, there will be a number of competing reactions within the fluidized bed, including competing reactions with SO₂ and other acid gases, as well as reaction that form alkali-chlorides such as KCl and NaCl. These alkali-chloride compounds can deposit on tubes and other heat transfer surfaces as a highly aggressive corrosive.²¹ The biomass-fired circulating fluidized bed boiler must be designed to address alkali-chloride corrosion issues.

Actual acid gas removal in the fluidized bed boiler and fabric filter will be dependent on several factors including the availability of alkaline species, temperature of the combustion bed, residence time within the combustion bed, mixing, and uncontrolled SO₂ and acid gas concentrations. Although, acid gas removal is expected in the fluidized bed and fabric filter baghouse, there are very little stack test data available upon which to establish an expected control efficiency. The CHIEF database includes HCl emissions data from seven (7) wood-fired boilers; however, none of the boilers were fluidized bed boilers. Three of the boilers controlled particulate emissions with an electrostatic precipitator, two were equipped with a mechanical collector, and two were equipped with a fabric filter baghouse. Results of the HCl stack tests at those wood-fired units are summarized in Table 3-7.

²¹ See, Tillman, D., Conn, R., and Duong, D., *Biomass Fuel Selection for Cofiring in Circulating Fluidized Bed Boilers*, Foster-Wheeler, Presented at Coal Gen 2009, Charlotte, North Carolina, August 18-21, 2009.

Table 3-7 — Biomass-Fired Boiler HCl Emissions Data

ID	FUEL TYPE	FIRING CONFIGURATION	CONTROL DEVICE	NUMBER OF RUNS	RUN AVERAGE (lb/MMBtu)
B08	Wet Wood	Stoker	ESP	2	0.06290
B125	Wet Wood	Not Reported	ESP	1	0.00170
B132	Wet Wood	Stoker	Fabric Filter	1	0.00035
B133	Wet Wood	Stoker	Fabric Filter	3	0.00163
B143	Wet Wood	Stoker	Mechanical Collector	1	0.00157
B23	Wet Wood	Stoker	ESP	7	0.00535
B42	Dry Wood	Stoker	Mechanical Collector	1	0.06140

The average HCl emission rate from units equipped with ESP and mechanical collector control systems was 0.027 lb/mmBtu. This emission rate is similar to the uncontrolled HCl emission rate predicted for ecoPower based on fuel chlorine analyses. The average HCl emission rate from the two units equipped with a fabric filter was 0.0010 lb/mmBtu, approximately 96% below the units controlled with other particulate controls. Although actual acid gas removal across the particulate control systems were not measured, these stack test results from wood-fired units suggest that the intimate contact between the boiler flue gas and alkaline biomass-generated filter cake provides significant acid gas removal.

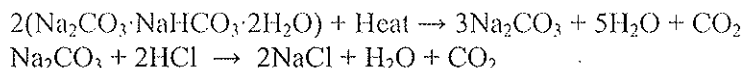
Based on the alkalinity of the biomass fly ash, the combustion conditions within the fluidized bed boiler (including combustion temperatures, solid/gas contact, mixing, and residence time), and the contact between the flue gas and alkaline baghouse filter cake, it is expected that the boiler/baghouse will capture at least 90% of the HCl generated in the boiler (based on a fuel chlorine concentration of 200 ppm). The alkaline biomass-generated fly ash will essentially act as a dry sorbent injection system upstream of the baghouse. Based on potential HCl emission of 0.026 lb/mmBtu, and assuming 90% removal efficiency in the fabric filter baghouse and filter cake, HCl emissions from the eGF boiler will be 0.0026 lb/mmBtu.

3.1.4.2 Dry Sorbent Injection Technology for Acid Gas Control

Although significant acid gas removal is expected due to alkalinity in the wood-based fly ash and intimate gas/solids contact in the fluidized bed boiler and fabric filter baghouse, other than the stack test data summarized above (Table 3-7), no data have been identified measuring actual acid gas removal efficiencies on a biomass-fired boiler equipped with a fabric filter baghouse. To address HCl emissions, the steam

generator supplier will be required to provide a HCl emission guarantee of 0.0026 lb/mmBtu. In the event that the supplier cannot provide this guarantee without post combustion controls, the steam generator equipment supplier will be required to provide a dry sorbent injection (DSI) control system to provide additional acid gas removal, as necessary. DSI is a proven technology for the removal of acid gases from power plant flue gas. DSI involves injection of a sodium based sorbent into the ductwork after the furnace and prior to the baghouse. With the proper temperature profile and stoichiometry, the sorbent will effectively react with acid gases in the flue gas and be captured in the baghouse. The process works through neutralization of the acid gases with the caustic solid sorbent.

The most common sodium based sorbent used for acid gas mitigation is Trona ($\text{Na}_2\text{CO}_3 \cdot \text{NaHCO}_3 \cdot 2\text{H}_2\text{O}$). Reaction rates will be based on contact between the sorbent and flue gas constituents. For example, the trona and HCl neutralization reactions proceed as follows:

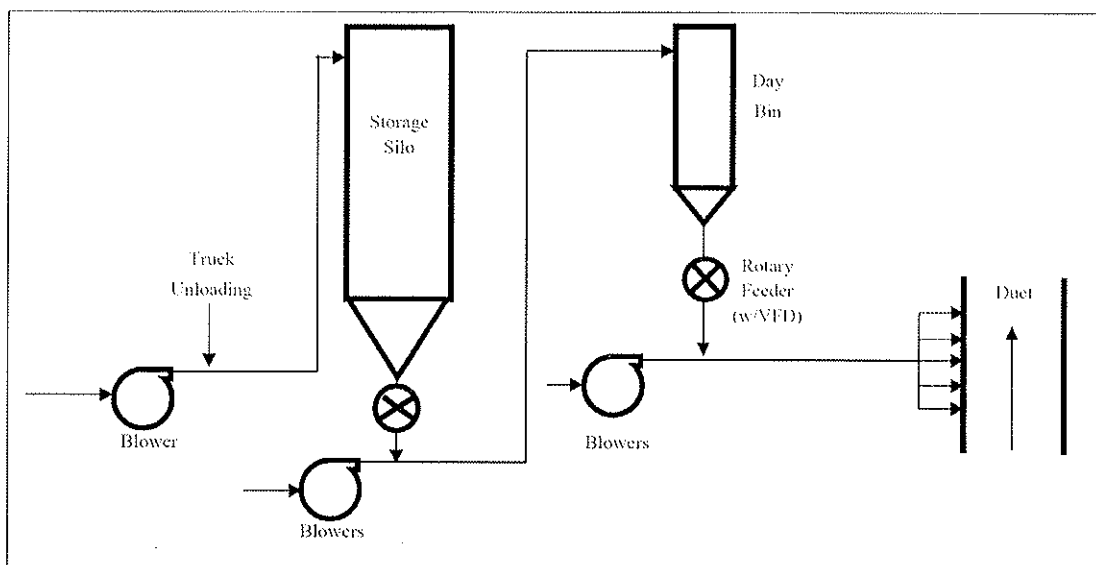


The appropriate temperature is needed to ensure that the sodium sorbent rapidly decomposes to sodium carbonate (Na_2CO_3), resulting in the formation of micropores on the sorbent surface. The increase in sorbent surface area due to micropore formation greatly increases sorbent utilization. Injecting the sodium sorbent into flue gas with a temperature less than 800°F and greater than 275°F will maximize the ability of the sorbent to capture acid gases.

Reaction time is another factor contributing to acid gas removal. Reaction time can be increased by injecting the sorbent as far upstream of the particulate control system, within the required temperature window. Using a fabric filter baghouse as the particulate control system will also maximize sorbent/gas contact and the available reaction time. Unutilized sorbent that accumulates in the baghouse filter cake will be available to react with acid gases in the flue gas as the flue gas flows through the filter cake, increasing overall sorbent utilization.

The DSI system includes a truck unloading station for the sorbent, long term storage silo, day bin, a rotary feeder, blowers, and injection lances. Typically, an air drying system is used to dry the air used for transporting the sorbent to the injection lances. In-line milling equipment may also be required to further grind the sorbent and increase sorbent utilization. Figure 3-3 shows a typical flow diagram for a dry sorbent injection system.

Figure 3-3: Typical DSI System Flow Diagram



Although only limited data is available demonstrating acid gas removal efficiency on coal-fired boilers using trona (and no data on HCl removal with trona on a biomass-fired boiler); however, based on engineering judgment and a maximum fuel chlorine content of 200 ppm, it is estimated that a trona injection rate of 1,200 lb/hr, or less, would ensure an acid gas removal efficiency of at least 90%.

3.2 MAIN BOILER PARTICULATE MATTER EMISSIONS

Particulate matter (PM) composition and emission levels are a complex function of boiler firing configuration, boiler operation, pollution control equipment and fuel properties. Uncontrolled PM emissions from biomass-fired boilers include the ash from combustion of the fuel and noncombustible metals present in trace quantities. Other sources of PM include condensable organics and minerals present in the combustion air.

Ash from the combustion of biomass may either settle out in the boiler (bottom ash) or be entrained in the flue gas (fly ash). The distribution of ash between the bottom ash and fly ash fractions affects uncontrolled PM emissions, and is a function of the boiler firing method and furnace type. In a biomass-fired fluidized bed boiler it is assumed that approximately 60% of the ash will be emitted as fly ash and 40% will settle out in the boiler as bottom ash.

Particulate matter can be classified as either “filterable” or “condensible.” Basically, filterable PM is composed of solids that can be captured on a filter media, while condensible PM is a gas at the sampling location which condenses into a liquid or solid within a few seconds of leaving the stack. The terms “filterable” and “condensible” describe how the particulate matter is captured in the sampling train. Filterable PM is captured in the filtering media located in the front-half of the sampling train. Condensible PM passes through the filter media and is captured in the sampling train impinger solution.

3.2.1 Filterable Particulate Matter Emissions

Fabric filtration has been widely applied to fossil-fuel combustion sources since the early 1970s, and will effectively removal PM emissions from a biomass-fired fluidized bed boiler. Fabric filtration systems consist of a number of filtering elements (bags) along with a bag cleaning system contained in a main shell structure incorporating dust hoppers. Particulate-laden gas enters a fabric filter compartment and passes through a layer of filter bags. The collected particulate forms a cake on the bag that enhances the bag’s filtering efficiency. Excessive caking will increase the pressure drop across the fabric filter at which point the filters must be cleaned.

Fabric-filters achieve a relatively constant outlet emission rate and exhibit varying pressure drops dependent upon the degree of cake thickness at any point of reference. As the flue gas passes through the fabric, the

captured particulate forms a cake on the surface of the fabric. This deposit increases both the filtration efficiency and its resistance to gas flow. Therefore, for continuous operation, a fabric-filter must have some mechanism for periodic cleaning of the deposited cake. Cleaning mechanisms include reverse-air systems and pulse-jet systems. The cleaning mechanism is frequently used to describe the type of fabric filter.

The eGF boiler will be designed with a pulse-jet fabric filter. In a pulse-jet design, the filter cake forms on the outside of the filter bag as particulate laden flue gas flows from the outside to the inside of the filter bag. Bag cleaning is by short pulses of high-pressure air directed downward into each bag in the row being cleaned. Dislodged particulate matter drops into a hopper for collection.

Fabric specifications include such properties as tensile strength, abrasion resistance, chemical attack resistance and limitations of operating temperature. Synthetic fibers are typically used because they can operate at higher temperatures and more effectively resist chemical attack. The synthetic fiber most used for high temperature applications is fiberglass or glass fibers. For low temperature applications, such as crushers, polypropylene is often used. Most of the baghouses currently operating on fossil fuel-fired boilers use bags made with glass fibers. Ryton®, a felted filter made of polyphenylene sulfide fibers attached to a polyfluorocarbon scrim, is also used. Ryton® can operate at temperatures of 350 °F and shows good resistance to acids and alkalis. Several fabrics capable of achieving the proposed particulate matter emission rates, including glass fibers, Ryton®, and others, are available for use at eGF.

Based on controlled particulate matter emission rates achieved at existing solid fuel-fired boilers and equipped with fabric filter control systems, it is expected that the fabric filter baghouse at eGF will consistently achieve a filterable PM₁₀ emission rate of 0.015 lb/mmBtu. A controlled emission rate of 0.015 lb/mmBtu equates to an overall collection efficiency of greater than 99.2%. The fabric filter baghouse will achieve similar control efficiencies for filterable PM and PM_{2.5}. Based on particle size distribution data in AP-42, PM₁₀ and PM_{2.5} emissions represent 74% and 55% of total filterable PM emissions controlled with a fabric filter baghouse, respectively.²² Therefore, a controlled filterable PM₁₀ emission rate of 0.015 lb/mmBtu corresponds to controlled filterable PM and PM_{2.5} emission rates of 0.020 lb/mmBtu and 0.011 lb/mmBtu, respectively.

²² See, AP-42 Section 1.6, Table 1.6-1 Emission Factors for PM From Wood Residue Combustion.

3.2.2 Condensible Particulate Matter Emissions

Condensible PM consists of inorganic and organic compounds which are in a gaseous phase at stack temperatures but condense into a liquid or solid particulate after leaving the stack. Sulfuric acid mist is the most widely recognized form of condensible PM emitted by combustion sources that fire sulfur-bearing fuels. Sulfuric acid formed in the boiler has a vapor pressure sufficiently low to condense at ambient conditions. Other inorganic species that can contribute to condensible PM emissions include ammonium sulfate, other acid gases, and trace volatile metals. Ammonium sulfate is formed when SO_3 in the flue gas reacts with free ammonia (NH_3) from the SNCR. Trace levels of chlorine in the fuel will convert to HCl gas during the combustion process, which may be classified as condensible particulates. Trace volatile metals are typically present in biomass flue gas at very low levels, and have no effect on condensible PM test results.

Organic species in the flue gas can exist as vapors at stack temperatures but condense to liquid or solid aerosols at ambient temperatures. Condensible organics are typically associated with non-combustion sources, as organic emissions from boilers are typically very low because boilers are operated with essentially complete combustion. Combustion controls that minimize the formation of CO and VOC will also minimize the formation of condensible organic species. Potential condensible emissions from the eGF boiler were calculated by summing acid gas and volatile organic emissions. Based on speciated organic compound stack test data available from the CHIEF database, it was concluded that approximately 50% of the speciated organic compounds could be classified as condensible organic emissions.

The condensible PM emission calculation for the eGF boiler is summarized in Table 3-8. Acid gas constituents were calculated based on maximum potential uncontrolled emissions and 90% removal in the fluidized bed boiler and fabric filter baghouse. Condensible organic constituents were calculated based on 50% of total VOC emissions. Using this methodology, condensible PM emissions are estimated to be 0.013 lb/mmBtu. This emission rate is consistent with condensible PM emissions data in the CHIEF database.²³ Typically, all condensible particulate is assumed to be emitted as $\text{PM}_{2.5}$; therefore, total PM_{10} and

²³ The CHIEF database includes condensible PM emissions for 88 wood-fired units. The overall average condensible PM emission rate from all wood-fired units was 0.017 lb/mmBtu. The database includes stack test data from three units equipped with a fabric filter control system. Average condensible PM emissions from those three units were measured at 0.014 lb/mmBtu.

PM_{2.5} emissions from the boiler will be 0.028 lb/mmBtu (i.e., 0.015 lb/mmBtu filterable + 0.013 lb/mmBtu condensible) and 0.024 lb/mmBtu (i.e., 0.011 lb/mmBtu filterable + 0.013 lb/mmBtu condensible), respectively.

Table 3-8 — Condensible PM Emission Calculation

Constituent	Emissions	
	lb/hr	lb/mmBtu
H ₂ SO ₄	0.13	0.0002
(NH ₄) ₂ SO ₄	0.09	0.0001
HCl	1.71	0.0025
Organics	6.70	0.010
Condensible PM	8.63	0.013

3.3 MAIN BOILER EMISSIONS - SUMMARY

A description of the main boiler emission controls and controlled emission rates are summarized in Table 3-9.

Table 3-9 — Main Boiler Emissions Rates and Control Technologies

Pollutant	Controlled Emission Rate	Emission Control Technology
NO _x	0.08 lb/mmBtu (30-day rolling average)	Selective Non-Catalytic Reduction (SNCR)
CO	0.08 lb/mmBtu (reference method stack test)	Combustion Controls
SO ₂	0.078 lb/mmBtu (reference method stack test)	Low sulfur content of the biomass fuel
PM (filterable)	0.020 lb/mmBtu (reference method stack test)	Fabric Filter (FF)
PM ₁₀ (filterable)	0.015 lb/mmBtu (reference method stack test)	Fabric Filter (FF)
Total PM ₁₀ (filterable + condensible)	0.028 lb/mmBtu (reference method stack test)	Combustion Controls and FF
PM _{2.5} (filterable)	0.011 lb/mmBtu (reference method stack test)	Fabric Filter (FF)
Total PM _{2.5} (filterable + condensible)	0.024 lb/mmBtu (reference method stack test)	Combustion Controls and FF
VOC	0.017 lb/mmBtu (reference method stack test)	Combustion Controls
Sulfuric Acid Mist	0.0002 lb/mmBtu	Low sulfur content of the biomass

	(reference method stack test)	fuel and FF
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3.4 MATERIAL HANDLING PARTICULATE MATTER EMISSIONS

ecoPower will use a combination of enclosures and particulate filter systems to control PM emissions from the material handling systems (see, Section 2.4.6). Particulate emissions from vehicle traffic will be minimized using a combination of paved roads and limiting vehicle speeds. Material handling particulate control systems and controlled PM₁₀ emission rates are summarized in the following table.

Table 3-10 — Material Handling Emissions and Control Technologies

Pollutant	Control Technology	Controlled Emission Rate
PM ₁₀ (Fuel)	Transfer Points: Enclosed Transfer Points and Fog type dust suppression on chipping and hogging operations. Fuel Storage Piles: Drop Point Control (e.g., enclosed hoppers) and Partial Enclosures	85% control efficiency
PM ₁₀ (Fly Ash and Bed Ash and Sand)	Enclosed drag chain conveyors with silo bin-vent filters. Pneumatic transport system for sand with bin-vent filter	0.01 gr/dscf (bin vent filters)
Haul Roads	Combination of paved roads and speed limits.	NA

3.5 AUXILIARY BOILER EMISSIONS

eGF is proposing a combination of fuel characteristics, combustion controls, and limited annual hours of operation to control emissions from the auxiliary boiler. NO_x emissions from the auxiliary boiler will be controlled using combustion controls, including low-NO_x burners. Based on information from boiler vendors, it is expected that the proposed auxiliary boiler equipped with combustion controls will achieve NO_x and CO concentrations of 100 and 150 ppmvd @ 3% O₂, respectively, under all normal operating conditions (including low load operation but excluding periods of startup, shutdown, and malfunction). These concentrations equate to controlled emission rates of 0.12 lb/mmBtu (NO_x) and 0.11 lb/mmBtu (CO). PM₁₀ and SO₂ emissions from the auxiliary boiler will be limited based on the low ash and sulfur content of propane. Because vendors do not provide emission guarantees for other pollutants, potential PM₁₀, SO₂, and

VOC emissions were calculating using AP-42 emission factors for propane combustion. Emissions from the auxiliary boiler are summarized in the following table.

Table 3-11 — Auxiliary Boiler Emission Rates and Control Technologies

Pollutant	Emission Rate	Control Technology
NO _x (Auxiliary Boiler)	0.12 lb/mmBtu	Combustion Controls, Low NO _x Burners and Flue Gas Recirculation
CO (Auxiliary Boiler)	0.11 lb/mmBtu	Good Combustion Practices
VOC (Auxiliary Boiler)	0.0054 lb/mmBtu	Good Combustion Practices
PM ₁₀ total (Auxiliary Boiler)	0.0065 lb/mmBtu	Propane and Good Combustion Practices
SO ₂ (Auxiliary Boiler)	0.00028 lb/mmBtu	Propane

3.6 EMERGENCY GENERATOR AND FIRE-WATER PUMP EMISSIONS

eGF will use low sulfur diesel fuel, combustion controls, and limited annual hours of operation to limit emissions from the emergency diesel generator and fire water pump. Diesel-fired engines will meet the applicable compression ignition internal combustion engine (CI ICE) new source performance standards (NSPS). The NSPS standards were based on the best demonstrated system of continuous emission reduction, considering costs, non-air quality health, environmental, and energy impacts. Emissions from the emergency generator and fire-water pump are summarized in the following tables.

Table 3-12 — Emergency Generator Emission Rates and Control Technologies

Pollutant	Emission Rate	Basis
NMHC + NO _x (EDG)	4.77 g/hp-hr	CI ICE NSPS and limited annual hours of operation.
NO _x	4.63 g/hp-hr	Based on NO _x -TOC ratio in AP-42
CO (EDG)	2.61 g/hp-hr	CI ICE NSPS and limited annual hours of operation.
PM ₁₀ filterable (EDG)	0.15 g/hp-hr	CI ICE NSPS and limited annual hours of operation.
SO ₂ (EDG)	0.052 lb/mmBtu	Low-sulfur diesel fuel and limited annual hours of operation.

Table 3-13 — Fire Water Pump Emission Rates and Control Technologies

Pollutant	Emission Rate	Basis
NMHC + NO _x (FWP)	3.0 g/hp-hr	CI ICE NSPS and limited annual hours of operation.
NO _x	2.91 g/hp-hr	Based on NO _x -TOC ratio in AP-42
CO (FWP)	2.6 g/hp-hr	CI ICE NSPS and limited annual hours of operation.
PM ₁₀ filterable (FWP)	0.15 g/hp-hr	CI ICE NSPS and limited annual hours of operation.
SO ₂ (FWP)	0.052 lb/mmBtu	Low-sulfur diesel fuel and limited annual hours of operation.

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4. PROJECT EMISSIONS

Emissions from eGF will be primarily the products of biomass combustion in the main boiler. The auxiliary boiler, emergency generator, and fire-water pump will have limited use, but are also sources of emissions associated with fuel combustion. Particulate emissions will be generated by the storage and transfer of the wood fuel and fly ash. Emission sources at the facility are listed in Table 2-5.

Emission sources at eGF have the potential to emit the following NSR-regulated pollutants:

- Nitrogen oxides (NO_x)
- Carbon monoxide (CO)
- Sulfur dioxide (SO₂)
- Volatile organic compounds (VOC)
- Particulate Matter (PM)
- PM with an aerodynamic diameter less than 10 microns (PM₁₀)
- PM with an aerodynamic diameter less than 2.5 microns (PM_{2.5})
- Sulfuric Acid Mist (H₂SO₄)

In addition to calculating potential NSR pollutant emissions, emission estimates were prepared for certain non-PSD pollutants, including pollutants defined hazardous air pollutants (HAPs) in Section 112 of the Clean Air Act. Potential HAP emissions were estimated for each emission source based on fuel characteristics, expected control efficiencies, stack test data from wood-fired boilers published on the CHIEF database, and/or published emission factors in U.S.EPA's Compilation of Air Pollution Emission Factors (AP-42), as applicable.

Emission calculations were prepared for all emission sources at eGF. Calculations were prepared for each potential emission source to determine: (1) average emission rates during normal operation; (2) emission rates associated with startup; and (3) source-wide annual emissions.

4.1 COMBUSTION SOURCES

4.1.1 Main Boiler NSR Emissions

Potential emissions from the main boiler were estimated using the design boiler maximum continuous rating (MCR) plus 5% heat input to account for net turbine heat rate degradation associated with turbine wear and normal boiler fouling. Emissions from the main boiler were calculated based on the boiler design parameters and the emission rates. Potential hourly and annual emissions from the main boiler are summarized in Table 4-1.

Table 4-1 — Main Boiler Emissions

Pollutant	Average Hourly Emissions* (lb/hr)	Annual Emissions* (tpy)
NO _x	53.8	235.6
CO	53.8	235.6
SO ₂	52.4	229.5
VOC	13.4	58.7
PM (filterable)	13.4	58.7
PM ₁₀ (filterable)	10.1	44.2
Total PM ₁₀ (filterable + condensible)	18.7	82.0
PM _{2.5} (filterable)	7.4	32.4
Total PM _{2.5} (filterable + condensible)	16.0	70.2
H ₂ SO ₄	0.13	0.56

* Hourly emission rates were calculated based on the controlled emission rates for each NSR-regulated pollutant and a design heat input to the main boiler 672 mmBtu/hr. Potential annual emissions were calculated based on 100% capacity factor.

4.1.2 Auxiliary Boiler NSR Emissions

Based on preliminary design calculations, the eGF auxiliary boiler will be rated for 75,000 lb/hr steam at 165 psig. The auxiliary boiler will be designed to fire propane. Emissions from the auxiliary boiler will be controlled by firing propane, using combustion controls, and limiting the annual hours of operation to no more than 1000 hours per year. Potential emissions from the auxiliary boiler are summarized in Table 4-2.

Table 4-2 — Auxiliary Boiler Emissions

Pollutant	Hourly Emissions* (lb/hr)	Annual Emissions @ 1000 hr/yr (tpy)
NO _x	11.0	5.5
CO	10.1	5.1
VOC	0.50	0.25
PM/PM ₁₀ /PM _{2.5}	0.60	0.30
SO ₂	0.026	0.013

* Hourly emission rates were calculated based on a design heat input to the auxiliary boiler of 92 mmBtu/hr. Annual emissions were calculated assuming 1000 hr/yr

4.1.3 Emergency Generator and Diesel Fire-Water Pump NSR Emissions

Based on preliminary design calculations, the EDG will be designed to provide 1,600 kW power during emergency situations, and the FWP will be designed at 450 hp to provide water at a rate of 2,500 to 3,000 gpm. The diesel engines will be designed to fire low-sulfur diesel fuel. Emissions from the diesel engines will be controlled by firing low-sulfur fuels, using combustion controls, and limiting the annual hours of operation to 500 hours per year. Both engines will be used only in case of an emergency and for periodic testing. Potential emissions from the EDG and FWP are summarized in Tables 4-3 and 4-4, respectively.

Table 4-3 — Diesel Fired Emergency Generator Emissions

Pollutant	Hourly Emissions ⁽¹⁾ (lb/hr)	Annual Emissions @ 500 hr/yr (tpy)
NO _x ⁽²⁾	22.5	5.6
CO	12.7	3.2
VOC ⁽²⁾	0.68	0.17
PM/PM ₁₀ /PM _{2.5}	0.73	0.18
SO ₂	0.78	0.19

- (1) Hourly emission rates were calculated assuming a maximum heat input to the engine of 14.9 mmBtu/hr. Annual emissions were calculated based on 500 hours per year.
- (2) NO_x and VOC emission rates were calculated based on the combustion ignition internal combustion engine new source performance standard of 4.77 g/hp-hr for NMHC+NO_x, assuming 97% NO_x and 3% VOC based on emission factors in AP-42 Table 3.4-1.

Table 4-4 — Diesel Fired Water Pump Emissions

Pollutant	Hourly Emissions ⁽¹⁾ (lb/hr)	Annual Emissions @ 500 hr/yr (tpy)
NO _x ⁽²⁾	2.89	0.72
CO	2.58	0.65
VOC ⁽²⁾	0.09	0.02
PM/PM ₁₀ /PM _{2.5}	0.15	0.04
SO ₂	0.17	0.04

- (1) Hourly emission rates were calculated assuming an engine output of 450 hp and a maximum heat input of 3.24 mmBtu/hr. Annual emissions were calculated based on 500 hours per year.
- (2) NO_x and VOC emission rates were calculated based on the combustion ignition internal combustion engine new source performance standard of 3.0 g/hp-hr for NMHC+NO_x, assuming 97% NO_x and 3% VOC based on emission factors in AP-42 Table 3.3-1.

4.2 MATERIAL HANDLING EMISSIONS

Material handling operations at eGF, including fuel, fly ash, bottom ash, and sand handling, have the potential to generate particulate matter emissions. Particulate emissions associated with these material handling systems will be generated from material transfers, storage pile working and maintenance (e.g., bulldozing), and storage pile wind erosion. In addition, vehicular traffic at eGF has the potential to generate fugitive dust emissions. System capacities and related data to calculate potential PM_{10} emissions associated with material handling operations at the facility are summarized in Tables 4-5, 4-6, 4-7, 4-8, and 4-9.

Table 4-5 — Biomass Handling System: Transfer Point Descriptions

Transfer Point Description	Short-Term Maximum Capacity		Emission Controls
	Value	Unit	
Log unloading	70	Tons/hr	biomass moisture
Log piling	70	Tons/hr	biomass moisture
Log transfer to chipper feeder	70	Tons/hr	enclosed fog type dust control system
Transfer from chipper to biomass receiving conveyor	70	Tons/hr	enclosed fog type dust control system
Oversize Hopper loading	120	Tons/hr	biomass moisture
Transfer from oversize hopper to biomass receiving conveyor	120	Tons/hr	enclosed biomass moisture
Truck unloading tipplers	120	Tons/hr	biomass moisture
Transfer from truck hopper to biomass receiving conveyor	120	Tons/hr	enclosed biomass moisture
Transfer from biomass receiving conveyor to disk screen in the Wood Hog Building	70	Tons/hr	enclosed fog type dust control system
Transfer from disc screen to wood hog in the Wood Hog Building	70	Tons/hr	enclosed fog type dust control system
Transfer from disk screen to transfer conveyor in the Wood Hog Building	70	Tons/hr	enclosed fog type dust control system
Transfer from wood hog to transfer conveyor in the Wood Hog Building	70	Tons/hr	enclosed fog type dust control system

Note: Emission point identification numbers have been assigned to each emission point in the air construction permit application.

Table 4-5 continued:

Transfer Point Description	Short-Term Maximum Capacity		Emission Controls
	Value	Unit	
Transfer from transfer conveyor to storage shed tripper conveyor in the Transfer Tower	240	Tons/hr	enclosed biomass moisture
Transfer from storage shed tripper conveyor to storage piles	240	Tons/hr	enclosed biomass moisture
Transfers from storage piles to reclaim conveyor	70	Tons/hr	enclosed biomass moisture
Transfer from storage pile reclaim conveyors to reclaim conveyor	70	Tons/hr	enclosed biomass moisture
Transfer from reclaim conveyor to chain conveyor within Boiler Building	70	Tons/hr	enclosed biomass moisture
Transfers from chain conveyor to surge bins within Boiler Building	70	Tons/hr	enclosed biomass moisture
Transfers from surge bins to boiler feed chain conveyor within Boiler Building	70	Tons/hr	enclosed biomass moisture
Transfers from boiler feed chain conveyors to boiler within Boiler Building	70	Tons/hr	enclosed biomass moisture

Note: Emission point identification numbers have been assigned to each emission point in the air construction permit application.

Table 4-6 — Biomass Handling System: Fugitive Dust and Emission Point Data

Emission Point Description	Short-Term Maximum Capacity		Emission Controls
	Value	Unit	
Fugitives from Wind Erosion at log storage pile	20 ft high pile	----	biomass moisture
Fugitives from ground equipment manipulation of logs	----	----	biomass moisture
Fugitive emissions from transfer operations at the Oversize Hopper	120	Tons/hr	biomass moisture
Fugitive emissions from the truck tipper operations (Tipper A)	120	Tons/hr	biomass moisture
Fugitive emissions from the truck tipper operations (Tipper B)	120	Tons/hr	biomass moisture
Fugitives from Wind Erosion at Wood Chip storage pile	50 ft high pile	----	storage pile is located within an open ended storage shed
Fugitives from Wind Erosion at Bark storage pile	50 ft high pile	----	storage pile is located within an open ended storage shed
Fugitives from Wind Erosion at Saw Dust storage pile	50 ft high pile	----	storage pile is located within an open ended storage shed
Emissions from Log Chipper Building ventilation fan	1,000	CFM	fog type dust control system
Emissions from Wood Hog Building ventilation fan	1,600	CFM	fog type dust control system
Emissions from Transfer Tower ventilation fan	1,500	CFM	enclosed transfer point
Emissions from Biomass Active Storage reclaim tunnel exhaust fan	9,000	CFM	enclosed transfer points
Emissions from surge bin-vent filter exhaust	1,500	CFM	

Note: Emission point identification numbers have been assigned to each emission point in the air construction permit application.

Table 4-7 — Fly Ash Handling System: Transfer Point Descriptions and Emission Point Data

Transfer Point / Emission Point Description	Short-Term Maximum Capacity		Emission Controls
	Value	Unit	
Baghouse drag chain collecting conveyor to drag chain transfer conveyor	1	Tons/hr	enclosed and exhausted through bin vent filter
Transfer from drag chain conveyor to fly ash storage silo	1	Tons/hr	enclosed and exhausted through bin vent filter
Storage silo to truck via dry loadout spout	200	Tons/hr	vented back to storage silo
Storage silo to truck via pin mixer	200	Tons/hr	fly ash is mixed with water to approximately 20% moisture
Emissions from fly ash storage silo bin-vent filter	2,000	CFM	bin vent filter @ 0.01 gr/dscf
Emissions from fly ash storage silo ventilation fan	600	CFM	no emissions (building exhaust fan)

Table 4-8 — Sand Handling System: Transfer Point Descriptions and Emission Point Data

Transfer Point / Emission Point Description	Short-Term Maximum Capacity		Emission Controls
	Value	Unit	
Self unloading truck to storage bin	25	Tons/hr	exhausted through bin vent filter
Emissions from sand storage bin-vent filter	2,000	CFM	bin vent filter @ 0.01 gr/dscf

Note: Emission point identification numbers have been assigned to each emission point in the air construction permit application.

Table 4-9 — Bed Ash Handling System: Transfer Point Descriptions and Emission Point Data

Transfer Point / Emission Point Description	Short-Term Maximum Capacity		Emission Controls
	Value	Unit	
Boiler ash cooler to drag chain conveyors	1	Tons/hr	enclosed and exhausted through bin vent filter
Drag chain conveyors to drag chain transfer conveyors	1	Tons/hr	enclosed and exhausted through bin vent filter
Drag chain conveyors to bed ash storage silo	1	Tons/hr	enclosed and exhausted through bin vent filter
Bed ash storage silo to truck via dry loadout spout	200	Tons/hr	vented back to storage silo
Bed ash storage silo to truck via pin mixer	200	Tons/hr	bottom ash is mixed with water to approximately 20% moisture
Emissions from bed ash storage silo bin-vent filter	2,000	CFM	bin vent filter @ 0.01 gr/dscf
Emissions from bed ash storage silo ventilation fan	600	CFM	no emissions (building exhaust fan)

Note: Emission point identification numbers have been assigned to each emission point in the air construction permit application.

4.3 STARTUP EMISSIONS

Boiler emissions summarized in subsection 4.1.1 are based on the average controlled emission rates achievable under normal boiler operating conditions, including periods of low load operation. However, the emission rates listed in Table 3-9 may not be achievable during startup of the boiler. For example, control systems designed to control temperature profiles in the combustion zone may not be as effective during initial firing. Similarly, operating parameters needed for effective NO_x control with the SNCR, including sufficient flue gas temperatures, well controlled NO_x-to-NH₃ stoichiometric ratio, and adequate mixing, may not be available during startup. The following table provides a summary of a typical boiler startup sequence.

Table 4-10 — Main Boiler Cold Startup Sequence

Startup Phase	Hours	Hours from Start	Description	Emission Controls
Initial Bed Warm-up	1	1	Firing Propane Exclusively	Initial bed warm-up with propane. NOx and CO emissions controlled with combustion controls.
	1	2		
	1	3		
	1	4		
	1	5		
	1	6		
Transition from propane firing to biomass firing	1	7	Initial Biomass Firing	Introduce biomass to the combustion bed. NOx and CO controlled with combustion controls. Boiler emissions will be directed through the fabric filter.
	1	8		
	1	9	Increase Biomass Firing	
	1	10		
100% Biomass Firing	1	11	100% Biomass Firing	Initiate ammonia injection to the SNCR for NOx control; however, no credit taken for NOx control during startup to allow time to tune the SNCR.
100% biomass firing - increase load from 35% to 50%	1	12	100% Biomass Firing - Increase heat input to the boiler from 25% to 50% of full load heat input.	
	1	13		
	1	14		
	1	15		
100% biomass firing - 50% load - end of startup mode	1	16	100% biomass firing - 50% load - end of startup mode	Tune SNCR and CO combustion controls.

Startup emissions were calculated by estimating heat input to the boiler during the startup period and assigning emission factors representative of uncontrolled NO_x, CO, and VOC emissions associated with initial and low-load firing. Propane will be used as the startup fuel to initiate boiler firing until sufficient heat is available to begin biomass firing. Propane is a low ash low sulfur fuel; therefore, excess emissions of PM, PM₁₀, PM_{2.5}, and SO₂ are not expected to occur during startup. Table 4-11 shows the heat input to the boiler from both propane and biomass during the startup period. Table 4-12 summarizes the emission factors used to calculate startup emissions.

Table 4-11 — Heat Input to the Boiler During Startup

Startup Phase	Hours	Hours from Start	Average Total Heat Input (%)	Heat Input From Propane (%)	Heat Input from Biomass (%)	Emission Controls In Service	
						SNCR	FF
Initial Bed Warm-up	1	1	10%	100%	0%	no	no
	1	2	10%	100%	0%	no	no
	1	3	13%	100%	0%	no	no
	1	4	13%	100%	0%	no	no
	1	5	15%	100%	0%	no	no
	1	6	15%	100%	0%	no	no
Transition from propane firing to biomass firing	1	7	20%	75%	25%	no	yes
	1	8	20%	75%	25%	no	yes
	1	9	20%	50%	50%	no	yes
	1	10	25%	20%	80%	no	yes
100% Biomass Firing	1	11	25%	0%	100%	no	yes
100% biomass firing - increase load from 35% to 50%	1	12	30%	0%	100%	no	yes
	1	13	35%	0%	100%	no	yes
	1	14	40%	0%	100%	no	yes
	1	15	45%	0%	100%	no	yes
100% biomass firing - 50% load - end of startup mode	1	16	50%	0%	100%	yes	yes

Table 4-12 — Main Boiler Startup Emissions Factors

Pollutant	Propane Emission Factors (Note 1)		Biomass Emission Factors	
	Short-Term Propane Emission Rates - Initial Firing to 35% Load (Note 1)		Short-Term Biomass Emission Rates - Initial Load to 35% (Note 2)	Controlled Emission Rates (>50% Load) (Note 3)
	lb/10 ³ gal	lb/mmBtu	lb/mmBtu	lb/mmBtu
CO		0.30	0.31	0.08
NO _x	19	0.21	0.26	0.08
VOC	0.5	0.011	0.026	0.017
PM	0.6	0.0066	0.020	0.020
PM ₁₀ (filterable)	0.6	0.0066	0.015	0.015
PM ₁₀ (total)	0.6	0.0066	0.042	0.028
PM _{2.5} (total)	0.6	0.0066	0.036	0.024
SO ₂	0.0225	0.0002	0.078	0.078

Note 1:

- CO: The propane CO emission factor is based on a CO concentration of 400 ppmvd @ 3% O₂. This emission rate should be representative of maximum short-term CO emissions during initial propane firing.
- NO_x: The NO_x emission factor is based on the AP-42 emission factor for propane fired industrial boilers (AP-42 Table 1.5-1) and is equivalent to a NO_x concentration of approximately 175 ppmvd @ 3% O₂.
- PM: The PM emission factor is based on the AP-42 emission factor for propane fired industrial boilers (AP-42 Table 1.5-1). It is assumed that all PM emitted during propane firing will be emitted as PM_{2.5}.
- VOC: The VOC emission rate is based on the Total Organic Carbon (TOC) emission factor in AP-42 Table 1.5-3. AP-42 does not have a NMTOC emission factor for propane-fired units; therefore, the emission factor for TOC was used. The TOC emission factor was doubled during initial firing to account for less effective combustion controls.
- SO₂: The SO₂ emission factor was based on a maximum propane sulfur content of 0.25 gr/100scf.

Note 2: Short-term emission rates for initial biomass-fired (from initial firing to 35% maximum heat input) are based on expected biomass-fired emission rates without taking into account post-combustion emission controls (i.e., SNCR). The CO emission rate is based on a CO concentration of approximately 400 ppmvd @ 3% O₂ and the NO_x emission rate is based on a NO_x concentration of approximately 200 ppmvd @ 3% O₂. The fabric filter control system will be used whenever biomass is fired; therefore, filterable PM emission rates during initial biomass firing are equal to the expected controlled emission rates during normal operations. Total PM emission rates (filterable + condensable) and VOC emissions were increased by 50% during initial firing to account for less effective combustion controls.

Note 3: Controlled emission rates (at >50% heat input) are based on the expected controlled emission rates during normal boiler operation.

Using the startup sequence, heat inputs, and emission rates summarized in Tables 4-10, 4-11, and 4-12, total startup emissions are summarized in Table 4-13. Table 4-13 also provides a comparison of the average emission rates achieved during startup (lb/mmBtu and lb/hr) and compares the startup emission rates to emission rates that will be achieved at full load during normal operation. Although NO_x, CO and VOC emission rates (lb/mmBtu) during startup may be higher than the emission rates achievable during normal boiler operation, hourly emissions (lb/hr) during startup are less than the hourly emissions calculated at full load operation for all pollutants. Hourly emissions are lower during startup because of the lower heat input to the boiler. Startup is expected to be complete at approximately 50% load and when all pollution control systems, including combustion controls and SNCR have been tuned. Because hourly emissions during startup are less than the full load hourly emissions, annual emissions from the boiler were calculated assuming a 100% capacity factor, or 8,760 hours per year at full load operation.

Table 4-13 — Main Boiler Startup Emissions

Pollutant	Total Startup Emissions	Average Startup Emission Rates*		Average Emission Rates During Normal Operation	
	(lb/startup)	(lb/mmBtu)	(lb/hr)	(lb/mmBtu)	(lb/hr)
NO _x	572	0.22	35.7	0.08	53.8
CO	717	0.28	44.8	0.08	53.8
SO ₂	139	0.054	8.69	0.078	52.4
VOC	51.4	0.012	3.21	0.017	11.4
PM (filterable)	40.9	0.016	2.6	0.020	13.4
PM ₁₀ (filterable)	32.0	0.012	2.0	0.015	10.1
PM ₁₀ (total)	67.4	0.026	4.2	0.028	18.8
PM _{2.5} (total)	58.5	0.023	3.7	0.024	16.1

* Startup emission rates were calculated based on a 16-hour startup duration.

4.4 POTENTIAL ANNUAL NSR EMISSIONS

Potential annual emissions from eGF are summarized in Table 4-14.

Table 4-14 — Annual Potential-to-Emit (PTE) Summary

Pollutant	Main Boiler (Note 1)	Auxiliary Boiler	Emergency Generator*	Fire-Water Pump*	Material Handling Sources	Total
	tpy	tpy	tpy	tpy	tpy	tpy
NO _x	235.6	5.5	5.6	0.72	0.0	247.4
CO	235.6	5.1	3.2	0.65	0.0	244.6
SO ₂	229.5	0.013	0.19	0.04	0.0	229.7
VOC	58.7	0.25	0.17	0.02	0.0	59.1
PM (filterable)	58.7	0.30	0.18	0.04		
PM ₁₀ (filterable)	44.2	0.30	0.18	0.04		
PM _{2.5} filterable)	32.4	0.30	0.18	0.04		
Total PM ₁₀ (filterable + condensable)	82.0	0.30	0.18	0.04		
Total PM _{2.5} (filterable + condensable)	70.2	0.30	0.18	0.04		
H ₂ SO ₄	0.56	neg.	neg.	neg.	0.0	0.56

Notes: (1) Because hourly emissions (lb/hr) from the boiler during startup are less than the full load hourly emissions, annual emissions from the boiler were calculated assuming a 100% capacity factor, or 8,760 hours per year at full load operation.

(2) Emission rates designated as "neg." are negligible.

4.5 POTENTIAL EMISSIONS OF NON-NSR POLLUTANTS

Hazardous air pollutant (HAP) emissions are regulated under §112 of the federal Clean Air Act. In the Clean Air Act Amendments of 1990, Congress included a list of 188 HAPs in §112(b)(1) of the Act. Not all of the HAPs listed in §112(b) will be emitted from each emission source or source category. The U.S.EPA has published HAP emission factors for various source categories, including wood residue combustion sources.²⁴ Emission factors published in AP-42 are based on stack test data compiled and reviewed by EPA from various sources. In most cases the AP-42 emission factors represent averages of all available data of acceptable quality. Emissions of hazardous air pollutants (HAPs) from eGF, including acid gases, trace metals, and organic compounds were estimated using a combination of fuel characteristics, expected control efficiencies, stack test data from wood-fired boilers available from the CHIEF database, and AP-42 emission factors, as applicable.

4.5.1 Main Boiler Acid Gas HAP Emissions

Hydrogen chloride (HCl) is listed as a HAP in §112(b). As described in Section 3.1.3, HCl emissions are a function of the chlorine content of the fuel and acid gas removal in the post combustion emission control systems. Acid gases, including HCl, generated during the combustion process will be effectively controlled in the fluidized bed boiler and fabric filter baghouse. Based on the alkalinity of the biomass fly ash, the combustion conditions within the fluidized bed boiler (including combustion temperatures, solid/gas contact, mixing, and residence time), and the contact between the flue gas and alkaline baghouse filter cake, it is expected that the boiler/baghouse will capture at least 90% of the HCl generated in the boiler (based on a maximum fuel chlorine content of 200 ppm). The alkaline biomass-generated fly ash will essentially act as a dry sorbent injection system upstream of the baghouse. Based on potential uncontrolled HCl emissions of 0.026 lb/mmBtu, controlled HCl emissions from the eGF boiler will be 0.0026 lb/mmBtu (see, section 3.1.4).

4.5.2 Main Boiler Organic HAP Emissions

Several organic compounds listed as hazardous air pollutants in §112(b) of the CAA may be present at very low concentrations in biomass-fired boiler flue gas. AP-42 provides emission factors for some 59 organic

compounds listed in §112(b), or included within a listed group of chemicals in §112(b), from biomass-fired boilers. Organic compound emissions can vary considerably, depending on boiler configuration and air pollution controls. These compounds are not part of the naturally occurring biomass fuel, but are formed in complicated chemical reactions that occur during the combustion process.

Like CO, which is formed when carbon in the fuel is not completely oxidized to CO₂, organic HAP emissions are a product of incomplete combustion. The quantity and types of organic compounds formed during the combustion of biomass fuels will be a function of the combustion process, including combustion temperatures, excess O₂, residence time, and turbulence. With adequate temperatures, residence time, and O₂ availability, organic compounds formed during combustion will be oxidized and converted to CO₂ and water vapor.

Organic emissions include volatile, semi-volatile, and particulate-phase organic compounds. Volatile organic compounds (VOCs) have high vapor pressures and low boiling points, and generally remain in the vapor phase at flue gas stack temperatures. Semi-volatile organic compounds (SVOCs), or condensible organics, primarily consist of polycyclic aromatic hydrocarbons (PAH). These compounds are characterized by lower vapor pressures and higher boiling points, and will likely be emitted in a condensed phase. U.S.EPA has also published emission factors for polychlorinated dibenzo-p-dioxin and polychlorinated dibenzo-furan (PCDD/PCDF) compounds from biomass fired units. These compounds have low vapor pressures and high boiling points, and have been detected at very low concentrations in biomass flue gas. These compounds, if present, would likely be emitted as a particulate.

Regardless of the physical and chemical characteristics of the individual organic compounds, the formation and subsequent destruction of all organic compounds is a function of combustion efficiency. Combustion controls will minimize the formation of all organic HAPs, including VOC, SVOC and particulate compounds. Adequate combustion temperatures, turbulence, residence time, and excess O₂, will minimize the formation of organic compounds, and oxidize organic compounds to CO₂ and water vapor. Post-combustion pollution control systems will provide additional organic compound removal. For example, volatile and semi-volatile organic compounds may react with the alkaline fly ash or condense onto fly ash particles and be captured in the fabric

²⁴ The hazardous air pollutant emission factors for wood residue combustion sources are included in AP-42 Section 1.6, Tables 1.6-3 and 1.6-4.

filter baghouse. Similarly, the fabric filter baghouse will effectively capture any organic compounds existing in a condensed or particulate phase.

Organic HAP emissions from the eGF boiler were estimated using stack test data from similar sources available from the CHIEF database. The CHIEF database includes speciated organic HAP emissions data from several wood-fired boilers. To develop representative emission factors, stack tests results in the CHIEF database were sorted by combustion source (e.g., dutch oven, stoker, fluidized bed boiler) and by pollution control system (e.g., no controls, ESP, mechanical collector, fabric filter, etc.). Representative emission factors were then determined based on the following hierarchy:

- a. Stack test data from fluidized bed combustion units equipped with fabric filter or ESP.
- b. Stack test data from any firing configuration (e.g., stoker, dutch oven, etc.) equipped with fabric filter.
- c. Stack test data from any firing configuration equipped with ESP.
- d. Stack test data from any firing configuration without fabric filter or ESP (in other words, units equipped with mechanical collectors or uncontrolled emissions).

This approach was used for the following reasons: (1) emissions from uncontrolled units, or units equipped with mechanical collectors or wet scrubbers, are not considered representative of emissions from ecoPower; (2) emissions from units equipped with ESP or FF are more representative of emissions from ecoPower, so these stack test results; (3) emissions from fluidized bed combustion units equipped with fabric filter or ESP controls are the most representative, and were used when available. Organic HAP emissions from the ecoPower main boiler, using the methodology described above, are summarized in Table 4-15.

4.5.3 Main Boiler Trace Metal HAP Emissions

Trace metals naturally occurring in the biomass may be emitted during the combustion process. The quantity of any given trace metal emitted from biomass-combustion depends on the following:

- the physical and chemical properties of the element itself
- the concentration of the element in the fuel
- combustion conditions
- the type of air pollution control systems.

In general, trace metal concentrations in biomass fuel are very low. Based on the physical and chemical properties of the trace metal HAPs, a majority of the trace metals will be emitted as particulate oxides. HAP

metals that exist primarily in particulate form are readily controlled by high-efficiency particulate control devices, including a fabric filter baghouse.

Stack test data for several trace metals from wood-fired boilers are included in the CHIEF database. Trace metal emissions from the ecoPower main boiler were calculated based on the overall average trace metal emission rate measured at all wood-fired boilers in the CHIEF database. Using the average emission rates should result in a conservative estimate of trace metal emissions from the eGF boiler. A large majority of the test data in the CHIEF database were from units equipped with particulate control systems other than a fabric filter baghouse. For example, only one of the 24 units tested for manganese (which accounts for 94% of all trace element emissions from the boiler) utilized fluidized bed combustion with a fabric filter baghouse. Manganese emissions from that unit were measured at 1.14×10^{-5} lb/mmBtu, which is only 0.73% of the overall average manganese emission rate from all wood-fired boilers (i.e., 1.6×10^{-3} lb/mmBtu). It is expected that the fabric filter baghouse proposed for the eGF boiler will provide significantly better fine particulate control, and that using overall average emission rates overestimates trace element emissions from eGF.

4.5.4 Main Boiler HAP Emission Summary

HAP emissions from the main boiler at eGF are summarized in the following tables.

Table 4-15 — Main Boiler Organic HAP Emissions

Speciated Organic Compounds AP-42 Table 1.6-3	Emission Factor* (lb/mmBtu)	Listed HAP in §112(b)**	POTENTIAL HAP EMISSIONS	
			lb/hr	tpy
Acenaphthene	2.49E-09	PAH	1.67E-06	7.31E-06
Acenaphthylene	8.58E-09	PAH	5.76E-06	2.52E-05
Acetaldehyde	2.08E-05	Y	1.40E-02	6.11E-02
Acetophenone	3.23E-09	Y	2.17E-06	9.49E-06
Acrolein	3.15E-05	Y	2.12E-02	9.29E-02
Anthracene	1.04E-08	PAH	6.99E-06	3.06E-05
Benzene	2.55E-05	Y	1.71E-02	7.51E-02
Benzo(a)anthracene	2.43E-09	PAH	1.63E-06	7.16E-06
Benzo(a)pyrene	2.87E-07	PAH	1.93E-04	8.45E-04
Benzo(b)fluoranthene	3.78E-10	PAH	2.54E-07	1.11E-06
Benzo(e)pyrene	2.59E-09	PAH	1.74E-06	7.63E-06
Benzo(g,h,i)perylene	4.62E-09	PAH	3.11E-06	1.36E-05
Benzo(j,k)fluoranthene	1.56E-07	PAH	1.05E-04	4.58E-04
Benzo(k)fluoranthene	2.38E-09	PAH	1.60E-06	7.01E-06
bis(2-ethylhexyl)phthalate	4.65E-08	Y	3.12E-05	1.37E-04
Bromomethane	2.80E-05	Y	1.88E-02	8.24E-02
2-Butanone (MEK)	5.39E-06	Y	3.62E-03	1.59E-02
Carbon tetrachloride	4.54E-05	Y	3.05E-02	1.34E-01
Chlorobenzene	3.32E-05	Y	2.23E-02	9.77E-02
Chloroform	2.75E-05	Y	1.85E-02	8.10E-02
Chrysene	2.18E-09	PAH	1.46E-06	6.42E-06
Decachlorobiphenyl	2.65E-10	PCB	1.78E-07	7.80E-07
Dichlorobiphenyl	9.26E-10	PCB	6.22E-07	2.72E-06
2,4-Dinitrophenol	1.80E-07	Y	1.21E-04	5.31E-04
Ethylbenzene	3.13E-05	Y	2.10E-02	9.21E-02
Fluoranthene	1.03E-08	PAH	6.89E-06	3.02E-05
Fluorene	8.38E-09	PAH	5.63E-06	2.47E-05
Formaldehyde	1.88E-05	Y	1.26E-02	5.53E-02
Heptachlorobiphenyl	6.57E-11	PCB	4.42E-08	1.93E-07
Hexachlorobiphenyl	2.89E-10	PCB	1.94E-07	8.51E-07
Heptachlorodibenzo-p-dioxins	1.44E-11	Y	9.68E-09	4.24E-08
Heptachlorodibenzo-p-furans	7.32E-13	Y	4.92E-10	2.15E-09
Hexachlorodibenzo-p-dioxins	1.20E-10	Y	8.07E-08	3.53E-07
Hexachlorodibenzo-p-furans	4.65E-12	Y	3.12E-09	1.37E-08
Indeno(1,2,3,c,d)pyrene	2.11E-07	PAH	1.42E-04	6.21E-04
Naphthalene	1.82E-07	Y	1.23E-04	5.37E-04
4-Nitrophenol	1.71E-07	Y	1.15E-04	5.04E-04
Octachlorodibenzo-p-dioxins	1.66E-11	D/F	1.12E-08	4.89E-08

Speciated Organic Compounds AP-42 Table 1.6-3	Emission Factor* (lb/mmBtu)	Listed HAP in §112(b)**	POTENTIAL HAP EMISSIONS	
			lb/hr	tpy
Octachlorodibenzo-p-furans	1.76E-12	D/F	1.18E-09	5.17E-09
Pentachlorodibenzo-p-dioxins	7.47E-11	D/F	5.02E-08	2.20E-07
Pentachlorodibenzo-p-furans	1.99E-11	D/F	1.33E-08	5.84E-08
Pentachlorobiphenyl	6.49E-10	PCB	4.36E-07	1.91E-06
Pentachlorophenol	2.27E-08	PCB	1.53E-05	6.68E-05
Phenanthrene	3.57E-08	PAH	2.40E-05	1.05E-04
Phenol	1.25E-05	Y	8.43E-03	3.69E-02
Propionaldehyde	6.11E-05	Y	4.11E-02	1.80E-01
Pyrene	9.79E-09	PAH	6.58E-06	2.88E-05
Styrene	1.86E-03	Y	1.25E+00	5.47E+00
2,3,7,8-Tetrachlorodibenzo-p-dioxins	1.61E-12	D/F	1.08E-09	4.74E-09
Tetrachlorodibenzo-p-dioxins	1.37E-10	D/F	9.21E-08	4.03E-07
2,3,7,8-Tetrachlorodibenzo-p-furans	2.70E-12	D/F	1.81E-09	7.95E-09
Tetrachlorodibenzo-p-furans	8.98E-11	D/F	6.03E-08	2.64E-07
Tetrachlorobiphenyl	1.60E-09	PCB	1.08E-06	4.71E-06
Toluene	2.13E-05	Y	1.43E-02	6.25E-02
Trichlorobiphenyl	5.45E-10	PCB	3.66E-07	1.60E-06
2,4,6-Trichlorophenol	1.14E-08	Y	7.63E-06	3.34E-05
Vinyl Chloride	1.84E-05	Y	1.24E-02	5.42E-02
o-Xylene	2.45E-05	Y	1.65E-02	7.21E-02
Total Organic HAP Emissions				6.67 tpy

* Emission factors were developed based on stack test data available from the CHIEF database. Where available, test data from fluidized bed combustion sources equipped with a fabric filter or ESP were used.

*Polycyclic Organic Matter - includes compounds with more than one benzene ring and a boiling point greater than or equal to 100 C.

* D/F refers to dibenzofurans and dioxins listed as HAP compounds in §112(b)

* PCB refers to polychlorinated biphenyls (aroclers) listed as HAP compounds in §112(b)

Table 4-16 — Main Boiler Trace Metal HAP Emissions

Trace Metal HAPs AP-42 Table 1.6-4*	Emission Factor (lb/mmBtu)	Listed HAP in §112(b)*	Emissions (lb/hr)	Emissions (tpy)
Antimony	7.90E-06	Trace Metal	5.31E-03	2.33E-02
Arsenic	2.20E-05	Trace Metal	1.48E-02	6.48E-02
Beryllium	1.10E-06	Trace Metal	7.39E-04	3.24E-03
Cadmium	4.10E-06	Trace Metal	2.76E-03	1.21E-02
Chromium (total)	2.10E-05	Trace Metal	1.41E-02	6.18E-02
Lead	4.80E-05	Trace Metal	3.23E-02	1.41E-01
Manganese	1.60E-03	Trace Metal	1.08E+00	4.71E+00
Mercury	3.50E-06	Trace Metal	2.35E-03	1.03E-02
Nickel	3.3E-05	Trace Metal	2.25E-02	9.86E-02
Selenium	2.80E-06	Trace Metal	1.88E-03	8.24E-03
Total Trace Metal HAP Emissions				5.13

Table 4-17 — Main Boiler Acid Gas HAP Emissions

Acid Gases*	Emission Factor Rating	Emission Factor (lb/mmBtu)	Listed HAP in §112(b)*	Emissions (lb/hr)	Emissions (tpy)
Hydrogen chloride	NA	2.55E-02	Y	17.1	7.51

*HCl emissions were calculated based on the chlorine content of the fuel, 100% conversion of fuel chlorine to HCl and 90% capture in the fabric filter baghouse.

Table 4-18 — Main Boiler Total HAP Emissions

HAP Category	Potential Annual Emissions (tpy)
Total Organic HAP Emissions	6.67
Total Acid Gas HAP Emissions	7.51
Total Trace Metal HAP Emissions	5.13
Total HAP Emissions	19.31
Maximum Individual HAP Emission (HCl)	7.51

4.5.5 Auxiliary Combustion Source HAP Emissions

In addition to the main boiler, eGF will have a propane-fired auxiliary boiler, emergency diesel generator (EDG), and diesel-fired emergency fire-water pump (FWP). Potential HAP emissions from these combustion sources were estimated using the maximum heat input to each combustion source and the applicable AP-42 emission factors. Potential HAP emissions from the auxiliary combustion sources are summarized in the following tables.

Table 4-19 — Auxiliary Boiler Trace Metal HAP Emissions

Emission Factors for Metals from Natural Gas Combustion ¹	Emission Factor (lb/mmsef)	Hourly Emissions (lb/hr)	Annual Emissions (tpy)	Source
Arsenic	2.00E-04	7.30E-06	7.30E-06	AP-42, Table 1.4-4
Beryllium	1.20E-05	4.38E-07	4.38E-07	AP-42, Table 1.4-4
Cadmium	1.10E-03	4.01E-05	4.01E-05	AP-42, Table 1.4-4
Chromium	1.40E-03	5.11E-05	5.11E-05	AP-42, Table 1.4-4
Cobalt	8.40E-05	3.07E-06	3.07E-06	AP-42, Table 1.4-4
Manganese	3.80E-04	1.39E-05	1.39E-05	AP-42, Table 1.4-4
Mercury	2.60E-04	9.49E-06	9.49E-06	AP-42, Table 1.4-4
Nickel	2.10E-03	7.66E-05	7.66E-05	AP-42, Table 1.4-4
Selenium	2.40E-05	8.76E-07	8.76E-07	AP-42, Table 1.4-4
Total Metal HAPs		2.03E-04	2.00E-04	

(1) There are no AP-42 emission factors for HAP emissions from propane-fired boilers. Therefore, AP-42 emission factors for HAP emissions from natural-gas combustion were used.

Table 4-20 — Auxiliary Boiler Organic HAP Emissions

Polycyclic Organic Matter (POM) ¹	Emission Factor (lb/mmscf)	Hourly Emissions (lb/hr)	Annual Emissions (tpy)	Source
2-Methylnaphthalene	2.40E-05	8.76E-07	8.76E-07	AP-42, Table 1.4-3
3-Methylchloranthrene	1.80E-06	6.57E-08	6.57E-08	AP-42, Table 1.4-3
7,12-Dimethylbenz(a)anthracene	1.60E-05	5.84E-07	5.84E-07	AP-42, Table 1.4-3
Acenaphthene	1.80E-06	6.57E-08	6.57E-08	AP-42, Table 1.4-3
Acenaphthylene	1.80E-06	6.57E-08	6.57E-08	AP-42, Table 1.4-3
Anthracene	2.40E-06	8.76E-08	8.76E-08	AP-42, Table 1.4-3
Benz(a)anthracene	1.80E-06	6.57E-08	6.57E-08	AP-42, Table 1.4-3
Benzo(a)pyrene	1.20E-06	4.38E-08	4.38E-08	AP-42, Table 1.4-3
Benzo(b)fluoranthene	1.80E-06	6.57E-08	6.57E-08	AP-42, Table 1.4-3
Benzo(g,h,i)perylene	1.20E-06	4.38E-08	4.38E-08	AP-42, Table 1.4-3
Benzo(k)fluoranthene	1.80E-06	6.57E-08	6.57E-08	AP-42, Table 1.4-3
Chrysene	1.80E-06	6.57E-08	6.57E-08	AP-42, Table 1.4-3
Dibenzo(a,h)anthracene	1.20E-06	4.38E-08	4.38E-08	AP-42, Table 1.4-3
Fluoranthene	3.00E-06	1.09E-07	1.09E-07	AP-42, Table 1.4-3
Fluorene	2.80E-06	1.02E-07	1.02E-07	AP-42, Table 1.4-3
Indeno(1,2,3-cd)pyrene	1.80E-06	6.57E-08	6.57E-08	AP-42, Table 1.4-3
Naphthalene	6.10E-04	2.23E-05	2.23E-05	AP-42, Table 1.4-3
Phenanthrene	1.70E-05	6.20E-07	6.20E-07	AP-42, Table 1.4-3
Pyrene	5.00E-06	1.82E-07	1.82E-07	AP-42, Table 1.4-3
Other Speciated Organic HAP Compounds				
Benzene	2.10E-03	7.66E-05	7.66E-05	AP-42, Table 1.4-3
Dichlorobenzene	1.20E-03	4.38E-05	4.38E-05	AP-42, Table 1.4-3
Formaldehyde	7.50E-02	2.74E-03	2.74E-03	AP-42, Table 1.4-3
Hexane	1.80E+00	6.57E-02	6.57E-02	AP-42, Table 1.4-3
Toluene	3.40E-03	1.24E-04	1.24E-04	AP-42, Table 1.4-3
Total Organic HAPs		0.069	0.069	

(1) There are no AP-42 emission factors for HAP emissions from propane-fired boilers. Therefore, AP-42 emission factors for HAP emissions from natural-gas combustion were used.

Table 4-21 — Emergency Diesel Generator HAP Emissions

PAH Emission Factors for Large Uncontrolled Stationary Diesel Engines (AP-42 Table 3.4-4) (Note 1)					
Pollutant	Emission Factor (lb/mmBtu)	Emission Factor Rating	HAP (yes/no)	Hourly Emissions (lb/hr)	Annual Emissions (ton/yr)
Naphthalene	1.30E-04	E	PAH	1.94E-03	4.84E-04
Acenaphthylene	9.23E-06	E	PAH	1.38E-04	3.44E-05
Acenaphthene	4.68E-06	E	PAH	6.97E-05	1.74E-05
Fluorene	1.28E-05	E	PAH	1.91E-04	4.77E-05
Phenanthrene	4.08E-05	E	PAH	6.08E-04	1.52E-04
Anthracene	1.23E-06	E	PAH	1.83E-05	4.58E-06
Fluoranthene	4.03E-06	E	PAH	6.00E-05	1.50E-05
Pyrene	3.71E-06	E	PAH	5.53E-05	1.38E-05
Benzo(a)anthracene	6.22E-07	E	PAH	9.27E-06	2.32E-06
Chrysene	1.53E-06	E	PAH	2.28E-05	5.70E-06
Benzo(b)fluoranthene	1.11E-06	E	PAH	1.65E-05	4.13E-06
Benzo(k)fluoranthene*	2.18E-07	E	PAH	3.25E-06	8.12E-07
Benzo(a)pyrene*	2.57E-07	E	PAH	3.83E-06	9.57E-07
Indeno(1,2,3-cd)pyrene*	4.14E-07	E	PAH	6.17E-06	1.54E-06
Dibenz(a,h)anthracene*	3.46E-07	E	PAH	5.16E-06	1.29E-06
Benzo(g,h,i)perylene*	5.56E-07	E	PAH	8.28E-06	2.07E-06
Total PAH Emissions				0.0032	0.0008
Speciated Organic Emission Factors for Large Uncontrolled Stationary Diesel Engines (AP-42 Table 3.4-3) (Note 1)					
Pollutant	Emission Factor (lb/mmBtu)	Emission Factor Rating	HAP (yes/no)	Hourly Emissions (lb/hr)	Annual Emissions (ton/yr)
Benzene	7.76E-04	E	yes	1.16E-02	2.89E-03
Toluene	2.81E-04	E	yes	4.19E-03	1.05E-03
Xylenes	1.93E-04	E	yes	2.88E-03	7.19E-04
Formaldehyde	7.89E-05	E	yes	1.18E-03	2.94E-04
Acetaldehyde	2.52E-05	E	yes	3.75E-04	9.39E-05
Acrolein	7.88E-06	E	yes	1.17E-04	2.94E-05
Speciated Organic HAPs				0.0203	0.0050
Total HAP Emissions				0.0235	0.0058

Note 1: HAP emissions from the emergency diesel generator were calculated based on a maximum heat input to the diesel engine of 14.9 mmBtu/hr and assuming 500 hours per year operation.

Table 4-22 — Diesel Fire Water Pump HAP Emissions

Pollutant	Emission Factor (lb/mmBtu)	Emission Factor Rating	HAP (yes/no)	Hourly Emissions (lb/hr)	Annual Emissions (ton/yr)
Benzene	9.33E-04	E	yes	3.02E-03	7.56E-04
Toluene	4.09E-04	E	yes	1.33E-03	3.31E-04
Xylenes	2.85E-04	E	yes	9.23E-04	2.31E-04
Propylene	2.58E-03	E	yes	8.36E-03	2.09E-03
1,3-Butadiene*	3.91E-05	E	yes	1.27E-04	3.17E-05
Formaldehyde	1.18E-03	E	yes	3.82E-03	9.56E-04
Acetaldehyde	7.67E-04	E	yes	2.49E-03	6.21E-04
Acrolein*	9.25E-05	E	yes	3.00E-04	7.49E-05
PAHs					
Naphthalene	8.48E-05	E	PAH	2.75E-04	6.87E-05
Acenaphthylene*	5.06E-06	E	PAH	1.64E-05	4.10E-06
Acenaphthene*	1.42E-06	E	PAH	4.60E-06	1.15E-06
Fluorene	2.92E-05	E	PAH	9.46E-05	2.37E-05
Phenanthrene	2.94E-05	E	PAH	9.53E-05	2.38E-05
Anthracene	1.87E-06	E	PAH	6.06E-06	1.51E-06
Fluoranthene	7.61E-06	E	PAH	2.47E-05	6.16E-06
Pyrene	4.78E-06	E	PAH	1.55E-05	3.87E-06
Benzo(a)anthracene	1.68E-06	E	PAH	5.44E-06	1.36E-06
Chrysene	3.53E-07	E	PAH	1.14E-06	2.86E-07
Benzo(b)fluoranthene*	9.91E-08	E	PAH	3.21E-07	8.03E-08
Benzo(k)fluoranthene*	1.55E-07	E	PAH	5.02E-07	1.26E-07
Benzo(a)pyrene*	1.88E-07	E	PAH	6.09E-07	1.52E-07
Indeno(1,2,3-cd)pyrene*	3.75E-07	E	PAH	1.22E-06	3.04E-07
Dibenz(a,h)anthracene*	5.83E-07	E	PAH	1.89E-06	4.72E-07
Benzo(g,h,i)perylene*	4.89E-07	E	PAH	1.58E-06	3.96E-07
Total Organic Emissions (Total HAP Emissions)				0.0209	0.0052

Note: HAP emissions from the diesel-fired fire water pump were calculated based on a maximum heat input to the diesel engine of 3.24 mmBtu/hr and assuming 500 hours per year operation.

4.5.6 HAP Emission Calculations

Potential HAP emissions from all combustion sources at eGF are summarized in the following table.

Table 4-23 — Annual HAP Emissions

	Total Annual Emissions	Notes
Main Boiler	19.31	Total HAP emissions including trace metals, organic compounds, and acid gases.
Auxiliary Boiler	0.069	
EDG	0.0058	
FWP	0.0052	
Total	19.39 tpy	
Total HCl Emissions	7.51	HCl was identified as the individual HAP with the highest annual emission rate.

ATTACHMENT 4
ORGANIC AND HAP EMISSION CALCULATIONS

Organic Emissions and HAP Emissions from Boiler
Nominal 50 MW Plant
Emission Unit # 1 - 672 MM Btu/hr Bubbling Fluidized Bed Boiler
Boiler Info:

672 MM Btu/hr
8760 hr/yr

Pollutants (HAPS are shown in BOLD print)	Emission Factor lb/MMBtu	Uncontrolled Emissions lb/hr	ton/year	Controlled Emissions (%)	Anticipated Emissions lb/hr	ton/year	Comments
Main Boiler Organic Emissions and HAPs Emissions							
Acenaphthene	2.49E-09	1.67E-06	0.00001	0	1.67E-06	0.000007	See Footnote 1, & 2
Acenaphthylene	8.58E-09	5.77E-06	0.0000	0	5.77E-06	0.00003	See Footnote 1, & 2
Acetaldehyde	2.08E-05	1.40E-02	0.0612	0	1.40E-02	0.0612	See Footnote 1, & 2
Acetophenone	3.23E-09	2.17E-06	0.000	0	2.17E-06	0.000010	See Footnote 1, & 2
Acrolein	3.15E-05	2.12E-02	0.093	0	2.12E-02	0.093	See Footnote 1, & 2
Anthracene	1.04E-08	6.99E-06	0.000	0	6.99E-06	0.00003	See Footnote 1, & 2
Benzene	2.55E-05	1.71E-02	0.0751	0	1.71E-02	0.0751	See Footnote 1, & 2
Benzo(a)anthracene	2.43E-09	1.63E-06	0.00001	0	1.63E-06	0.0000072	See Footnote 1, & 2
Benzo(a)pyrene	2.87E-07	1.93E-04	0.0008	0	1.93E-04	0.0008	See Footnote 1, & 2
Benzo(b)fluoranthene	3.78E-10	2.54E-07	0.000001	0	2.54E-07	0.0000011	See Footnote 1, & 2
Benzo(e)pyrene	2.59E-09	1.74E-06	0.00001	0	1.74E-06	0.000008	See Footnote 1, & 2
Benzo(g,h,i)perylene	4.62E-09	3.10E-06	0.000	0	3.10E-06	0.000014	See Footnote 1, & 2
Benzo(j,k)fluoranthene	1.56E-07	1.05E-04	0.00046	0	1.05E-04	0.00046	See Footnote 1, & 2
Benzo(k)fluoranthene	2.38E-09	1.60E-06	0.0000070	0	1.60E-06	0.0000070	See Footnote 1, & 2
bis(2-ethylhexyl)phthalate	4.65E-08	3.12E-05	0.0001369	0	3.12E-05	0.0001369	See Footnote 1, & 2
Bromomethane	2.80E-05	1.88E-02	0.082	0	1.88E-02	0.082	See Footnote 1, & 2
2-Butanone (MEK)	5.39E-06	3.62E-03	0.0159	0	3.62E-03	0.0159	See Footnote 1, & 2
Carbon Tetrachloride	4.54E-05	3.05E-02	0.134	0	3.05E-02	0.134	See Footnote 1, & 2
Chlorobenzene	3.32E-05	2.23E-02	0.0977	0	2.23E-02	0.0977	See Footnote 1, & 2
Chloroform	2.75E-05	1.85E-02	0.0809	0	1.85E-02	0.0809	See Footnote 1, & 2
Chrysene	2.18E-09	1.46E-06	0.00001	0	1.46E-06	0.000006	See Footnote 1, & 2
Decachlorobiphenyl	2.65E-10	1.78E-07	0.000001	0	1.78E-07	0.0000008	See Footnote 1, & 2
Dichlorobiphenyl	9.26E-10	6.22E-07	0.000003	0	6.22E-07	0.000003	See Footnote 1, & 2
2,4-Dinitrophenol	1.80E-07	1.21E-04	0.00053	0	1.21E-04	0.0005	See Footnote 1, & 2
Ethylbenzene	3.13E-05	2.10E-02	0.092127168	0	2.10E-02	0.092	See Footnote 1, & 2
Fluoranthene	1.03E-08	6.92E-06	0.000	0	6.92E-06	0.00003	See Footnote 1, & 2
Fluorene	8.38E-09	5.63E-06	0.000	0	5.63E-06	0.000025	See Footnote 1, & 2
Formaldehyde	1.88E-05	1.26E-02	0.06	0	1.26E-02	0.06	See Footnote 1, & 2
Heptachlorobiphenyl	6.57E-11	4.42E-08	0.0000002	0	4.42E-08	0.00000019	See Footnote 1, & 2
Hexachlorobiphenyl	2.89E-10	1.94E-07	0.000001	0	1.94E-07	0.0000009	See Footnote 1, & 2
Heptachlorodibenzo-p-dioxins	1.44E-11	9.68E-09	0.000000	0	9.68E-09	0.00000004	See Footnote 1, & 2
Heptachlorodibenzo-p-furans	7.32E-13	4.92E-10	0.000000	0	4.92E-10	0.000000022	See Footnote 1, & 2
Hexachlorodibenzo-p-dioxins	1.20E-10	8.06E-08	0.000	0	8.06E-08	0.000000035	See Footnote 1, & 2
Hexachlorodibenzo-p-furans	4.65E-12	3.12E-09	0.000	0	3.12E-09	0.000000014	See Footnote 1, & 2
Indeno(1,2,3,c,d)pyrene	2.11E-07	1.42E-04	0.000	0	1.42E-04	0.00062	See Footnote 1, & 2
Naphthalene	1.82E-07	1.22E-04	0.001	0	1.22E-04	0.0005	See Footnote 1, & 2
4-Nitrophenol	1.71E-07	1.15E-04	0.001	0	1.15E-04	0.0005	See Footnote 1, & 2
Octachlorodibenzo-p-dioxins	1.66E-11	1.12E-08	0.0000	0	1.12E-08	0.00000005	See Footnote 1, & 2
Octachlorodibenzo-p-furans	1.76E-12	1.18E-09	0.0000	0	1.18E-09	0.000000005	See Footnote 1, & 2
Pentachlorodibenzo-p-dioxins	7.47E-11	5.02E-08	0.0000	0	5.02E-08	0.00000022	See Footnote 1, & 2
Pentachlorodibenzo-p-furans	1.99E-11	1.34E-08	0.0000	0	1.34E-08	0.000000006	See Footnote 1, & 2
Pentachlorobiphenyl	6.49E-10	4.36E-07	0.0000	0	4.36E-07	0.0000019	See Footnote 1, & 2
Pentachlorophenol	2.27E-08	1.53E-05	0.0001	0	1.53E-05	0.00007	See Footnote 1, & 2
Phenanthrene	3.57E-08	2.40E-05	0.0001	0	2.40E-05	0.00011	See Footnote 1, & 2
Phenol	1.25E-05	8.40E-03	0.0368	0	8.40E-03	0.0368	See Footnote 1, & 2
Propionaldehyde	6.11E-05	4.11E-02	0.180	0	4.11E-02	0.180	See Footnote 1, & 2
Pyrene	9.79E-09	6.58E-06	0.000	0	6.58E-06	0.00003	See Footnote 1, & 2
Styrene	1.86E-03	1.25E+00	5.47	0	1.25E+00	5.47	See Footnote 1, & 2
2,3,7,8-Tetrachlorodibenzo-p-dioxins	1.61E-12	1.08E-09	0.000	0	1.08E-09	0.000000005	See Footnote 1, & 2
Tetrachlorodibenzo-p-dioxins	1.37E-10	9.21E-08	0.000	0	9.21E-08	0.00000004	See Footnote 1, & 2
2,3,7,8-Tetrachlorodibenzo-p-furans	2.70E-12	1.81E-09	0.000	0	1.81E-09	0.000000008	See Footnote 1, & 2
Tetrachlorodibenzo-p-furans	8.98E-11	6.03E-08	0.00000	0	6.03E-08	0.00000003	See Footnote 1, & 2
Tetrachlorobiphenyl	1.60E-09	1.08E-06	0.000	0	1.08E-06	0.000005	See Footnote 1, & 2
Toluene	2.13E-05	1.43E-02	0.0627	0	1.43E-02	0.0627	See Footnote 1, & 2
Trichlorobiphenyl	5.45E-10	3.66E-07	0.000	0	3.66E-07	0.0000016	See Footnote 1, & 2
2,4,6-Trichlorophenol	1.14E-08	7.66E-06	0.000	0	7.66E-06	0.00003	See Footnote 1, & 2
Vinyl Chloride	1.84E-05	1.24E-02	0.0542	0	1.24E-02	0.0542	See Footnote 1, & 2
o-Xylene	2.45E-05	1.65E-02	0.072	0	1.65E-02	0.072	See Footnote 1, & 2
Total Organics		1.5231	6.671		1.5231	6.671	
Subtotal HAPS		1.5226	6.669		1.5226	6.669	
Acid Gas HAPs Emissions							
2.55E-02	1.71E+01	75.06		90	1.71	7.51	AP-42 Section 1.6, Table 1.6-7
Subtotal HAPS	1.71E+01	75.06			1.71	7.51	
Trace Metal Emissions							
Antimony	7.90E-06	5.31E-03	0.023	0	0.0053	0.023	AP-42 Section 1.6, Table 1.6-7
Arsenic	2.20E-05	1.48E-02	0.0648	0	0.0148	0.0648	AP-42 Section 1.6, Table 1.6-7
Beryllium	1.10E-06	7.39E-04	0.003	0	0.0007	0.003	AP-42 Section 1.6, Table 1.6-7
Cadmium	4.10E-06	2.76E-03	0.012	0	0.0028	0.012	AP-42 Section 1.6, Table 1.6-7
Chromium (total)	2.10E-05	1.41E-02	0.0618	0	0.0141	0.062	AP-42 Section 1.6, Table 1.6-7
Lead	4.80E-05	3.23E-02	0.1413	0	0.03226	0.1413	AP-42 Section 1.6, Table 1.6-7
Nickel	3.30E-05	2.22E-02	0.0971	0	0.02218	0.0971	AP-42 Section 1.6, Table 1.6-8
Manganese	1.60E-03	1.08E+00	4.7094	0	1.07520	4.7094	AP-42 Section 1.6, Table 1.6-7
Mercury	3.50E-06	2.35E-03	0.0103	0	0.0024	0.0103	AP-42 Section 1.6, Table 1.6-7
Selenium	2.80E-06	1.88E-03	0.0082	0	0.0019	0.0082	AP-42 Section 1.6, Table 1.6-7
Subtotal HAPS		1.17	5.13		1.17	5.13	
Sum of HAPS		19.83	86.86		4.41	19.31	ton/year
TOTAL HAPS FOR THE MAIN BOILER							

Notes:

- HAP emission factors are based upon AP-42, Fifth Edition, Volume 1, Chapter 1.6, "Wood Residue Combustion in Boilers," Table 1.6-7; however, as noted, this data was used to derive representative emission factors.
- Representative emission factors were achieved by following this hierarchy:
 - Average emissions from fluidized bed combustion (FBC) units equipped with a fabric filter (FF) or an electrostatic precipitator (ESP);
 - Average emissions from any firing configuration equipped with a FF;
 - Average emissions from any firing configuration with FF or ESP; and
 - Overall average (represents emission from firing configuration other than FBC and controls other than a FF or ESP).

Additional Submission

January 25, 2010

Smith Management Group



Sustainability
Safety/Industrial Hygiene
Information Technology
Environmental Management

January 25, 2010

Mr. Ben Markin, Supervisor
Combustion Section Supervisor
Division for Air Quality
200 Fair Oaks Lane
Frankfort, KY 40601

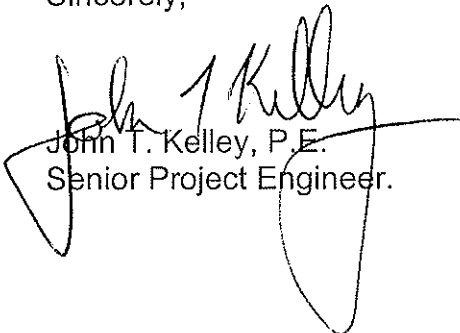
SUBJECT: Response to Notice of Deficiency
ecoPower Generation, LLC
Perry County, Kentucky

Dear Mr. Markin:

On January 15, 2010, ecoPower Generation, LLC received a Notice of Deficiency (NOD) requesting additional information regarding a permit application submitted for the ecoPower Generating facility to be located in Chavies, Perry County, Kentucky. Per the DAQ's request, attached is the Response to Notice of Deficiency.

If you have questions, please feel free to contact me at 859-231-8936.

Sincerely,



John T. Kelley, P.E.
Senior Project Engineer.

Attachments

1405 Mercer Road
Lexington, KY 40511

(859) 231-8936
Fax (859) 231-8997
<http://www.smithmanage.com>

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Response to Notice of Deficiency of January 15, 2010

1. As stated on page 3-16 of the *Air permit Application Technical Support Document*, HCl will react with $\text{Ca}(\text{OH})_2$ to form CaCl_2 . The reaction as given does not address the hygroscopic nature of CaCl_2 and the reversibility of the reaction in the presence of water vapor from the SNCR. Please provide an analysis of the aforementioned issue and focus on the reversibility of the reaction given the conditions.

Response to 1:

See Attached **Sargent & Lundy Project Memorandum, January 25, 2010,**
Subject: Response to KYDEP NOD.

2. Please substantiate the suggestion in the *Technical Support Document*, on page 3-17, in the first paragraph, which states, "Although actual acid gas removal across the particulate control systems were not measured, these stack test results from wood-fired units suggest that the intimate contact between the boiler flue gas and alkaline biomass-generated filter cake provides significant acid gas removal."

Response to 2:

See Attached **Sargent & Lundy Project Memorandum, January 25, 2010,**
Subject: Response to KYDEP NOD.

3. Please provide a technical basis as to the ratio of bottom ash to fly ash as stated on page 3-20 of the *Technical Support Document*.

Response to 3:

See Attached **Sargent & Lundy Project Memorandum, January 25, 2010,**
Subject: Response to KYDEP NOD.

4. The *Technical Support Document*, on page 3-12, in the fourth paragraph, states that, "Based on experience at existing solid fuel-fired boilers, approximately 2.0% of the fuel SO_2 will convert to SO_3 in the boiler." Please provide a technical basis for this assumption.

Response to 4:

See Attached **Sargent & Lundy Project Memorandum, January 25, 2010,**
Subject: Response to KYDEP NOD.

5. The *Technical Support Document*, in its Table of Contents, on the list of Tables, shows NO_x emissions being taken from the Schiller facility in New Hampshire, and CO emissions being taken from other sources. If sources other than vendor guarantees are to be used for emissions data, the same source must be used for all emission factors possible, or justification must be made for the choice not to. The Schiller power plant is in many ways very similar to this one, and it was stack tested in 2007 for PM₁₀, mercury, and CO, even though table 3-4 states that CO is "not reported" for Schiller.

Response to 5:

See Attached **Sargent & Lundy Project Memorandum, January 25, 2010,**
Subject: Response to KYDEP NOD.

6. In the *Technical Support Document*, on the table titled "Calculations of Potential to Emit – Wood Yard Storage and Handling Emission Points", a control efficiency of 85% is given for Emission Points 6, 7, 9, 10, and 11. Footnote 3, which covers all of these units except Unit 7, states "Emission factor for PM and PM₁₀ taken from KYDAQ SOB dated June 17, 2008, for Kingsford Manufacturing Company in Burnside, KY. The facility operates wood handling operations similar to the proposed ecoPower facility." According to the 2008 KY Emissions Inventory Survey, control measure efficiency was initially counted into these emission factors at the Kingsford plant. Therefore, to again supply a control efficiency factor to them is to count in the same controls twice. Please adjust these emission factors appropriately.

Response to 6:

As outlined in the application, the wood received at ecoPower will have relatively high moisture content. Table 2-1 of the Sargent & Lundy Air Permit Application Technical Support Document (TSD) indicates the wood received varies in moisture content from 33.61% to 38.69%. Based on the anticipated mixed design fuel characteristics, the moisture for the mixed design fuel is 36.72% moisture (Table 2-2 of the TSD).

At emission point 6, the oversize reclaim hopper, the anticipated size of wood is approximated by ecoPower to be ¾ inch to 2 inches in size. This emission point occurs before the wood hog. Due to the large size of the wood pieces, it is anticipated that emissions from handling and transferring the wood will be low. The water spray fog suppression system employed at the previous operation (i.e. chipper building) will further increase moisture content of the material. Based on this information of the large wood size and the moisture carryover, it is anticipated that 85% control will be achieved.

At emission point 7 (truck dump), SMG contends that the emission factor for the truck dump at Kingsford Burnside (IA-31 on the Burnside EIS Detailed Plant Information Form) is 0.00129 lb/ton, as used in the application. The control efficiency shown at IA-31 at Kingsford is 90% however 85% control was used at this emission point in the ecoPower application for consistency.

The design of the wood handling systems, emission points EP9, EP10, and EP11, include inherent emission controls (enclosures). As indicated in Air Permit Application Technical Support Document (January 5, 2010), Section 2.4.6, page 2-10, paragraph 3, all conveyor transfer points have enclosures per design information provided by Sargent & Lundy. Also the transfer point at the Transfer Tower, EP9 is within an enclosed structure. EP10 and EP11 are conveyor transfer points and therefore have enclosures. Due to the enclosures, it is our contention that there is additional 85% control of the transfer points.

In conclusion, based on the size of the wood, the inherent moisture in the wood, the water spray in the initial operations (chipper and wood hog), carryover of the moisture, and enclosures at conveyor drop points, the anticipated 85% control is justified.

7. An authorized signature is required on form DEP7007DD.

Response to 7:

See **Attachment to Response 7, DEP7007DD Form**. ecoPower has provided the updated DEP7007 DD Forms with the authorized signatory signature and date. The estimated emissions from a 35 gallon mineral spirits cabinet have been provided. The Propane storage tank and a Urea storage tank qualify as Insignificant Activities (See the discussion in the **Response to 12** below).

8. The Introduction, page 1, third paragraph, in the last sentence, states that this application is for "a federally enforceable permit for non-major sources pursuant to the provisions in 401 KAR 52:030." This will be a major source, and will be applicable under 401 KAR 52:020, Title V Permits.

Response to 8:

ecoPower acknowledges that the typographic error will/should be corrected to read "...will be applicable under 401 KAR 52:020, Title V Permits."

9. The Division requires stack parameters for the auxiliary boiler. Missing parameters include stack height, UTM coordinates of the stack, exit velocity or flow rate, stack diameter, and the exit temperature. In addition, the coordinates supplied for the main boiler stack need to be refined, as they currently locate the main boiler stack off the property, and they should be resubmitted as UTM coordinates.

Response to 9:

See **Sargent & Lundy Project Memorandum, January 25, 2010, Subject: Response to KYDEP NOD.**

10. The MSDS sheets for all the active chemicals to be used at the facility were not supplied. Please check all portions of the form DEP7007AI where necessary to support this information.

Response to 10:

See **Attachment to Response 10, Material Safety Data Sheets** for the list of anticipated chemicals to be used in the process. Copies of the representative MSDS have also been attached. Also attached is an **updated page 3 of the DEP7007AI (Administrative Information Form)** to show the inclusion of the MSDS.

11. The application footnotes Table 2.1 and Table 2.3 from the *Technical Support Document*. This footnote states that "Fuel samples, analyzed by University of Kentucky's CAER, have been provided to DAQ under separate cover." The referenced documents have not been received by the Division.

Response to 11:

See **Attachment to Response 11, the analytical data generated by University of Kentucky, Center for Applied Energy Research.**

12. The application fails to mention the storage tanks for propane and the diluent substances used in the SNCR. These tanks should be listed either as insignificant activities or emission points, and appropriate calculations should be included.

Response to 12:

The addition of a Propane storage tank and a Urea storage tank qualify as Insignificant Activities. See **Sargent & Lundy Project Memorandum, January 25, 2010, Subject: Response to KYDEP NOD** for the Propane and Urea tank emission estimates. The Propane and Urea tanks have been added to the DEP 7007 DD Form.

13. The plan view and elevation drawings are incomplete. Only one boiler building is shown. Is there a separate building for the propane boiler? The stack for the propane boiler, as well as the propane tank and tank for the SNCR diluent, are missing from the drawings, as is the Dry Sorbent Injection System.

Response to 13:

See **Sargent & Lundy Project Memorandum, January 25, 2010, Subject: Response to KYDEP NOD**, revised drawing will be submitted.

14. For the type of permit sought, the Division suggests that CO and SO_x CEMS be evaluated to ensure compliance with the required limits. Form DEP7007V, Applicable Requirements and Compliance, is the appropriate place to list required CEMS systems. Sources such as the Adage power plant recently permitted in Florida have been permitted with such monitoring.
<http://www.dep.state.fl.us/air/emission/apds/listpermits.asp>, permit no. 0470016-001-AC

Response to 14:

Footnote 3, Monitoring Performance Specifications has been added to the DEP7007 V Form for EP01, Fluidized Bed Boiler. Language has been included in Footnote 3 to address the evaluation of the acceptability of CEMS for various pollutants as provided in recently permitted Adage facility in Florida.

SARGENT & LUNDY PROJECT MEMORANDUM
JANUARY 25, 2010
SUBJECT: RESPONSE TO KYDEP NOD

PROJECT EMEORANDUM

From: Ken Snell **Date:** January 25, 2010

Client: ecoPower Generating LLC
Station: ecoPower Generating Station

To: John Kelley, Smith Management Group

Copies: Gary Crawford, ecoPower
Scott Smith, Smith Management Group
Mike Vacek, S&L

Subject: Response to KYDEP NOD
Dated January 15, 2010
Items 1, 2, 3, 4, 5, 9, 12, and 13

This memorandum provides responses to items 1, 2, 3, 4, 5, 9, 12, and 13 in the Notice of Deficiency (NOD) issued by the Kentucky Department of Environmental Protection (KYDEP) on January 15, 2010. For completeness, KYDEP's comments are repeated below.

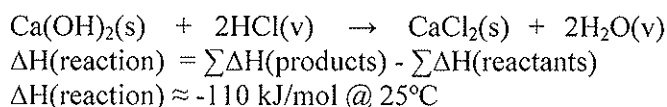
1. As stated on page 3-16 of the *Air Permit Application Technical Support Document*, HCl will react with $\text{Ca}(\text{OH})_2$ to form CaCl_2 . The reaction as given does not address the hygroscopic nature of CaCl_2 and the reversibility of the reaction in the presence of water vapor from the SNCR. Please provide an analysis of the aforementioned issue and focus on the reversibility of the reaction given the conditions.

Response: As described in subsection 3.1.4.1 of the *Technical Support Document*, the combination of low chlorine concentrations in the biomass fuel, high alkalinity of the biomass-generated fly ash, and fabric filter baghouse control system will result in low HCl emissions from the eGF main boiler (see, response to Item No. 2 below for HCl stack test data from biomass-fired units equipped with a fabric filter baghouse).

Although the SNCR control system generates water vapor, the amount of water introduced via this system is negligible compared to the moisture that is generated from the solid fuel. The moisture content inherent in biomass fuel (approximately 36.7%) provides a majority of water vapor in the flue gas. The biomass fuel contributes approximately 48,282 lb/hr moisture to the flue gas at a full load fuel consumption rate of 131,558 lb/hr. By comparison, at full load, the urea consumption rate is expected to be approximately 380 lb/hr (50% urea solution). Thus, the SNCR control system will add approximately 190 lb/hr moisture to the flue gas (plus a small quantity associated with the NO_x reduction reaction). The flue gas moisture content at the boiler outlet will be in the range of 15%. A large majority of the flue gas moisture comes from the fuel itself, with additional contributions from moisture in the inlet combustion air, fuel hydrogen, and the SNCR control system.

Chlorine from the coal, which is released during the combustion process, will react with water vapor in the flue gas to form vapor phase hydrochloric acid. Acid gases, including HCl will adsorb on alkaline fly ash particles in the air pre-heater (APH) and downstream equipment, react with the alkaline species, and be removed from the flue gas in the downstream particulate control system. The rate of adsorption depends on the temperature of the flue gas; concentration of the acid gas; and fly ash properties, in particular, alkalinity. Adsorption will increase rapidly as the flue gas reaches the cold end of the APH and will continue in the duct between the APH and the particulate control equipment.¹

HCl that adsorbs onto alkaline fly ash particles will react with the alkali species to form alkali-chlorides such as KCl, NaCl, and CaCl₂. Because of the high calcium oxide content of the biomass fuel (as CaO or Ca(OH)₂), the primary mechanism for HCl removal is shown by the following reaction.



The reversibility of a chemical reaction can be predicted by comparing the heats of formation (ΔH) of the reactants to the heats of formation of the products (at a given temperature). The reaction shown above is exothermic at flue gas conditions upstream of the baghouse, and strongly favors the formation of CaCl₂. CaCl₂ does have a hygroscopic nature; however, this will not encourage the above reaction to reverse in the flue gas due to the presence of water vapor. The hygroscopic nature of CaCl₂ typically results in the retention and absorption of humidity from the surrounding atmosphere. While the flue gas will have a high humidity, at the temperatures expected in the flue gas downstream of the boiler (300 – 800 °F), all of the moisture will be in the vapor phase and the thermodynamics will not allow for water to condense out of the vapor phase onto the CaCl₂ salt. Additionally, if there were water in the liquid form available for the hygroscopic CaCl₂ to absorb, the above reaction would not reverse due to the unfavorable kinetics and thermodynamics.

2. Please substantiate the suggestion in the *Technical Support Document*, on page 3-17, in the first paragraph, which states, “Although actual acid gas removal across the particulate control systems were not measured, these stack test results from wood-fired units suggest that the intimate contact between the boiler flue gas and alkaline biomass-generated filter cake provides significant acid gas removal.”

Response: Hydrochloric acid (HCl) emissions from the ecoPower Generating Facility (eGF) biomass-fired boiler were estimated based on a review of available stack test data from biomass-fired units equipped with a fabric filter baghouse. U.S.EPA’s Clearinghouse for Inventories & Emission Factors (CHIEF) data base (available at <http://www.epa.gov/ttn/chief/index.html>) includes HCl emissions data from seven wood-fired boilers equipped with various particulate control systems. HCl emissions data from the CHIEF database are summarized in table 1, sorted by particulate control device.

¹ See, Srivastava, R.K., Miller, C.A., et al., “Technical Publication – Emissions of Sulfur Trioxide From Coal-Fired Power Plants,” presented at Power-Gen International, Orlando, FL, December 10-12, 2002, page 11.

**Table 1
Biomass-Fired Boiler HCl Emissions Data
Sorted by Particulate Control Device**

Unit ID	Firing Configuration	Fuel Type	Stack Test Results Run Average (lb/mmBtu)		
			Mechanical Collector	ESP	Fabric Filter
B08	Stoker	Wet Wood		0.0629	
B125	Not Reported	Wet Wood		0.0017	
B132	Stoker	Wet Wood			0.000354
B133	Stoker	Wet Wood			0.00163
B143	Stoker	Wet Wood	0.00157		
B23	Stoker	Wet Wood		0.00535	
B42	Stoker	Dry Wood	0.0614		
Average Test Results:			0.0315	0.0233	0.000992
Percent Reduction:			baseline	(26%)	(96.8%)

As discussed in the *Technical Support Document*, emissions data available from the CHIEF database are stack test results, and do not provide the information needed to calculate removal efficiency across a particular control device (e.g., inlet and outlet concentrations). However, the stack test data summarized above suggest that acid gas emissions from wood-fired units equipped with a fabric filter baghouse will be significantly lower than acid gas emissions from units equipped with a mechanical collector or ESP.

HCl emissions data are also available from Public Service of New Hampshire's Schiller Station Unit 5 in Portsmouth, New Hampshire. Schiller Unit 5 is a 50-MW biomass-fired unit equipped with a fabric filter baghouse. Performance tests conducted in August 2007 included a set of three compliance runs for HCl (as well as particulate matter, CO, mercury, and opacity). HCl emissions were measured using EPA Test Method 26A.² A summary of the test results is provided in Table 2.

**Table 2
Schiller Station Unit 5 - HCl Emissions Data**

	Run 1	Run 2	Run 3	Average
HCl (lb/mmBtu)	2.19×10^{-4}	5.08×10^{-5}	1.46×10^{-4}	1.39×10^{-4}

² Public Service of New Hampshire Schiller Station, Annual Compliance Test Program SR5 Boiler – Condition, Wood, Final Report, Prepared by Eastmount Environmental Services, LLC, October 19, 2007.

Again, test data from Schiller Unit 5 do not measure removal efficiency across any particular control device; however, the test results support the conclusion that HCl emissions from a biomass-fired boiler equipped with a fabric filter baghouse will be low.

The fact that HCl emissions from wood-fired boilers equipped with a fabric filter baghouse tend to be significantly lower than HCl emissions from units equipped with other particulate control devices suggests that the fabric filter baghouse promotes HCl removal. Based on engineering judgment, familiarity with the acid gas removal mechanism in coal-fired boilers,³ and the alkalinity of the biomass-generated flyash (discussed in subsection 3.1.4.1 of the *Technical Support Document*), it is reasonable to conclude that HCl generating during the combustion process will react with alkaline species in the biomass-generated flyash (in particular CaO) to form calcium chloride, and that the calcium chloride will be removed from the flue gas in the baghouse filter cake. Acid gas removal would be expected in the fluidized bed boiler, duct work downstream of the boiler, and as the flue gas passes through the fabric filter cake (as described for sulfuric acid mist in the footnote below).

3. Please provide a technical basis as to the ratio of bottom ash to fly ash as stated on page 3-20 of the *Technical Support Document*.

Response: In general, bottom ash is slag that builds up on the heat-absorbing surfaces of the furnace and superheater that eventually falls either by its own weight or as a result of load changes or sootblowing. Flyash is entrained in the flue gas, and is collected in the economizer and particulate control device.⁴ The split between flyash and bottom ash is dependent upon ash characteristics and boiler type. For example, when firing a solid fuel that generates ash with low ash-fusion temperatures, a larger quantity of molten slag can adhere to the furnace walls and subsequently fall through the furnace as bottom ash.⁵ The quantity of ash entrained in the flue gas will depend upon the dust-bearing capacity of the combustion gases, the size and shape of the particles, and on the density of the ash relative to that of the upward flowing gas.

³ See, e.g., Srivastava, R.K., Miller, C.A., et al., "Technical Publication – Emissions of Sulfur Trioxide From Coal-Fired Power Plants," presented at Power-Gen International, Orlando, FL, December 10-12, 2002, excerpt from page 11:

In addition to the processes described above, some H₂SO₄ gets adsorbed on flyash in the APH [air pre-heater] and downstream equipment. The rate of this adsorption depends on the temperature of the flue gas; concentration of H₂SO₄; and flyash properties, in particular, alkalinity.... The adsorbed H₂SO₄ gets removed with the flyash in the PM control device electrostatic precipitator (ESP) or baghouse.

The firing of sub-bituminous coals, which generally have sulfur contents on the order of 0.5%, results in flyash with a relatively high amount of alkali (20-30% by weight). Such alkaline ash adsorbs virtually all H₂SO₄ the flue gas.

⁴ See, e.g., "Combustion Fossil Power – A Reference Book on Fuel Burning and Steam Generation," Combustion Engineering, Inc., Joseph G. Singer, P.E., editor, 4th ed., page 16-1.

⁵ Id.

Based on experience with the design of coal-fired fluidized bed boilers and air pollution control systems, 20% to 40% of coal ash is typically removed as bottom ash, while 60% to 80% of the ash leaves the furnace as flyash. However, more than 45% bottom ash has been reported on certain lignite-fired units.⁶ Particulate control systems for subbituminous and lignite-fired units are sized using a bottom ash split of 30% to 50%. Based on discussions with boiler vendors and biomass ash characteristics, a similar flyash-bottom ash split would be expected.

When sizing the ash removal equipment different values are used to apply a margin for variation in operations. For the bottom/bed ash, a value of 50% of the total ash would be used for sizing the ash hoppers and removal systems. Similarly, for the flyash system, a value of 80% of the total ash would be applied for sizing the pulse jet baghouse. This higher value is used to assure that the baghouse is designed with sufficient capacity to meet the required outlet emission rate, and to assure that ash hoppers and flyash removal systems have adequate capacity.

The actual flyash:bottom ash ratio will constantly vary depending on boiler operation and ash characteristics. However, the actual ratio will not affect controlled PM emissions from the boiler. As discussed in the *Technical Support Document*, the fabric filter baghouse is considered a constant outlet control device. In other words, controlled filterable PM emissions will remain relatively constant regardless of inlet loading. Although higher inlet loading rates will cause the filter cake to develop more rapidly (requiring more frequent cleaning), controlled emissions will remain relatively constant (approximately 0.015 lb/mmBtu filterable PM₁₀).

4. The *Technical Support Document*, on page 3-12, in the fourth paragraph, states that, "Based on experience at existing solid fuel-fired boilers, approximately 2.0% of the fuel SO₂ will convert to SO₃ in the boiler." Please provide a technical basis for this assumption.

Response: The formation of SO₃ is a complex process that is not thoroughly understood even after many years of investigation.⁷ Srivastava, et al., presented a technical publication at the 2002 Power-Gen Conference describing the formation of SO₃ from coal-fired power plants.⁸ The publication included a comprehensive review of the technical literature describing SO₃ formation in coal-fired boilers. In general, three mechanisms have been proposed for SO₂ to SO₃ oxidation:

⁶ Id. at 16-4.

⁷ See, e.g., Hardman, R., Stacy, R., and Dismukes, E., "Estimating Sulfuric Acid Aerosol Emissions from Coal-Fired Power Plants," U.S. Department of Energy-FETC Conference on Formation, Distribution, Impact and Fate of Sulfur Trioxide in Utility Flue Gas Streams, March 1998.

⁸ Srivastava, R.K., Miller, C.A., et al., "Technical Publication – Emissions of Sulfur Trioxide From Coal-Fired Power Plants," presented at Power-Gen International, Orlando, FL, December 10-12, 2002.

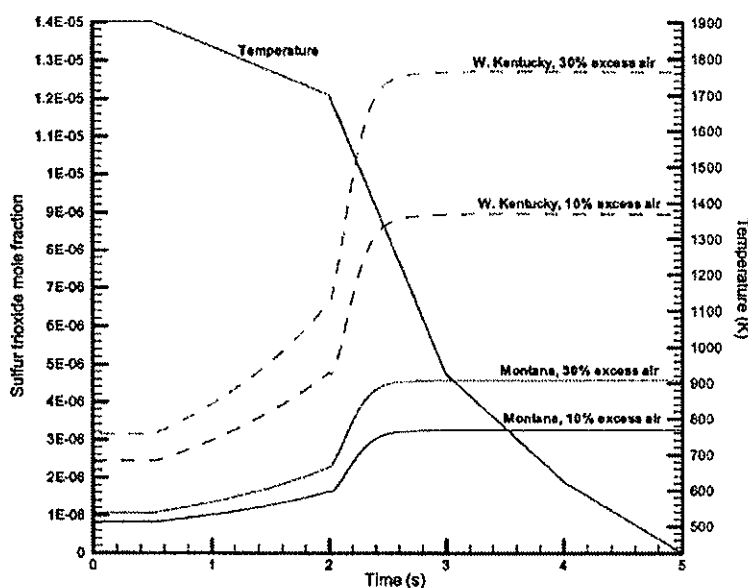
1. Oxidation of SO₂ by atomic oxygen
 $\text{SO}_2 + \text{O} \leftrightarrow \text{SO}_3$
2. Oxidation of SO₂ by molecular oxygen
 $\text{SO}_2 + \frac{1}{2}\text{O}_2 \leftrightarrow \text{SO}_3$
3. Catalytic oxidation via molecular oxygen

These mechanisms suggest that the rate of SO₃ formation is dependent upon a number of factors including the sulfur content of the fuel, amount of excess air, and the presence of some form of catalyst. The rate of SO₂ to SO₃ oxidation reported in technical literature varies, but is generally in the range of 1% to approximately 5%.⁹

Figures 1 & 2, taken from the Srivastava report, plot SO₃ mole fraction and the ratio SO₃ mole fraction/SO₂ mole fraction as a function of time and temperature. These figures show that an increase in fuel sulfur content and/or furnace excess air levels results in a corresponding increase in SO₃ formation (via reaction mechanism 1); and that approximately 0.60% to 0.65% of the fuel sulfur will oxidize to SO₃ in the furnace.

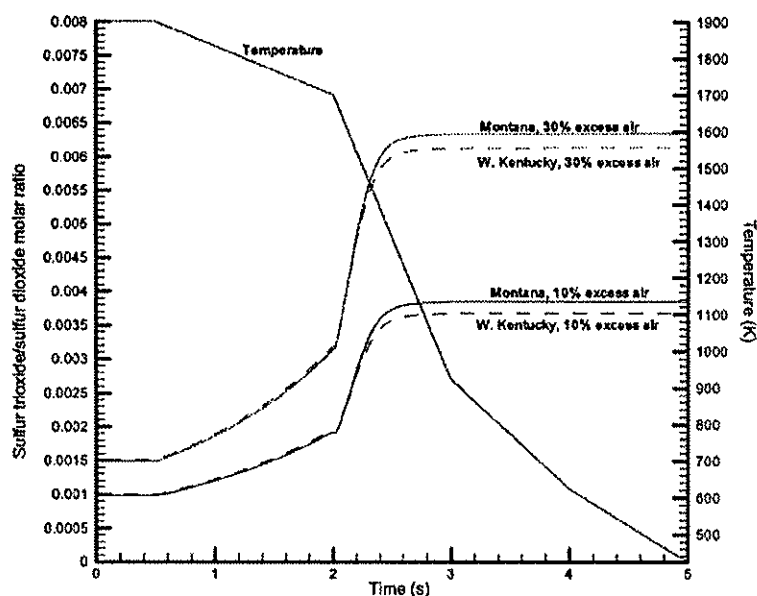
Figure 1
SO₃ Produced During Coal Combustion

Figure 2
SO₂ Conversion During Coal Combustion



⁹ See, e.g., Combustion Fossil Power, pages 14-36, 15-27, and 15-3.

In addition to the SO_3 formation in the furnace, SO_3 formation takes place in the temperature range of



1,100 – 800 °F found in the economizer region of the boiler. This formation results from oxidation of SO_2 via molecular oxygen (O_2) catalyzed by iron oxides present in both ash and tube surfaces.¹⁰ This oxidation mechanism depends on several operating and design parameters including SO_2 concentration, ash content and composition, convective pass surface area, gas and tube surface temperature distributions, and excess air level.¹¹ Additional SO_2 to SO_3 oxidation as a result of this mechanism is typically in the range of 0.5% to approximately 0.8%, depending on the presence of a catalyst.

Based on a review of the published literature and engineering judgment, and taking into consideration the low sulfur content of the biomass fuel and the biomass ash characteristics, an overall SO_2 to SO_3 conversion rate of 2% provides a conservatively high estimate of potential SO_3 emissions (as H_2SO_4) from the eGF boiler.

¹⁰ Srivastava, at page 7.

¹¹ *Id.*

5. The *Technical Support Document*, in its Table of Contents, on the list of Tables, shows NO_x emissions being taken from the Schiller facility in New Hampshire, and CO emissions being taken from other sources. If sources other than vendor guarantees are to be used for emissions data, the same source must be used for all emission factors possible, or justification must be made for the choice not to. The Schiller power plant is in many ways very similar to this one, and it was stack tested in 2007 for PM₁₀, mercury, and CO, even though table 3-4 states that CO is “not reported” for Schiller.

Response: CO emission rates included in Table 3-4 of the *Technical Support Document* list the CO permit limits included in several recently issued air permits for biomass-fired units. “Not reported” was listed for Schiller Unit 5, because the Title V Operating Permit review document available at the time did not include a CO permit limit. Subsequently, we have learned that the CO permit limit for Schiller Unit 5 is 0.10 lb/mmBtu.¹²

A variety of technical information was reviewed to estimate emissions from the eGF main boiler, including the fuel/ash characteristics, emissions information available in vendor publications, stack test data from similar sources (where available), and engineering calculations. The most representative emissions data available were used to estimate emissions from the eGF main boiler, and engineering calculations were used to confirm that the proposed emission rates were achievable.

With respect to CO emissions, ecoPower used stack test data available from EPA for biomass-fired fluidized bed boilers (see, *Technical Support Document*, Table 3-3). Emissions data from biomass-fired fluidized bed boilers showed that CO emissions varied significantly, ranging from 0.016 lb/mmBtu (approximately 20 ppmvd @ 3% O₂) to as high as 0.943 lb/mmBtu (approximately 1,200 ppmvd @ 3% O₂).

As KYDEP notes, Schiller Unit 5 performance tests conducted in January 2007 included CO stack testing. Those stack tests detected very low CO concentrations, in fact, CO concentrations were reported as zero.¹³ The Schiller performance test confirms that a biomass-fired fluidized bed boiler is capable of achieving low CO concentrations; however, because the stack test reported an CO emission rate of 0.0 lb/mmBtu, it would not be appropriate to use the single performance test to establish an expected emission rate from the eGF boiler.

Taking into consideration all available stack test data from biomass-fired fluidized bed boilers, CO emission rates included in recently issued permits, and information available from boiler vendors, the eGF boiler should achieve a controlled CO emission rate of 0.08 lb/mmBtu (approximately 100 ppmvd @ 3% O₂) under all normal operation conditions.

¹² See, Public Service of New Hampshire Schiller Station, Annual Compliance Test Program SR5 Boiler – Condition, Wood, Final Report, Prepared by Eastmount Environmental Services, LLC, October 19, 2007, Table 1-2.

¹³ Schiller Unit 5 Compliance Test, Table 1-2 and Appendix A-2.

9. The Division requires stack parameters for the auxiliary boiler. Missing parameters include stack height, UTM coordinates of the stack, exit velocity or flow rate, stack diameter, and the exit temperature. In addition, the coordinates supplied for the main boiler stack need to be refined, as they currently locate the main boiler stack off the property, and they should be resubmitted as UTM coordinates.

Response: Stack parameters for the auxiliary combustion sources, including the auxiliary boiler, emergency diesel generator, and fire-water pump are provided in Table 3. Emission point locations (UTM coordinates) are shown on Drawing EM-5.

Table 3
eGF Auxiliary Combustion Source Stack Parameters*

Stack Parameter	Units	Auxiliary Boiler	Emergency Diesel Generator	Fire Water Pump Diesel Engine
Exhaust Flow Rate	acfm	35,490	12,950	2,000
Exhaust Temperature	oF	305	777	918
Stack Diameter	inches	36	8	6
Exit Velocity	ft/sec.	85	618	170
Stack Height	ft. agl	120	20	12

* Stack parameters included in this table are based on preliminary engineering calculations and information available from equipment vendors. For example, the emergency diesel generator information is based on the Caterpillar DM8295 Generator Set. Similarly, fire pump stack parameters are based on the Clark JX6H-UF70 fire water pump (adjusted for 450 hp). Stack parameters may change somewhat during final engineering.

12. The application fails to mention the storage tanks for propane and the diluent substances used in the SNCR. These tanks should be listed either as insignificant activities or emission points, and appropriate calculations should be included.

Response: Based on preliminary design engineering calculations, the propane storage tank will have a capacity of 30,000 gallons. The propane storage capacity is based on boiler startup emission calculations with air pre-heating, and a propane consumption rate of approximately 10,000 gallons per cold startup. In addition, the auxiliary boiler will have a propane consumption rate of approximately 1,000 gallons per hour.

The propane storage tank will be a pressurized storage tank; thus, emissions from the storage tank will be negligible. The propane handling system has the potential to emit fugitive emissions from valves, pump seals, and un-welded flanges/connectors ("components"). One accepted approach for estimating process fugitive emissions allows use of average emission factors developed by EPA in combination with: (1) the number of each type of component; (2) the service each component is in (gas, light liquid, or heavy

liquid), the TOC concentration of the stream; and (4) the time period each component is in service.¹⁴ Note that using average emission factors is not intended to be used for estimating emissions from an individual piece of equipment over a short period of time (i.e., 1-hour), but is most valid for estimating emissions from a population of equipment over an extended period of time. Using EPA emission factors for marketing terminals (gas service) and component count for a typical propane handling and delivery system, potential fugitive emissions from the propane handling system estimated to be less than 0.01 tpy. Therefore, emissions from the propane storage tank system should be considered negligible.

The urea tank will have a capacity of approximately 30,000 gallon capacity. This urea storage tank capacity is based on a 50% urea solution, 380 lb/hr consumption (at full load), and 30-day storage. Two material safety data sheets (MSDS) from suppliers of urea solutions for industrial use are attached. In the MSDS from Terra Industries, Inc., the urea solution has a boiling point of 223 °F and a vapor pressure designation of “no test results.” Similarly, the MSDS from Cervantes-Delgado, Inc., has a boiling point >212 °F and a vapor pressure of “not applicable.” Although urea and water can react to produce ammonia and carbon dioxide by hydrolysis, the rate of hydrolysis is controlled by temperature and only minimal amounts of ammonia will be formed from a 50% urea solution at ambient temperatures and storage conditions. Therefore, emissions from the urea storage tank should be considered negligible.

13. The plan view and elevation drawings are incomplete. Only one boiler building is shown. Is there a separate building for the propane boiler? The stack for the propane boiler, as well as the propane tank and tank for the SNCR diluent, are missing from the drawings, as is the Dry Sorbent Injection System.

Response: A revised site plan is being provided under separate cover. The revised site plan (Drawing No. EM 4_Rev. 4) shows the location of each emissions point, and provides the UTM coordinates and exhaust point height above ground of each emissions point.

¹⁴ See, U.S.EPA, “Protocol for Equipment Leak Emission Estimates,” EPA Office of Air Quality Planning and Standards, EPA-453/R-95-017, November 1995, page 2-10.

For reasons of Homeland Security, this document is not available on-line:

Case Number: 2009-00530

*Description of Document: Exhibit K, Air Permit, Figure 12, Site Emissions
Point Locations, 42" x 30"*

Persons requiring access to this document may contact the Public Service Commission in person or in writing at:

Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602
Attn: GIS Coordinator
Phone (502) 564-3940

Written requests must include a signature, name, title of organization (if applicable), mailing address, phone number and optional e-mail address and the following statement: *I understand that since September 11, 2001, location data of critical utility structures is considered sensitive information for security reasons. I will not publish this map or any part of it on the World Wide Web. I will not redistribute this map to others, but shall refer requests by others for such information to the Kentucky Public Service Commission.*

Maps will be sent as pdf files by e-mail or on CD at no cost to the party. If printed "oversized" maps are requested, there will be a charge of \$8 per sheet.

Maps will be available for viewing at the Public Service Commission and at any public hearing.

ATTACHMENT TO RESPONSE 7

DEP7007 DD FORM

DEP7007DD

**INSIGNIFICANT
ACTIVITIES**

INSIGNIFICANT ACTIVITY CRITERIA

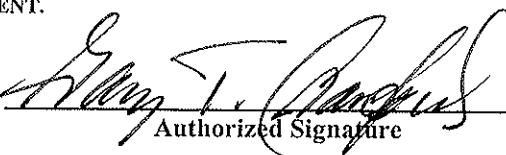
1. Emissions from insignificant activities shall be counted toward the source's potential to emit;
2. Emissions from the activity shall not be subject to a federally enforceable requirement other than generally applicable requirements that apply to all activities and affected facilities such as 401 KAR 59:010, 61:020, 63:010, and others deemed generally applicable by the Cabinet;
3. The potential to emit a regulated air pollutant from the activity or affected facility shall not exceed 5 tons/yr.
4. The potential to emit of a hazardous air pollutant from the activity or affected facility shall not exceed 1,000 pounds/yr., or the de minimis level established under Section 112(g) of the Act, whichever is less;
5. The activity shall be included in the permit application, identifying generally applicable and state origin requirements.

Description of Activity Including Rated Capacity	Generally Applicable Regulations Or State Origin Requirements	Does the Activity meet the Insignificant Activity Criteria Listed Above?
IA-1 10,000 gal. Horizontal Diesel Tank	401 KAR 63:020	Yes
IA-2 550 gal. Diesel Tank – Emergency Generator	401 KAR 63:020	Yes
IA-3 550 gal. Diesel Tank –Fire Water Pump	401 KAR 63:020	Yes
IA-4 35 gal. Mineral Spirits Cabinet	401 KAR 63:020	Yes
IA-5 30,000 gal. Propane Storage Tank	401 KAR 63:020	Yes
IA-6 30,000 gal. Urea Storage Tank	401 KAR 63:020	Yes

SIGNATURE BLOCK

I, THE UNDERSIGNED, HEREBY CERTIFY UNDER PENALTY OF LAW, THAT I AM A RESPONSIBLE OFFICIAL, AND THAT I HAVE PERSONALLY EXAMINED, AND AM FAMILIAR WITH, THE INFORMATION SUBMITTED IN THIS DOCUMENT AND ALL ITS ATTACHMENTS. BASED ON MY INQUIRY OF THOSE INDIVIDUALS WITH PRIMARY RESPONSIBILITY FOR OBTAINING THE INFORMATION, I CERTIFY THAT THE INFORMATION IS ON KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE OR INCOMPLETE INFORMATION, INCLUDING THE POSSIBILITY OF FINE OR IMPRISONMENT.

BY


Authorized Signature

Jan 1 25 2010
Date

Gary T. Crawford
Typed or Printed Name of Signatory

Chief Executive Officer
Title of Signatory

Estimated Emissions from the Mineral Spirits Cabinet

The emissions from a small mineral spirits cabinet planned to be used for maintenance activities have been estimated for the proposed ecoPower facility based on existing emission factors. As indicated in the EPA Document "Compilation of Air Pollutant Emission Factors (AP-42)", Section 4.6 Solvent Degreasing, Table 4.6-2, the emission from a Cold Cleaning Unit is estimated to be 0.33 tons/year per unit. A copy of AP-42 Section 4.6 has been attached.

4.6 Solvent Degreasing

4.6.1 General^{1,2}

Solvent degreasing (or solvent cleaning) is the physical process of using organic solvents to remove grease, fats, oils, wax or soil from various metal, glass, or plastic items. The types of equipment used in this method are categorized as cold cleaners, open top vapor degreasers, or conveyorized degreasers. Nonaqueous solvents such as petroleum distillates, chlorinated hydrocarbons, ketones, and alcohols are used. Solvent selection is based on the solubility of the substance to be removed and on the toxicity, flammability, flash point, evaporation rate, boiling point, cost, and several other properties of the solvent.

The metalworking industries are the major users of solvent degreasing, i. e., automotive, electronics, plumbing, aircraft, refrigeration, and business machine industries. Solvent cleaning is also used in industries such as printing, chemicals, plastics, rubber, textiles, glass, paper, and electric power. Most repair stations for transportation vehicles and electric tools use solvent cleaning at least part of the time. Many industries use water-based alkaline wash systems for degreasing, and since these systems emit no solvent vapors to the atmosphere, they are not included in this discussion.

4.6.1.1 Cold Cleaners -

The 2 basic types of cold cleaners are maintenance and manufacturing. Cold cleaners are batch loaded, nonboiling solvent degreasers, usually providing the simplest and least expensive method of metal cleaning. Maintenance cold cleaners are smaller, more numerous, and generally use petroleum solvents as mineral spirits (petroleum distillates and Stoddard solvents). Manufacturing cold cleaners use a wide variety of solvents, which perform more specialized and higher quality cleaning with about twice the average emission rate of maintenance cold cleaners. Some cold cleaners can serve both purposes.

Cold cleaner operations include spraying, brushing, flushing, and immersion. In a typical maintenance cleaner (Figure 4.6-1), dirty parts are cleaned manually by spraying and then soaking in the tank. After cleaning, the parts are either suspended over the tank to drain or are placed on an external rack that routes the drained solvent back into the cleaner. The cover is intended to be closed whenever parts are not being handled in the cleaner. Typical manufacturing cold cleaners vary widely in design, but there are 2 basic tank designs: the simple spray sink and the dip tank. Of these, the dip tank provides more thorough cleaning through immersion, and often is made to improve cleaning efficiency by agitation. Small cold cleaning operations may be numerous in urban areas. However, because of the small quantity of emissions from each operation, the large number of individual sources within an urban area, and the application of small cold cleaning to industrial uses not directly associated with degreasing, it is difficult to identify individual small cold cleaning operations. For these reasons, factors are provided in Table 4.6-1 to estimate emissions from small cold cleaning operations over large urban geographical areas. Factors in Table 4.6-1 are for nonmethane VOC and include 25 percent 1,1,1 trichloroethane, methylene chloride, and trichlorotrifluoroethane.

4.6.1.2 Open-Top Vapor Systems -

Open-top vapor degreasers are batch loaded boiling degreasers that clean with condensation of hot solvent vapor on colder metal parts. Vapor degreasing uses halogenated solvents (usually

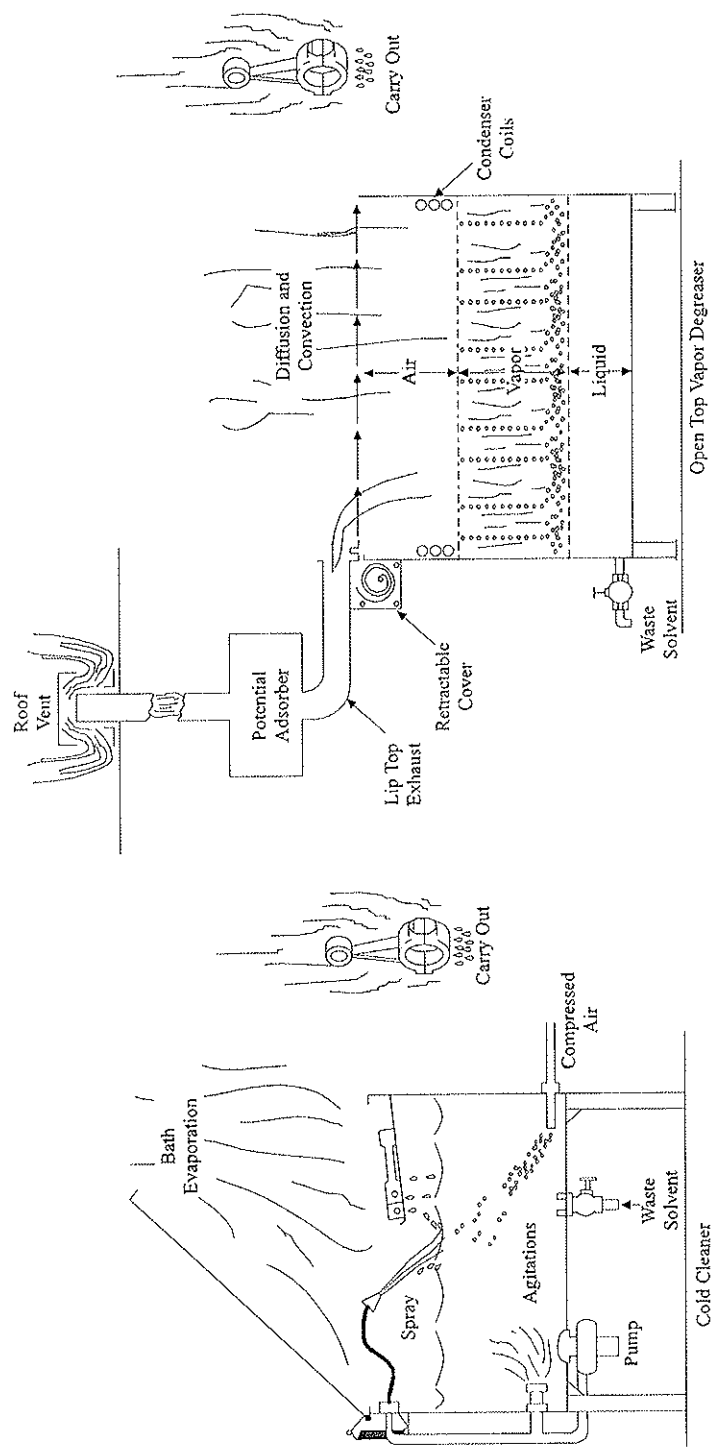


Figure 4.6-1. Degreaser emissions points.

Table 4.6-1 (Metric And English Units). NONMETHANE VOC EMISSIONS FROM SMALL COLD CLEANING DEGREASING OPERATIONS^a

EMISSION FACTOR RATING: C

Operating Period	Per Capita Emission Factor
Annual	1.8 kg 4.0 lb
Daily ^b	5.8 g 0.013 lb

^a Reference 3.

^b Assumes a 6-day operating week (313 days/yr).

perchloroethylene, trichloroethylene, or 1,1,1-trichloroethane), because they are not flammable and their vapors are much heavier than air.

A typical vapor degreaser (Figure 4.6-1) is a sump containing a heater that boils the solvent to generate vapors. The height of these pure vapors is controlled by condenser coils and/or a water jacket encircling the device. Solvent and moisture condensed on the coils are directed to a water separator, where the heavier solvent is drawn off the bottom and is returned to the vapor degreaser. A "freeboard" extends above the top of the vapor zone to minimize vapor escape. Parts to be cleaned are immersed in the vapor zone, and condensation continues until they are heated to the vapor temperature. Residual liquid solvent on the parts rapidly evaporates as they are slowly removed from the vapor zone. Lip mounted exhaust systems carry solvent vapors away from operating personnel. Cleaning action is often increased by spraying the parts with solvent below the vapor level or by immersing them in the liquid solvent bath. Nearly all vapor degreasers are equipped with a water separator which allows the solvent to flow back into the degreaser.

Emission rates are usually estimated from solvent consumption data for the particular degreasing operation under consideration. Solvents are often purchased specifically for use in degreasing and are not used in any other plant operations. In these cases, purchase records provide the necessary information, and an emission factor of 1000 kg of volatile organic emissions per Mg (2000 lb/ton) of solvent purchased can be applied, based on the assumption that all solvent purchased is eventually emitted. When information on solvent consumption is not available, emission rates can be estimated if the number and type of degreasing units are known. The factors in Table 4.6-2 are based on the number of degreasers and emissions produced nationwide and may be considerably in error when applied to a particular unit.

The expected effectiveness of various control devices and procedures is listed in Table 4.6-3. As a first approximation, this efficiency can be applied without regard for the specific solvent being used. However, efficiencies are generally higher for more volatile solvents. These solvents also result in higher emission rates than those computed from the "average" factors listed in Table 4.6-2.

4.6.1.3 ConveyORIZED Degreasers -

ConveyORIZED degreasers may operate with either cold or vaporized solvent, but they merit separate consideration because they are continuously loaded and are almost always hooded or enclosed. About 85 percent are vapor types, and 15 percent are nonboiling.

Table 4.6-2 (Metric And English Units). SOLVENT LOSS EMISSION FACTORS FOR
DEGREASING OPERATIONS

EMISSION FACTOR RATING: C

Type Of Degreasing	Activity Measure	Uncontrolled Organic Emission Factor ^a	
All ^b	Solvent consumed	1,000 kg/Mg	2,000 lb/ton
Cold cleaner			
Entire unit ^c	Units in operation	0.30 Mg/yr/unit	0.33 tons/yr/unit
Waste solvent loss		0.165 Mg/yr/unit	0.18 tons/yr/unit
Solvent carryout		0.075 Mg/yr/unit	0.08 tons/yr/unit
Bath and spray			
evaporation			
Entire unit	Surface area and duty cycle ^d	0.06 Mg/yr/unit	0.07 tons/yr/unit
		0.4 kg/hr/m ²	0.08 lb/hr/ft ²
Open top vapor			
Entire unit	Units in operation	9.5 Mg/yr/unit	10.5 ton/yr/unit
Entire unit	Surface area and duty cycle ^e	0.7 kg/hr/m ²	0.15 lb/hr/ft ²
Conveyorized, vapor			
Entire unit	Units in operation	24 Mg/yr/unit	26 tons/yr/unit
Conveyorized, nonboiling			
Entire unit	Units in operation	47 Mg/yr/unit	52 tons/yr/unit

^a 100% Nonmethane VOC.

^b Solvent consumption data will provide much more accurate emission estimates than any of the other factors presented.

^c Emissions generally would be higher for manufacturing units and lower for maintenance units.

^d Reference 4, Appendix C-6. For trichloroethane degreaser.

^e For trichloroethane degreaser. Does not include waste solvent losses.

4.6.2 Emissions And Controls¹⁻³

Emissions from cold cleaners occur through: (1) waste solvent evaporation, (2) solvent carryout (evaporation from wet parts), (3) solvent bath evaporation, (4) spray evaporation, and (5) agitation (Figure 4.6-1). Waste solvent loss, cold cleaning's greatest emission source, can be reduced through distillation and transport of waste solvent to special incineration plants. Draining cleaned parts for at least 15 seconds reduces carryout emissions. Bath evaporation can be controlled by using a cover regularly, by allowing an adequate freeboard height, and by avoiding excessive drafts in the workshop. If the solvent used is insoluble in and heavier than water, a layer of water 5 to 10 centimeters (2 to 4 inches) thick covering the solvent can also reduce bath evaporation. This is known as a "water cover". Spraying at low pressure also helps to reduce solvent loss from this part of the process. Agitation emissions can be controlled by using a cover, by agitating no longer than necessary, and by avoiding the use of agitation with low volatility solvents. Emissions of low volatility solvents increase significantly with agitation. However, contrary to what one might expect, agitation causes only a small increase in emissions of high volatility solvents. Solvent type is the variable that most affects cold cleaner emission rates, particularly the volatility at operating temperatures.

Table 4.6-3. PROJECTED EMISSION REDUCTION FACTORS FOR SOLVENT DEGREASING^a

System	Cold Cleaner		Vapor Degreaser		Conveyorized Degreaser	
	A	B	A	B	A	B
Control devices						
Cover or enclosed design	X	X	X	X	X	X
Drainage facility	X	X	X			X
Water cover, refrigerated chiller, carbon adsorption or high freeboard ^b		X		X		X
Solid, fluid spray stream ^c		X		X		
Safety switches and thermostats				X		X
Emission reduction from control devices (%)	13-38	NA ^d	20-40	30-60		40-60
Operating procedures						
Proper use of equipment	X	X	X	X	X	X
Waste solvent reclamation	X	X	X	X	X	X
Reduced exhaust ventilation			X	X	X	X
Reduced conveyor or entry speed			X	X	X	X
Emission reduction from operating procedures (%)	15-45	NA ^d	15-35	20-40	20-30	20-30
Total emission reduction (%)	28-83 ^e	55-69 ^f	30-60	45-75	20-30	50-70

^a Reference 2. Ranges of emission reduction present poor to excellent compliance. X indicates devices or procedures that will produce the given reductions. Letters A and B indicate different control device circumstances. See Appendix B of Reference 2.

^b Only one of these major control devices would be used in any degreasing system. Cold cleaner system B could employ any of them. Vapor degreaser system B could employ any except water cover. Conveyorized degreaser system B could employ any except water cover and high freeboard.

^c If agitation by spraying is used, the spray should not be a shower type.

^d Breakout between control equipment and operating procedures is not available.

^e A manual or mechanically assisted cover would contribute 6 - 18% reduction; draining parts 15 seconds within the degreaser, 7 - 20%; and storing waste solvent in containers, an additional 15 - 45%.

^f Percentages represent average compliance.

As with cold cleaning, open top vapor degreasing emissions relate heavily to proper operating methods. Most emissions are due to (6) diffusion and convection, which can be reduced by using an automated cover, by using a manual cover regularly, by spraying below the vapor level, by optimizing work loads, or by using a refrigerated freeboard chiller (for which a carbon adsorption unit would be substituted on larger units). Safety switches and thermostats that prevent emissions during malfunctions and abnormal operation also reduce diffusion and convection of the vaporized solvent. Additional sources of emissions are solvent carryout, exhaust systems, and waste solvent evaporation. Carryout is directly affected by the size and shape of the workload, by racking of parts, and by cleaning and drying time. Exhaust emissions can be nearly eliminated by a carbon adsorber that collects the solvent vapors for reuse. Waste solvent evaporation is not so much a problem with vapor degreasers as it is with cold cleaners, because the halogenated solvents used are often distilled and recycled by solvent recovery systems.

Because of their large workload capacity and the fact that they are usually enclosed, conveyORIZED degreasers emit less solvent per part cleaned than do either of the other 2 types of degreaser. More so than operating practices, design and adjustment are major factors affecting emissions, the main source of which is carryout of vapor and liquid solvents.

References For Section 4.6

1. P. J. Marn, *et al.*, *Source Assessment: Solvent Evaporation — Degreasing*, EPA Contract No. 68-02-1874, Monsanto Research Corporation, Dayton, OH, January 1977.
2. Jeffrey Shumaker, *Control Of Volatile Organic Emissions From Solvent Metal Cleaning*, EPA-450/2-77-022, U. S. Environmental Protection Agency, Research Triangle Park, NC, November 1977.
3. W. H. Lamason, "Technical Discussion Of Per Capita Emission Factors For Several Area Sources Of Volatile Organic Compounds", Office Of Air Quality Planning And Standards, U. S. Environmental Protection Agency, Research Triangle Park, NC, March 15, 1981, unpublished.
4. K. S. Suprenant and D. W. Richards, *Study To Support New Source Performance Standards For Solvent Metal Cleaning Operations*, EPA Contract No. 68-02-1329, Dow Chemical Company, Midland, MI, June 1976.

ATTACHMENT TO RESPONSE 10

MATERIAL SAFETY DATA SHEETS

MSDS#	PRODUCT	MSDS VENDOR	PROCESS
1	Propane, Odorized	Amerigas	Boiler Fuel
2	Regular Unleaded Gasoline	Speedway SSA	AST for vehicle refueling
3	No. 2 Low Sulfur Diesel (<500 ppm sulfur)	Speedway SSA	AST for vehicle refueling
4	CO ₂	Amerex/Linde	Fire Protection
5	TRONA NATURAL, T-50, T-200	Solvay Chemicals	Baghouse Treatment
6	Nexguard 22310	NALCO	Scale Control for Boiler Water
7	Nalco 1720	NALCO	Oxygen Scavenger for Boiler Water
8	Conquor 3588	NALCO	Condensate Corrosion Inhibitor amine for Boiler Water
9	Nalco 8735	NALCO	Alkalinity Control for Boiler Water

MSDS #1

Product: Propane, Odorized

Vendor: Amerigas

Process: Boiler Fuel

MATERIAL SAFETY DATA SHEET FOR ODORIZED PROPANE

1. Chemical Product and Company Identification

Product Name: Odorized Commercial Propane

Chemical Name: Propane

Chemical Family: Paraffinic Hydrocarbon

Formula: C₃H₈

Synonyms: Dimethylmethane, LP-Gas, Liquefied Petroleum Gas (LPG), Propane, Propyl Hydride

Transportation Emergency Number:

CHEMTREC 1-800-424-9300

Name & Address:

AmeriGas Propane, L.P.

P. O. Box 965

Valley Forge, PA. 19482

For General Information, Call:

1-610-337-1000, Safety Dept.

2. Composition / Information on Ingredients

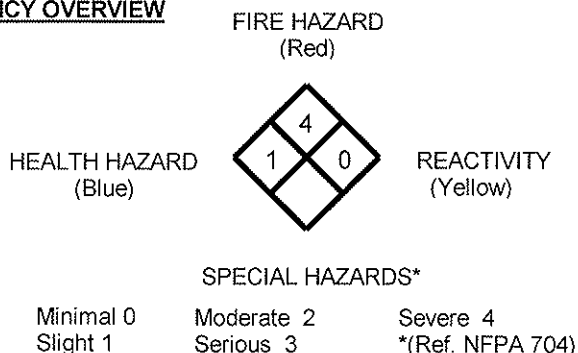
INGREDIENT NAME /CAS NUMBER	PERCENTAGE	OSHA PEL	ACGIH TLV
Propane / 74-98-6	87.5 -100	1,000 ppm	Simple asphyxiant
Ethane / 74-84-0	0 - 7.0		Simple asphyxiant
Propylene / 115-07-1	0 - 5.0		Simple asphyxiant
Butanes / 106-97-8	0 - 2.5		Simple asphyxiant
Ethyl Mercaptan / 75-08-1	0 - 50 ppm	0.5 ppm	0.5 ppm

WARNING: The intensity of the chemical odorant (e.g., ethyl mercaptan) may "fade" or diminish due to chemical oxidation, adsorption or absorption. Individuals with nasal perception problems may not be able to smell the odorant. Leaking propane from underground gas lines may lose its odor as it passes through certain soils. No odorant is effective 100% of the time. Therefore, circumstances can exist when individuals are in the presence of leaking propane and not be alerted by the smell. Contact AmeriGas for more information about odor, propane gas detectors and other safety considerations associated with the handling, storage and use of propane.

3. Hazards Identification

EMERGENCY OVERVIEW

DANGER! Flammable liquefied gas under pressure. Keep away from heat, sparks, flame, and all other ignition sources. Vapor replaces oxygen available for breathing and may cause suffocation in confined spaces. Use only with adequate ventilation. Reliance upon detection of odor may not provide adequate warning of potentially hazardous concentrations. Vapor is heavier than air; may collect at low levels. Liquid can cause freeze burn similar to frostbite. Do not get liquid in eyes, on skin, or on clothing. Avoid breathing vapor. Keep service valve closed when not in use.



POTENTIAL HEALTH EFFECTS INFORMATION

ROUTES OF EXPOSURE:

Inhalation: Asphyxiation. Before suffocation could occur, the lower flammability limit of propane in air would be exceeded, possibly causing both an oxygen-deficient and explosive atmosphere. Exposure to concentrations >10% may cause dizziness. Exposure to atmospheres containing 19% or less oxygen will bring about unconsciousness without warning. Lack of sufficient oxygen may cause serious injury or death.

Eye Contact: Contact with liquid can cause freezing of tissue.

Skin Contact: Contact with liquid can cause frostbite.

Skin Absorption: None.

Ingestion: Ingestion is not expected to occur in normal use. However, liquid can cause freeze burn similar to frostbite.

CHRONIC EFFECTS: None.

CARCINOGENICITY: Propane is not listed by NTP, OSHA or IARC.

4. First Aid Measures

INHALATION: Individuals suffering from lack of oxygen should be removed to fresh air. If victim is not breathing, administer artificial respiration. If breathing is difficult, administer oxygen. Obtain immediate medical assistance.

EYE CONTACT: Gently flush eyes with lukewarm water. Obtain immediate medical assistance.

SKIN CONTACT: Remove saturated clothes, shoes and jewelry. Immerse affected area in lukewarm water not exceeding 105° F. Keep immersed. Obtain immediate medical assistance.

INGESTION: If swallowed, obtain immediate medical assistance.

5. Fire-Fighting Measures

FLASH POINT: -156°F (-104°C)

AUTOIGNITION: 842°F (432°C)

IGNITION TEMPERATURE IN AIR: 920°F to 1120°F (493°C to 549°C)

FLAMMABLE LIMITS IN AIR (% by volume): Lower: 2.15% Upper: 9.6%

EXTINGUISHING MEDIA: Dry chemical, CO₂, water spray or fog for surrounding area. Do not attempt to extinguish fire until propane source is isolated.

SPECIAL FIRE-FIGHTING INSTRUCTIONS: Evacuate all unnecessary personnel from the area. Allow only properly trained and protected emergency response personnel in area. A NIOSH approved self-contained breathing apparatus may be required. If gas flow cannot be shut off, do not attempt to extinguish fire. Allow fire to burn itself out. Use high volume water supply to cool exposed pressure containers and nearby equipment. Approach a flame-enveloped container from the sides, never from the ends. Use extreme caution when applying water to a container that has been exposed to heat or flame for more than a short time. For uncontrollable fires and/or when flame is impinging on container, withdraw all personnel and evacuate vicinity immediately.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Propane is heavier than air and can collect in low areas. Flash back along a vapor trail is possible. Pressure in a container can build up due to heat; and, container may rupture suddenly and violently without warning if pressure relief devices fail to function properly. If flames are against the container, withdraw immediately on hearing a rising sound, if venting increases in volume or intensity or if there is discoloration of the container due to fire. Propane released from a properly functioning relief valve on an overheated container can also become ignited.

HAZARDOUS COMBUSTION PRODUCTS: None.

6. Accidental Release Measures

IF MATERIAL IS RELEASED OR SPILLED: Evacuate the immediate area. Eliminate any possible sources of ignition and provide maximum ventilation. Shut off source of propane, if possible. If leaking from container or valve, contact your supplier or AmeriGas immediately.

7. Handling and Storage

HANDLING PRECAUTIONS: Propane vapor is heavier than air and can collect in low areas that are without sufficient ventilation. Conduct system checks for leaks with a leak detector or solution, never with flame. Make certain the container service valve is shut off prior to connecting or disconnecting. If container valve does not operate properly, discontinue use and contact AmeriGas. Never insert an object (e.g., wrench, screwdriver, pry bar, etc.) into pressure relief valve or cylinder valve cap openings. Do not drop or abuse cylinders. Never strike an arc on a gas container or make a container part of an electrical circuit. See Section 16, "OTHER INFORMATION", for additional precautions.

STORAGE PRECAUTIONS: Store in a safe, authorized location (outside, detached storage is preferred) with adequate ventilation. Specific requirements are listed in NFPA 58, LP-GAS CODE. Isolate from heat and ignition sources. Containers should never be allowed to reach temperature exceeding 125°F (52°C). Isolate from combustible materials. Provide separate storage locations for other compressed and flammable gases. Propane containers should be separated from oxygen cylinders or other oxidizers by a minimum distance of 20 feet, or by a barrier of non-combustible material at least 5 feet high having a fire rating of at least 1/2 hour. Full and empty cylinders should be segregated. Keep cylinders in an upright position at all times so that each pressure relief valve communicates with the vapor space. Keep container valve closed and plugged or capped when not in use. Install protective caps when cylinders are not connected for use. Empty containers retain some residue and should be treated as if they were full.

8. Exposure Control / Personal Protection

ENGINEERING CONTROLS

Ventilation: Provide ventilation adequate to ensure propane does not reach a flammable mixture.

RESPIRATORY PROTECTION

General Use: None.

Emergency Use: If concentrations are high enough to warrant supplied-air or NIOSH self-contained breathing apparatus, then the atmosphere may be flammable (See Section 5). Appropriate precautions must be taken regarding flammability.

PROTECTIVE CLOTHING: Avoid skin contact with liquid propane because of possibility of freeze burn. Wear gloves and protective clothing that are impervious to the product for the duration of the anticipated exposure.

EYE PROTECTION: Safety glasses, goggles or face shields are recommended when handling cylinders.

OTHER PROTECTIVE EQUIPMENT: Safety shoes are recommended when handling cylinders.

9. Physical and Chemical Properties

BOILING POINT: @ 14.7 psia = -44° F (@1.00 atm.pressure = -42°C)

SPECIFIC GRAVITY OF VAPOR (Air = 1) at 60° F (15.56°C): 1.50

SPECIFIC GRAVITY OF LIQUID (Water = 1) at 60° F: 0.504

VAPOR PRESSURE: @ 70° F (20°C) = 127 psig; @ 105° F (45°C) = 210 psig; @ 130°F (55°C) = 287 psig

EXPANSION RATIO (From liquid to gas @ 14.7 psia): 1 to 270

SOLUBILITY IN WATER: Slight, 0.1 to 1.0%

APPEARANCE AND ODOR: A colorless and tasteless gas at normal temperature and pressure. An odorant (ethyl mercaptan) is added to provide a strong unpleasant odor. Should a propane-air mixture reach the lower limits of flammability, the ethyl mercaptan concentration will be approximately 0.5 ppm in air.

ODORANT WARNING: Odorant is added to aid in the detection of leaks. One common odorant is ethyl mercaptan, CAS No. 75-08-1. Odorant has a foul smell. The ability of people to detect odors varies widely. Also, the odor level can be reduced by certain chemical reactions with material in the propane system or when fugitive propane gas from underground leaks passes through certain soils. No odorant will be 100% effective in all circumstances. If the presence of the odorant is not obvious, notify AmeriGas immediately.

10. Stability and Reactivity

STABILITY: Stable.

Conditions to Avoid: Keep away from high heat, strong oxidizing agents and sources of ignition.

REACTIVITY:

Hazardous Decomposition Products: Under fire conditions, fumes, smoke, carbon monoxide, aldehydes and other decomposition products. In most applications where there is inadequate venting to the outside air, incomplete combustion will produce carbon monoxide (a toxic gas) and potentially develop concentrations that can create a serious health hazard.

Hazardous Polymerization: Will not occur.

11. Toxicological Information

Propane is non-toxic and is a simple asphyxiant. It has slight anesthetic properties. Higher concentrations may cause dizziness.

IRRITANCY OF MATERIAL: None.

SENSITIZATION TO MATERIAL: None

REPRODUCTIVE EFFECTS: None

MUTAGENICITY: None

TERATOGENICITY: None

SYNERGISTIC MATERIALS: None

12. Ecological Information

No adverse ecological effects are expected. Propane does not contain any Class I or Class II ozone-depleting chemicals (40 CFR Part 82). Propane is not listed as a marine pollutant by DOT (49 CFR Part 171).

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused product in the container; return it to your supplier or contact AmeriGas for safe disposal. Residual product within a process system may be burned at a controlled rate if a suitable burning unit is available on site, and is done in accordance with federal, state and local regulations.

14. Transport Information

DOT SHIPPING NAME: Liquefied Petroleum Gas

SHIPPING LABEL (S): Flammable Gas

IDENTIFICATION NUMBER: UN 1075

PLACARD (WHEN REQUIRED): Flammable Gas

IMO SHIPPING NAME: Propane

SPECIAL SHIPPING INFORMATION: Container must be

IMO IDENTIFICATION NUMBER: UN 1978

transported in a well-ventilated vehicle, secured, and in a position such that the pressure relief device is in communication with the vapor space.

HAZARD CLASS: 2.1 (Flammable Gas)

PRODUCT RQ: None

15. Regulatory Information

The following information concerns U.S. Federal regulatory requirements potentially applicable to this product. Not all such requirements are identified. Users of this product are responsible for their own regulatory compliance on a federal, state [provincial] and local level.

U.S. FEDERAL REGULATIONS

Environmental Protection Agency (EPA)

Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) - 40 CFR Parts 117 and 302

Reportable Quantity (RQ): None

Superfund Amendment and Reauthorization Act (SARA)

- Sections 302/304: Relates to emergency planning on threshold planning quantities (TPQ) and release reporting based on reportable quantities (RQ) of EPA's extremely hazardous substances (40 CFR Part 355).

Extremely Hazardous Substances: None

Threshold Planning Quantity (TPQ): None

- Sections 311/312: Relates to submission of material safety data sheets (MSDSs) and chemical inventory reporting with identification of EPA-defined hazard classes (40 CFR Part 370). The hazard classes for this product are:

IMMEDIATE: No **PRESSURE:** Yes **DELAYED:** No **REACTIVITY:** No **FLAMMABLE:** Yes

- Section 313: Relates to submission of annual reports of release of toxic chemicals that appear in 40 CFR Part 372. Propane does not require reporting under Section 313.

Toxic Substance Control Act (TSCA)

Propane is listed on the TSCA inventory.

Occupational Safety and Health Administration (OSHA)

The following 29 CFR Parts may apply to propane:

29 CFR 1910.110: *Storage and Handling of Liquefied Petroleum Gases*

29 CFR 1910.119: *Process Safety Management of Highly Hazardous Chemicals*

29 CFR 1910.1200: *Hazardous Communications*

Food and Drug Administration (FDA)

21 CFR 184.1655: Generally recognized as safe (GRAS) as a direct human food ingredient when used as a propellant, aerating agent and gas.

16. Other Information

SPECIAL PRECAUTIONS: Use piping and equipment adequately designed to withstand pressure to be encountered. NFPA 58, LP-GAS CODE and OSHA 29 CFR 1910.10 require that all persons employed in handling LP-gases be trained in proper handling and operating procedures, which the employer shall document. Contact your propane supplier or AmeriGas to arrange for the required training. Allow only trained and qualified persons to install and service propane containers and systems.

ISSUE INFORMATION

Issue Date: December 2002
Issued By: Director of Safety

Supersedes Date: April 2002
Phone Number: 1-610-337-7000

This material safety data sheet and the information it contains is offered to you in good faith as accurate. This Supplier does not manufacture this product, but is a supplier of the product that is independently produced by others. Much of the information contained in this data sheet was received from sources outside our Company. To the best of our knowledge this information is accurate, but this Supplier does not guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely, comply with all applicable laws and regulations and to assume the risks involved in the use of this product.

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MSDS #2

Product: Regular Unleaded Gasoline

Vendor: Speedway SSA

Process: AST for vehicle refueling



Material Safety Data Sheet

MSDS ID NO.: 0104SPE012
Revision date: 11/06/2006

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product name: SSA Regular Unleaded Gasoline
Synonym: Regular Unleaded Gasoline, SSA; Speedway/Superamerica Regular Unleaded Gasoline
Chemical Family: Petroleum Hydrocarbon

Formula: Mixture

Manufacturer:
Speedway/Superamerica LLC
P O BOX 1500
ENON OH 45501

Other information: 419-421-3070
Emergency telephone number: 877-627-5463

2. COMPOSITION/INFORMATION ON INGREDIENTS

Gasoline is a complex combination of hydrocarbons consisting of paraffins, cycloparaffins, aromatic and olefinic hydrocarbons having carbon numbers predominantly greater than C3 and boiling in the range of 85-500 F. Can contain small amounts of dye and other additives (>0.02%) which are not considered hazardous at the concentrations used.

Product information:

Name	CAS Number	Weight %	ACGIH Exposure Limits:	OSHA - Vacated PELs - Time Weighted Ave	Other:
SSA Regular Unleaded Gasoline	86290-81-5	100	= 300 ppm TWA = 500 ppm STEL		

Component Information:

Name	CAS Number	Weight %	ACGIH Exposure Limits:	OSHA - Vacated PELs - Time Weighted Ave	Other:
Saturated Hydrocarbons	Mixture	55-85			
Aromatic Hydrocarbons	Mixture	10-40			
Unsaturated Hydrocarbons	Mixture	1-15			
Toluene	108-88-3	1-15	= 50 ppm TWA skin - potential for cutaneous absorption	= 100 ppm TWA = 150 ppm STEL = 375 mg/m ³ TWA = 560 mg/m ³ STEL	
Xylene	1330-20-7	2-10	= 100 ppm TWA = 150 ppm STEL	= 100 ppm TWA = 150 ppm STEL = 435 mg/m ³ TWA = 655 mg/m ³ STEL	
1,2,4-Trimethylbenzene	95-63-6	1-5	= 25 ppm TWA	= 125 mg/m ³ TWA = 25 ppm TWA	
Benzene	71-43-2	0.5-3.5	= 0.5 ppm TWA = 2.5 ppm STEL skin - potential for cutaneous absorption	= 10 ppm TWA unless specified in 1910.1028 = 25 ppm Ceiling unless specified in 1910.1028 = 50 ppm STEL 10 min, unless specified in 1910.1028	OSHA Exposure Limit as specified in 1910.1028: = 1.0 ppm TWA = 5 ppm STEL = 0.5 ppm Action Level
Hexane	110-54-3	0-3	= 1000 ppm STEL = 50 ppm TWA = 500 ppm TWA skin - potential for cutaneous absorption		
Ethyl Benzene	100-41-4	0.5-2.0	= 100 ppm TWA = 125 ppm STEL	= 100 ppm TWA = 125 ppm STEL = 435 mg/m ³ TWA = 545 mg/m ³ STEL	
Napthalene	91-20-3	0.1-.5	Skin - potential significant contribution to overall exposure by the cutaneous route = 10 ppm TWA = 15 ppm STEL	= 10 ppm TWA = 50 mg/m ³ TWA = 15 ppm STEL = 75 mg/m ³ STEL	

Notes:

The manufacturer has voluntarily elected to reflect exposure limits contained in OSHA's 1989 air contaminants standard in its MSDS's, even though certain of those exposure limits were vacated in 1992.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

GASOLINE IS A CLEAR OR COLORED LIQUID WITH A STRONG HYDROCARBON ODOR. IT IS A VOLATILE AND EXTREMELY FLAMMABLE LIQUID THAT MAY CAUSE FLASH FIRES. KEEP AWAY FROM HEAT, SPARKS OR OPEN FLAME. THIS PRODUCT CONTAINS BENZENE WHICH MAY CAUSE CANCER OR BE TOXIC TO BLOOD-FORMING ORGANS. CONTAINS MATERIAL THAT HAS CAUSED CANCER BASED ON ANIMAL DATA. NEVER SIPHON THIS PRODUCT BY MOUTH. IF SWALLOWED, THIS PRODUCT MAY GET SUCKED INTO THE LUNGS (ASPIRATED) AND CAUSE LUNG DAMAGE OR EVEN DEATH.

OSHA WARNING LABEL:

DANGER!
EXTREMELY FLAMMABLE.
HARMFUL OR FATAL IF INHALED OR SWALLOWED.
ASPIRATION (INADVERTENT SUCTION) OF LIQUID INTO THE LUNGS CAN PRODUCE CHEMICAL PNEUMONIA OR EVEN DEATH.
CONTAINS BENZENE WHICH MAY CAUSE CANCER OR BE TOXIC TO BLOOD-FORMING ORGANS.
CONTAINS MATERIAL THAT HAS CAUSED CANCER BASED ON ANIMAL DATA.

CONSUMER WARNING LABEL:

GASOLINE HEALTH AND SAFETY WARNING STATEMENT:

EXTREMELY FLAMMABLE, VAPORS MAY EXPLODE.
LONG TERM EXPOSURE TO VAPORS HAS CAUSED CANCER IN LABORATORY ANIMALS.
KEEP FACE AWAY FROM NOZZLE WHILE FILLING.
KEEP NOZZLE AWAY FROM EYES AND SKIN.
NEVER SIPHON BY MOUTH.
DON'T OVERFILL TANK.
FOR USE AS A MOTOR FUEL ONLY.

STATIC ELECTRICITY, SPARK EXPLOSION, ELECTRONIC DEVICES WARNING:

DO NOT GET BACK IN YOUR VEHICLE WHILE REFUELING.
RE-ENTRY COULD CAUSE STATIC ELECTRICITY BUILD UP.
USE APPROVED CONTAINER.
PUT CONTAINER ON GROUND (NEVER ON OR IN A VEHICLE).
KEEP NOZZLE IN CONTACT WITH CONTAINER.
KEEP CELLULAR PHONES OR OTHER DEVICES IN YOUR VEHICLE DURING REFUELING.

Inhalation:

Exposure to vapor concentrations of gasoline exceeding 1,000 ppm can cause respiratory irritation, headache, dizziness, nausea and loss of coordination. Higher concentrations may cause loss of consciousness, cardiac sensitization, coma and death resulting from respiratory failure. Intentional overexposure to high concentrations of product vapors (such as huffing) can cause nervous system and brain damage, convulsions and sudden death from cardiac arrest.

Ingestion:

Ingestion may result in nausea, vomiting, diarrhea and restlessness. Aspiration (inadvertent suction) of liquid into the lungs must be avoided as even small quantities in the lungs can produce chemical pneumonitis, pulmonary edema/hemorrhage and even death.

Skin contact:

Prolonged and repeated liquid contact can cause defatting and drying of the skin and can lead to irritation and/or dermatitis.

Eye contact: Eye irritation may result from contact with the liquid or exposure to the vapor at concentrations above the TLV.

Carcinogenic Evaluation:

Product information:

Name	IARC Carcinogens:	NTP Carcinogens:	ACGIH - Carcinogens:	OSHA - Select Carcinogens:
SSA Regular Unleaded Gasoline 86290-81-5	A2 - Possible Human Carcinogen		A3 - Animal Carcinogen	

Notes: The International Agency for Research on Cancer (IARC) has determined that there is inadequate evidence for the carcinogenicity of gasoline in humans. IARC determined that limited evidence of carcinogenicity in animals exists. IARC's overall evaluation of gasoline, in spite of limited carcinogenicity evidence, has resulted in the IARC designation of gasoline as possibly carcinogenic to humans (Group 2B) because gasoline contains benzene.

IARC has determined that there is inadequate evidence for the carcinogenicity of gasoline engine exhaust in humans or animals. However, IARC's overall evaluation on gasoline engine exhaust, in spite of the absence of carcinogenicity data, has resulted in the IARC designation of gasoline engine exhaust as possibly carcinogenic to humans (Group 2B) because of the presence of certain engine exhaust components.

Component Information:

Name	IARC Carcinogens:	NTP Carcinogens:	ACGIH - Carcinogens:	OSHA - Select Carcinogens:
Toluene 108-88-3			A4 - Not Classifiable as a Human Carcinogen	
Xylene 1330-20-7			A4 - Not Classifiable as a Human Carcinogen	
Benzene 71-43-2	Supplement 7, 1987; Monograph 29, 1982	Known Carcinogen Reasonably Anticipated To Be A Carcinogen	A1 - Confirmed Human Carcinogen	Present
Ethyl Benzene 100-41-4	Monograph 77, 2000		A3 - Animal Carcinogen	
Napthalene 91-20-3	Monograph 82, 2002	Reasonably Anticipated To Be A Carcinogen Listed	A4 - Not Classifiable as a Human Carcinogen	Present

Notes: The International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), and OSHA have determined that there is sufficient evidence for the carcinogenicity of benzene in humans (Group 1A).

The International Agency for Research on Cancer (IARC) has concluded that ethyl benzene is possibly carcinogenic to humans (Group 2B).

The International Agency for Research on Cancer (IARC) and the Environmental Protection Agency (EPA) have determined that naphthalene could be a possible human carcinogen.

4. FIRST AID MEASURES

Inhalation: If affected, move person to fresh air. If breathing is difficult, administer oxygen. If not breathing or if no heartbeat, give artificial respiration or cardiopulmonary resuscitation (CPR). Immediately call a physician. If symptoms or irritation occur with any exposure, call a physician.

Skin contact: Wash with soap and large amounts of water. Remove contaminated clothing. If symptoms or irritation occur, call a physician.

Ingestion:	If swallowed, do not induce vomiting and do not give liquids. Immediately call a physician.
Eye contact:	Flush eyes with large amounts of tepid water for at least 15 minutes. If symptoms or irritation occur, call a physician.
Medical conditions aggravated by exposure:	Pre-existing eye, skin, respiratory, liver and/or kidney disorders may be aggravated by exposure to components of this product.

5. FIRE FIGHTING MEASURES

Suitable extinguishing media:	For small fires, Class B fire extinguishing media such as CO ₂ , dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFT/ATC) can be used. Fire fighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.
Specific hazards:	This product has been determined to be a flammable liquid per the OSHA Hazard Communication Standard, and should be handled accordingly. Vapors may travel along the ground or be moved by ventilation and ignited by many sources such as pilot lights, sparks, electric motors, static discharge, or other ignition sources at locations distant from material handling. Flashback can occur along vapor trail. For additional fire related information, see NFPA 30 or the North American Emergency Response Guide 128.
Special protective equipment for firefighters:	Avoid using straight water streams. Water may be ineffective in extinguishing low flash point fires, but can be used to cool exposed surfaces. Avoid excessive water spray application. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Keep run-off water out of sewers and water sources.
Flash point:	-50 F
Autoignition temperature:	C.A. 495 F
Flammable limits in air - lower (%):	1.4
Flammable limits in air - upper (%):	7.6
NFPA rating:	HMS classification:
Health: 1	Health: 1
Flammability: 3	Flammability: 3
Reactivity: 0	Reactivity: 0
Other: -	Special: *See Section 8 for guidance in selection of personal protective equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:	Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Eliminate all ignition sources. Advise authorities and National Response Center (800-424-8802) if substance has entered a watercourse or sewer. Notify local health and pollution control agencies, if appropriate. Contain liquid with sand or soil. Recover and return free product to proper containers. Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids.
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7. HANDLING AND STORAGE

Handling:

Comply with all applicable EPA, OSHA, NFPA and consistent state and local requirements. Use appropriate grounding and bonding practices. Store in properly closed containers that are appropriately labeled and in a cool well-ventilated area. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. Do not cut, drill, grind or weld on empty containers since they may contain explosive residues. Avoid skin contact. Exercise good personal hygiene including removal of soiled clothing and prompt washing with soap and water.

For use as a motor fuel only. Product should never be used as a solvent due to its flammable and potentially toxic properties. Siphoning by mouth can result in lung aspiration which can be harmful or fatal.

Portable containers of 12 gallons (45 liters) or less should never be filled while they are in or on a motor vehicle or marine craft. Static electric discharge can ignite fuel vapors when filling non-grounded containers or vehicles on trailers. Containers should be placed on the ground. The nozzle spout must be kept in contact with the container before and during the entire filling operation. Use only approved containers. A buildup of static electricity can occur upon re-entry into a vehicle during fueling especially in cold or dry climate conditions. The charge is generated by the action of dissimilar fabrics (i.e., clothing and upholstery) rubbing across each other as a person enters/exits the vehicle. A flash fire can result from this discharge if sufficient flammable vapors are present. Therefore, do not get back in your vehicle while refueling. Cellular phones and other electronic devices may have the potential to emit electrical charges (sparks). Sparks in potentially explosive atmospheres (including fueling areas such as gas stations) could cause an explosion if sufficient flammable vapors are present. Therefore, turn off cellular phones and other electronic devices when working in potentially explosive atmospheres or keep devices inside your vehicle during refueling.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT

Engineering measures:	Local or general exhaust required in an enclosed area or when there is inadequate ventilation.
Respiratory protection:	Approved organic vapor chemical cartridge or supplied air respirators should be worn for exposures to any components exceeding the TLV or STEL. Observe respirator protection factor criteria cited in ANSI Z88.2. Self-contained breathing apparatus should be used for fire fighting.
Skin and body protection:	Use nitrile rubber, viton or PVA gloves for repeated or prolonged skin exposure.
Eye protection:	No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields.
Hygiene measures:	No special protective clothing is normally required. Select protective clothing depending on industrial operations. Use mechanical ventilation equipment that is explosion-proof.

9. PHYSICAL AND CHEMICAL PROPERTIES:

Appearance:	Clear Or Colored Liquid
Physical state (Solid/Liquid/Gas):	Liquid
Substance type (Pure/Mixture):	Mixture
Color:	Clear or Colored
Odor:	Strong Hydrocarbon
Molecular weight:	100
pH:	Neutral
Boiling point/range (5-95%):	90-437 F
Melting point/range:	Not determined.
Decomposition temperature:	Not applicable.
Specific gravity:	0.70-0.77
Density:	5.9-6.3 lbs/gal
Bulk density:	No data available.
Vapor density:	3-4
Vapor pressure:	Not determined.

Evaporation rate:	No data available.
Solubility:	Not determined
Solubility in other solvents:	No data available.
Partition coefficient (n-octanol/water):	2.13-4.5
VOC content(%):	100%
Viscosity:	No data available.

10. STABILITY AND REACTIVITY

Stability:	The material is stable at 70 F, 760 mm pressure.
Polymerization:	Will not occur.
Hazardous decomposition products:	Combustion produces carbon monoxide, aldehydes, aromatic and other hydrocarbons.
Materials to avoid:	Strong oxidizers such as nitrates, chlorates, peroxides.
Conditions to avoid:	Excessive heat, sources of ignition, open flame.

11. TOXICOLOGICAL INFORMATION

Acute toxicity:

Product information:

Name	CAS Number	Inhalation:	Dermal:	Oral:
SSA Regular Unleaded Gasoline	86290-81-5	>10,000 ppm [Dog]	>5 ml/kg [Rabbit]	>14 ml/kg [Rat]

Lifetime inhalation studies with full vaporized gasoline (67, 292 and 2,056 ppm) produced kidney damage and kidney tumors in male rats but not in female rats or male and female mice. Female mice developed a slightly higher incidence of liver tumors compared to controls at the highest exposure level. Results from separate studies with compounds producing similar effects, i.e., 1,4-dichlorobenzene and perchloroethylene, have shown that the kidney damage and kidney tumors develop via the formation of alpha-2u-globulin, a mechanism unique to the male rat. Humans do not form alpha-2u-globulin, therefore, tumors resulting from this mechanism are not relevant in humans. The biologic significance of the mouse liver tumor response with regard to human health risk is questionable.

Summary of health effect information on gasoline engine exhaust:

Chronic inhalation studies of gasoline engine exhaust in mice, rats and hamsters did not produce any carcinogenic effects. Condensates/extracts of gasoline engine exhaust produced an increase in tumors compared to controls when testing by skin painting, subcutaneous injection, intratracheal instillation or implantation into the lungs. Combustion of gasoline produces gases and particulates which include carbon monoxide, carbon dioxide, oxides of nitrogen and/or sulfur and hydrocarbons. Significant exposure to carbon monoxide vapors decreases the oxygen carrying capacity of the blood and may cause tissue hypoxia via formation of carboxyhemoglobin. Overexposure to CO can cause headache, nausea, nervous system depression, coma and death.

Summary of health effect data on gasoline components:

This product contains benzene at a level of >0.1%. Repeated or prolonged exposure to benzene at concentrations in excess of the TLV may cause serious injury to blood-forming organs. Significant chronic exposure to benzene vapor has been reported to produce various blood disorders ranging from anemia to certain forms of leukemia (cancer) in man. Benzene produced tumors in rats and mice in lifetime chronic toxicity studies, but the response has not been consistent across species, strain, sex or route of exposure. Animal studies on benzene have demonstrated immune toxicity, chromosomal aberrations, testicular effects and alterations in reproductive cycles and embryo/fetotoxicity, but not teratogenicity.

This product contains >0.1% ethyl benzene (EB). Rats and mice exposed to 750 ppm EB for 6 hours/day, 5 days/week for two years developed kidney tumors in male and female rats and lung tumors in male mice and liver tumor in female mice.

This product contains >0.1% naphthalene. Exposure to naphthalene at 30 ppm for two years caused lung tumors in female mice. Male mice with the same exposure did not develop tumors. Exposure to 10-60 ppm naphthalene for 2 years caused tumors in the tissue lining of the nose and respiratory tract in male and female rats. Oral administration of 133-267 mg/kg/day of naphthalene in mice for up to 90 days did not produce mortality, systemic toxicity, adversely affect organ or body weight or produce changes in blood. Repeated oral administration of naphthalene produced an anemia in dogs. Repeated intraperitoneal doses of naphthalene produced lung damage in mice. Repeated high doses of naphthalene has caused the formation of cataracts and retinotoxicity in the eyes of rats and rabbits due to accumulation of 1,2-naphthoquinone, a toxic metabolite. Effects in human eyes is uncertain and not well documented. Pregnant rats administered intraperitoneal doses of naphthalene during gestation gave birth to offspring that had delayed heart and bone development. Pregnant mice given near lethal doses of naphthalene showed no significant maternal toxicity and a reduction in the number of pups per litter, but no gross abnormalities in offspring. Suppressed spermatogenesis and progeny development have been reported in mice, rats and guinea pigs after exposure to high concentrations of naphthalene in their drinking water. Certain groups or individuals, i.e., infants, Semites, Arabs, Asians and Blacks, with a certain blood enzyme deficiency (glucose-6-phosphate dehydrogenase) are particularly susceptible to hemolytic agents and can rapidly develop hemolytic anemia and systemic poisoning from ingestion or inhalation of naphthalene.

This product may contain hexane at a level of >1.0%. Studies in laboratory animals have produced systemic toxicity in blood, spleen and lungs. Fetotoxicity has been observed at hexane concentrations that produced maternal toxicity. Long term exposure to high concentrations of hexane has been shown to cause testicular effects and nervous system damage.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects:

Product can cause fouling of shoreline and may be harmful to aquatic life in low concentrations. This product does not concentrate or accumulate in the food chain.

The aquatic toxicity of gasoline is as follows:

Freshwater Toxicity:

LD50 is 8 ppm at 96 hours in bluegill.

TLM is 90 ppm at 24 hours in juvenile shad.

Saltwater Toxicity:

LC50 is 2 ppm at 96 hours in mullet.

LD50 is 1.5 ppm at 96 hours in grass shrimp.

LC50 is 2 ppm at 96 hours in menhaden.

TLM is 91 ppm at 24 hours in juvenile shad.

13. DISPOSAL CONSIDERATIONS

Cleanup Considerations:

This product as produced is not specifically listed as an EPA RCRA hazardous waste according to federal regulations (40 CFR 261). However, when discarded or disposed of, it may meet the criteria of an "characteristic" hazardous waste. This product could also contain benzene at >0.5 ppm and could exhibit the characteristics of "toxicity" as determined by the toxicity characteristic leaching procedure (TCLP). This material could become a hazardous waste if mixed or contaminated with a hazardous waste or other substance(s). It is the responsibility of the user to determine if disposal material is hazardous according to federal, state and local regulations.

14. TRANSPORT INFORMATION

49 CFR 172.101:**DOT:****Transport Information:**

This material when transported via US commerce would be regulated by DOT Regulations.

Proper shipping name:

Gasoline

UN/Identification No:

UN 1203

Hazard Class:

3

Packing group:

II

DOT reportable quantity (lbs):

Not applicable.

TDG (Canada):**Proper shipping name:**

Gasoline

UN/Identification No:

UN 1203

Hazard Class:

3

Packing group:

II

Regulated substances:

Not applicable.

15. REGULATORY INFORMATION

Federal Regulatory Information:**US TSCA Chemical Inventory Section 8(b):**

This product and/or its components are listed on the TSCA Chemical Inventory.

OSHA Hazard Communication Standard:

This product has been evaluated and determined to be hazardous as defined in OSHA's Hazard Communication Standard.

EPA Superfund Amendment & Reauthorization Act (SARA):

SARA Section 302:

This product contains the following component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Saturated Hydrocarbons	NA
Aromatic Hydrocarbons	NA
Unsaturated Hydrocarbons	NA
Toluene	NA
Xylene	NA
1,2,4-Trimethylbenzene	NA
Benzene	NA
Hexane	NA
Ethyl Benzene	NA
Napthalene	NA

SARA Section 304:

This product contains the following component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
Saturated Hydrocarbons	NA
Aromatic Hydrocarbons	NA
Unsaturated Hydrocarbons	NA
Toluene	= 0.454 kg final RQ = 1 lb final RQ = 1000 lb final RQ = 454 kg final RQ
Xylene	= 100 lb final RQ = 45.4 kg final RQ
1,2,4-Trimethylbenzene	NA
Benzene	= 10 lb final RQ = 4.54 kg final RQ
Hexane	= 2270 kg final RQ = 5000 lb final RQ
Ethyl Benzene	= 1000 lb final RQ = 454 kg final RQ
Napthalene	= 0.454 kg final RQ = 1 lb final RQ = 100 lb final RQ = 45.4 kg final RQ

SARA Section 311/312:

The following EPA hazard categories apply to this product:

Acute Health Hazard
Chronic Health Hazard
Fire Hazard

SARA Section 313:

This product contains the following component(s) that may be subject to reporting on the Toxic Release Inventory (TRI) From R:

Name	CERCLA/SARA 313 Emission reporting:
Saturated Hydrocarbons	None
Aromatic Hydrocarbons	None
Unsaturated Hydrocarbons	None
Toluene	= 1.0 percent de minimis concentration
Xylene	= 1.0 percent de minimis concentration
1,2,4-Trimethylbenzene	= 1.0 percent de minimis concentration
Benzene	= 0.1 percent de minimis concentration
Hexane	= 1.0 percent de minimis concentration
Ethyl Benzene	= 0.1 percent de minimis concentration
Napthalene	= 0.1 % de minimis concentration

State and Community Right-To-Know Regulations:

The following component(s) of this material are identified on the regulatory lists below:

Saturated Hydrocarbons

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Aromatic Hydrocarbons

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Unsaturated Hydrocarbons

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.

Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Toluene

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	developmental toxicity; initial date 1/1/91
New Jersey Right-To-Know:	sn 1866
Pennsylvania Right-To-Know:	environmental hazard
Massachusetts Right-To Know:	Present
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic, Flammable; skin
Michigan critical materials register list:	Annual usage threshold = 100 pounds
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 1866
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	= 1 lb Land/Water RQ = 1,000 lbs Air RQ

Xylene

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	sn 2014
Pennsylvania Right-To-Know:	environmental hazard
Massachusetts Right-To Know:	Present
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic, Flammable
Michigan critical materials register list:	Annual usage threshold = 100 pounds (all isomers)
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 2014
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	= 1 lb Land/Water RQ = 1,000 lbs Air RQ

1,2,4-Trimethylbenzene

Louisiana Right-To-Know:	Not Listed
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California Proposition 65:	Not Listed
New Jersey Right-To-Know:	sn 1929 sn 2716
Pennsylvania Right-To-Know:	[present] environmental hazard
Massachusetts Right-To Know:	Present
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	SN 2716
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
Benzene	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	carcinogen; initial date 2/27/87 developmental toxicity; initial date 12/26/97 male reproductive toxicity; initial date 12/26/97
New Jersey Right-To-Know:	sn 0197
Pennsylvania Right-To-Know:	environmental hazard; special hazardous substance
Massachusetts Right-To Know:	Carcinogen; Extraordinarily hazardous
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic, Flammable, Carcinogen; skin
Michigan critical materials register list:	Annual usage threshold = 100 pounds
Massachusetts Extraordinarily Hazardous Substances:	carcinogen; extraordinarily hazardous
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	[present]
New Jersey - Special Hazardous Substances:	carcinogen; flammable - third degree; mutagen
New Jersey - Environmental Hazardous Substances List:	SN 0197
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	= 1 lb Land/Water RQ = 10 lbs Air RQ
Hexane	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed

New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
Ethyl Benzene	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	sn 0851
Pennsylvania Right-To-Know:	environmental hazard
Massachusetts Right-To Know:	Present
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic, Flammable
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 0851
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	= 1 lb Land/Water RQ = 1,000 lbs Air RQ
Napthalene	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Listed
New Jersey Right-To-Know:	Listed
Pennsylvania Right-To-Know:	Listed
Massachusetts Right-To Know:	Listed
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Listed
Illinois - Toxic Air Contaminants	Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Listed

Canadian Regulatory Information:

Canada DSL/NDSL Inventory: This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
Toluene	B2; D2A	1% (English Item 1578, French Item 1622)
Xylene	B2; D2A; D2B	
1,2,4-Trimethylbenzene	B3	0.1% (English Item 1640, French Item 1684) 1% (English Item 1638, French Item 1682)
Benzene	B2; D2A	0.1% (English Item 153, French Item 277)
Ethyl Benzene	B2; D2A; D2B	0.1% (English Item 697, French Item 854)
Napthalene	B4, D2A	1 %

16. OTHER INFORMATION

Additional Information: No data available.

Prepared by: Craig M. Parker Manager, Toxicology and Product Safety

The information and recommendations contained herein are based upon tests believed to be reliable. However, Speedway SuperAmerica (SSA) does not guarantee their accuracy or completeness nor shall any of this information constitute a warranty, whether expressed or implied, as to the safety of the goods, the merchantability of the goods, or the fitness of the goods for a particular purpose. Adjustment to conform to actual conditions of usage maybe required. SSA assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied.

End of Safety Data Sheet

MSDS #3

Product: No. 2 Low Sulfur Diesel (<500 ppm sulfur)

Vendor: Speedway SSA

Process: AST for vehicle refueling



Material Safety Data Sheet

MSDS ID NO.: 0114SPE012
Revision date: 11/06/2006

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product name: SSA No. 2 Low Sulfur Diesel 500 ppm Sulfur Max
Synonym: Diesel No. 2 500 ppm Sulfur Max; No. 2 Diesel, Motor Vehicle Use, Undyed; No. 2 Diesel 500 ppm Sulfur Max; No. 2 MV 500 Diesel; No. 2 Diesel (0.05% Sulfur Max)
Chemical Family: Petroleum Hydrocarbon
Formula: Mixture

Manufacturer:
Speedway/Superamerica LLC
P O BOX 1500
ENON OH 45501

Other information: 419-421-3070
Emergency telephone number: 877-627-5463

2. COMPOSITION/INFORMATION ON INGREDIENTS

No. 2 Diesel is a complex mixture of paraffins, cycloparaffins, olefins, and aromatic hydrocarbons having hydrocarbon chain lengths predominately in the range of C11 through C20. May contain a trace amount of benzene (<0.01%). Can contain small amounts of dye and other additives (<0.15%) which are not considered hazardous at the concentrations used.

Product information:

Name	CAS Number	Weight %	ACGIH Exposure Limits:	OSHA - Vacated PELs - Time Weighted Ave	Other:
SSA No. 2 Low Sulfur Diesel 500 ppm Sulfur Max	68476-30-2	100	Skin - potential significant contribution to overall exposure by the cutaneous route = 100 mg/m ³ TWA		

Component Information:

Name	CAS Number	Weight %	ACGIH Exposure Limits:	OSHA - Vacated PELs - Time Weighted Ave	Other:
Saturated Hydrocarbons	Mixture	54-85			
Aromatic Hydrocarbons	Mixture	15-45			
Unsaturated Hydrocarbons	Mixture	1-6			
Naphthalene	91-20-3	0.01-0.5	Skin - potential significant contribution to overall exposure by the cutaneous route = 10 ppm TWA = 15 ppm STEL	= 10 ppm TWA = 50 mg/m ³ TWA = 15 ppm STEL = 75 mg/m ³ STEL	

Notes: The manufacturer has voluntarily elected to reflect exposure limits contained in OSHA's 1989 air contaminants standard in its MSDS's, even though certain of those exposure limits were vacated in 1992.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

NO. 2 DIESEL IS A RED COLORED LIQUID. THIS PRODUCT IS CONSIDERED TO BE A COMBUSTIBLE LIQUID PER THE OSHA HAZARD COMMUNICATION STANDARD AND SHOULD BE KEPT AWAY FROM HEAT, FLAME AND SOURCES OF IGNITION. NEVER SIPHON THIS PRODUCT BY MOUTH. IF SWALLOWED, THIS PRODUCT MAY GET SUCKED INTO THE LUNGS (ASPIRATED) AND CAUSE LUNG DAMAGE OR EVEN DEATH. PROLONGED OR REPEATED SKIN CONTACT CAN CAUSE DEFATTING AND DRYING OF THE SKIN WHICH MAY PRODUCE SEVERE IRRITATION OR DERMATITIS.

OSHA WARNING LABEL:

**WARNING.
COMBUSTIBLE LIQUID.**

**ASPIRATION (INADVERTENT SUCTION) OF LIQUID INTO THE LUNGS CAN PRODUCE CHEMICAL PNEUMONIA
OR EVEN DEATH.**

PRODUCES SKIN IRRITATION UPON PROLONGED OR REPEATED CONTACT.

CONSUMER WARNING LABEL:

A CONSUMER WARNING LABEL IS NOT APPLICABLE FOR THIS PRODUCT.

Inhalation: Exposure to high vapor concentrations may produce headache, giddiness, vertigo, and anesthetic stupor.

Ingestion: Ingestion may result in nausea, vomiting, diarrhea and restlessness. Aspiration (inadvertent suction) of liquid into the lungs must be avoided as even small quantities in the lungs can produce chemical pneumonitis, pulmonary edema/hemorrhage and even death.

Skin contact: Prolonged and repeated liquid contact can cause defatting and drying of the skin and can lead to irritation and/or dermatitis.

Eye contact: Produces little or no irritation on direct contact with the eye.

Carcinogenic Evaluation:

Product information:

Name	IARC Carcinogens:	NTP Carcinogens:	ACGIH - Carcinogens:	OSHA - Select Carcinogens:
SSA No. 2 Low Sulfur Diesel 500 ppm Sulfur Max 68476-30-2	NE		A3 - Confirmed animal carcinogen with unknown relevance to humans (as total hydrocarbons)	

Notes:

The International Agency for Research on Cancer (IARC) has determined that there is inadequate evidence for the carcinogenicity of diesel fuel/fuel oil in humans. IARC determined that there was limited evidence for the carcinogenicity of marine diesel fuel in animals. Distillate (light) diesel fuels were not classifiable as to their carcinogenicity to humans (Group 3A).

IARC has determined that there is sufficient evidence for the carcinogenicity in experimental animals of diesel engine exhaust and extracts of diesel engine exhaust particles. IARC determined that there is only limited evidence for the carcinogenicity in humans of diesel engine exhaust. However, IARC's overall evaluation has resulted in the IARC designation of diesel engine exhaust as probably carcinogenic to humans (Group 2A) because of the presence of certain engine exhaust components.

Component Information:

Name	IARC Carcinogens:	NTP Carcinogens:	ACGIH - Carcinogens:	OSHA - Select Carcinogens:
Naphthalene 91-20-3	Monograph 82, 2002	Reasonably Anticipated To Be A Carcinogen Listed	A4 - Not Classifiable as a Human Carcinogen	Present

Notes: The International Agency for Research on Cancer (IARC) and the Environmental Protection Agency (EPA) have determined that naphthalene could be a possible human carcinogen.

4. FIRST AID MEASURES

Inhalation: If affected, move person to fresh air. If breathing is difficult, administer oxygen. If not breathing or if no heartbeat, give artificial respiration or cardiopulmonary resuscitation (CPR). Immediately call a physician. If symptoms or irritation occur with any exposure, call a physician.

Skin contact: Wash with soap and large amounts of water. Remove contaminated clothing. If symptoms or irritation occur, call a physician.

Ingestion: If swallowed, do not induce vomiting and do not give liquids. Immediately call a physician.

Eye contact: Flush eyes with large amounts of tepid water for at least 15 minutes. If symptoms or irritation occur, call a physician.

Medical conditions aggravated by exposure: Pre-existing skin conditions and respiratory disorders may be aggravated by exposures to components of this product.

5. FIRE FIGHTING MEASURES

Suitable extinguishing media: For small fires, Class B fire extinguishing media such as CO₂, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFT/ATC) can be used. Fire fighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

Specific hazards: This product has been determined to be a combustible liquid per the OSHA Hazard Communication Standard and should be handled accordingly. For additional fire related information, see NFPA 30 or the North American Emergency Response Guide 128.

Special protective equipment for firefighters: Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Keep surrounding area cool with water spray from a distance and prevent further ignition of combustible material. Keep run-off water out of sewers and water sources.

Flash point: 130-190 F

Autoignition temperature: 637 F

Flammable limits in air - lower (%): 0.7

Flammable limits in air - upper (%): 5.0

NFPA rating:

Health: 1

Flammability: 2

HMIS classification:

Health: 1

Flammability: 2

Reactivity: 1
Other: -

Reactivity: 1
Special: *See Section 8 for guidance in selection of personal protective equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Eliminate all ignition sources. Advise authorities and National Response Center (800-424-8802) if substance has entered a watercourse or sewer. Notify local health and pollution control agencies, if appropriate. Contain liquid with sand or soil. Recover and return free product to proper containers. Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids.

7. HANDLING AND STORAGE

Handling:

Comply with all applicable EPA, OSHA, NFPA and consistent state and local requirements. Use appropriate grounding and bonding practices. Store in properly closed containers that are appropriately labeled and in a cool well-ventilated area. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. Do not cut, drill, grind or weld on empty containers since they may contain explosive residues.

Avoid repeated and prolonged skin contact. Never siphon this product by mouth. Exercise good personal hygiene including removal of soiled clothing and prompt washing with soap and water.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT

Engineering measures:	Local or general exhaust required when using at elevated temperatures that generate vapors or mists.
Respiratory protection:	Use approved organic vapor chemical cartridge or supplied air respirators when material produces vapors that exceed permissible limits or excessive vapors are generated. Observe respirator protection factor criteria cited in ANSI Z88.2. Self-contained breathing apparatus should be used for fire fighting.
Skin and body protection:	Neoprene, nitrile, polyvinyl alcohol (PVA), polyvinyl chloride and polyurethane gloves to prevent skin contact.
Eye protection:	No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields.
Hygiene measures:	No special protective clothing is normally required. Select protective clothing depending on industrial operations. Use mechanical ventilation equipment that is explosion-proof.

9. PHYSICAL AND CHEMICAL PROPERTIES:

Appearance:	Clear to Amber Liquid
Physical state (Solid/Liquid/Gas):	Liquid
Substance type (Pure/Mixture):	Mixture
Color:	Clear or Amber
Odor:	Slight Hydrocarbon
Molecular weight:	180
pH:	Neutral
Boiling point/range (5-95%):	400-640 F
Melting point/range:	Not determined.

MSDS ID NO.: 0114SPE012

Product name: SSA No. 2 Low Sulfur Diesel 500
ppm Sulfur Max

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Decomposition temperature:	Not applicable.
Specific gravity:	Not determined
Density:	6.76 lbs/gal
Bulk density:	No data available.
Vapor density:	4-5
Vapor pressure:	1-10 mm Hg @ 100 F
Evaporation rate:	No data available.
Solubility:	Negligible
Solubility in other solvents:	No data available.
Partition coefficient (n-octanol/water):	No data available.
VOC content(%):	10%
Viscosity:	1.9-3.4 @ 40 C

10. STABILITY AND REACTIVITY

Stability:	The material is stable at 70 F, 760 mm pressure.
Polymerization:	Will not occur.
Hazardous decomposition products:	Combustion produces carbon monoxide, aldehydes, aromatic and other hydrocarbons.
Materials to avoid:	Strong oxidizers such as nitrates, perchlorates, chlorine, fluorine.
Conditions to avoid:	Excessive heat, sources of ignition and open flames.

11. TOXICOLOGICAL INFORMATION

Acute toxicity:

Product information:

Name	CAS Number	Inhalation:	Dermal:	Oral:
SSA No. 2 Low Sulfur Diesel 500 ppm Sulfur Max	68476-30-2	No data available	No data available	No data available

Lifetime skin painting studies in animals with similar distillate fuels have produced weak to moderate carcinogenic activity following prolonged and repeated exposure. Similar middle distillates, when tested at nonirritating dose levels, did not show any significant carcinogenic activity indicating that this tumorigenic response is likely related to chronic irritation and not to dose. Repeated dermal application has produced severe irritation and systemic toxicity in subacute toxicity studies. Some components of this product, have been shown to produce a species specific, sex hormonal dependent kidney lesion in male rats from repeated oral or inhalation exposure. Subsequent research has shown that the kidney damage develops via the formation of a alpha-2μ-globulin, a mechanism unique to the male rat. Humans do not form alpha-2μ-globulin, therefore, the kidney effects resulting from this mechanism are not relevant in humans. Some components of this product were found to be positive in a few mutagenicity tests while negative in the majority of others. The exact relationship between these results and human health is not known.

Summary of health effect data on distillate fuel components:

This product may contain >0.1% naphthalene. Exposure to naphthalene at 30 ppm for two years caused lung tumors in female mice. Male mice with the same exposure did not develop tumors. Exposure to 10-60 ppm naphthalene for 2 years caused tumors in the tissue lining of the nose and respiratory tract in male and female rats. Oral administration of 133-267 mg/kg/day of naphthalene in mice for up to 90 days did not produce mortality, systemic toxicity, adversely affect organ or body weight or produce changes in blood. Repeated oral administration of naphthalene produced an anemia in dogs. Repeated intraperitoneal doses of naphthalene produced lung damage in mice. Repeated high doses of naphthalene has caused the formation of cataracts and retinotoxicity in the eyes of rats and rabbits due to accumulation of 1,2-naphthoquinone, a toxic metabolite. Effects in human eyes is uncertain and not well documented. Pregnant rats administered intraperitoneal doses of naphthalene during gestation gave birth to offspring that had delayed heart and bone development. Pregnant mice given near lethal doses of naphthalene showed no significant maternal toxicity and a reduction in the number of pups per litter, but no gross abnormalities in offspring. Suppressed spermatogenesis and progeny development have been reported in mice, rats and guinea pigs after exposure to high concentrations of naphthalene in their drinking water. Certain groups or individuals, i.e., infants, Semites, Arabs, Asians and Blacks, with a certain blood enzyme deficiency (glucose-6-phosphate dehydrogenase) are particularly susceptible to hemolytic agents and can rapidly develop hemolytic anemia and systemic poisoning from ingestion or inhalation of naphthalene.

Summary of health effect information on diesel engine exhaust:

Chronic inhalation studies of whole diesel engine exhaust in mice and rats produced a significant increase in lung tumors. Combustion of kerosine and/or diesel fuels produces gases and particulates which include carbon monoxide, carbon dioxide, oxides of nitrogen and/or sulfur and hydrocarbons. Significant exposure to carbon monoxide vapors decreases the oxygen carrying capacity of the blood and may cause tissue hypoxia via formation of carboxyhemoglobin.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects:

Product can cause fouling of shoreline and may be harmful to aquatic life in low concentrations. The 96 hour LL50 values for an accomadated fraction (WAF) of fuel oil ranged from 3.2 to 65 mg/l in fish and 2-210 mg/l in invertebrates. EL50 values for inhibition of algal growth ranged from 1.8 to 2.9 mg/l for No. 2 fuel oil and from 10 to 78 mg/l for diesel fuel. This product does not concentrate or accumulate in the food chain. If released to soil and water, this product is expected to biodegrade under both aerobic and anaerobic conditions.

13. DISPOSAL CONSIDERATIONS

Cleanup Considerations:

This product as produced is not specifically listed as an EPA RCRA hazardous waste according to federal regulations (40 CFR 261). However, when discarded or disposed of, it may meet the criteria of an "characteristic" hazardous waste. This material could become a hazardous waste if mixed or contaminated with a hazardous waste or other substance(s). It is the responsibility of the user to determine if disposal material is hazardous according to federal, state and local regulations.

14. TRANSPORT INFORMATION

49 CFR 172.101:

DOT:

Transport Information: This material when transported via US commerce would be regulated by DOT Regulations.

Proper shipping name: Fuel Oil, No. 2
UN/Identification No: NA 1993
Hazard Class: 3
Packing group: III
DOT reportable quantity (lbs): Not applicable.

TDG (Canada):

Proper shipping name: Fuel Oil, No. 2
UN/Identification No: NA 1993
Hazard Class: 3
Packing group: III
Regulated substances: Not applicable.

15. REGULATORY INFORMATION

Federal Regulatory Information:

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

OSHA Hazard Communication Standard: This product has been evaluated and determined to be hazardous as defined in OSHA's Hazard Communication Standard.

EPA Superfund Amendment & Reauthorization Act (SARA):

SARA Section 302: This product contains the following component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Saturated Hydrocarbons	NA
Aromatic Hydrocarbons	NA
Unsaturated Hydrocarbons	NA
Naphthalene	NA

SARA Section 304: This product contains the following component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
Saturated Hydrocarbons	NA
Aromatic Hydrocarbons	NA
Unsaturated Hydrocarbons	NA
Naphthalene	= 0.454 kg final RQ = 1 lb final RQ = 100 lb final RQ = 45.4 kg final RQ

SARA Section 311/312: The following EPA hazard categories apply to this product:

Acute Health Hazard
Fire Hazard

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Product name: SSA No. 2 Low Sulfur Diesel 500
ppm Sulfur Max

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SARA Section 313:

This product contains the following component(s) that may be subject to reporting on the Toxic Release Inventory (TRI) From R:

Name	CERCLA/SARA 313 Emission reporting:
Saturated Hydrocarbons	None
Aromatic Hydrocarbons	None
Unsaturated Hydrocarbons	None
Naphthalene	= 0.1 % de minimis concentration

State and Community Right-To-Know Regulations:

The following component(s) of this material are identified on the regulatory lists below:

Saturated Hydrocarbons

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Aromatic Hydrocarbons

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Unsaturated Hydrocarbons

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.

Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Naphthalene

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Listed
New Jersey Right-To-Know:	Listed
Pennsylvania Right-To-Know:	Listed
Massachusetts Right-To Know:	Listed
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Listed
Illinois - Toxic Air Contaminants	Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Listed

Canadian Regulatory Information:

Canada DSL/NDSL Inventory: This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
Naphthalene	B4, D2A	1 %

16. OTHER INFORMATION

Additional Information: No data available.

Prepared by: Craig M. Parker Manager, Toxicology and Product Safety

The information and recommendations contained herein are based upon tests believed to be reliable. However, Marathon Petroleum Company LLC (MPC) does not guarantee their accuracy or completeness nor shall any of this information constitute a warranty, whether expressed or implied, as to the safety of the goods, the merchantability of the goods, or the fitness of the goods for a particular purpose. Adjustment to conform to actual conditions of usage maybe required. MPC assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied.

End of Safety Data Sheet

MSDS #4
Product: CO₂
Vendor: Amerex/Linde
Process: Fire Protection

Material Safety Data Sheet

Printing date 12/29/2008

Version 5

Reviewed on 12/29/2008

1 Identification of substance

- **Product details**

- **Trade name:** Carbon Dioxide

- **Article number:** 120-01-0001

- **Creation date:** 05/02/2008

- **Manufacturer/Supplier:**

Linde Canada Limited

5860 Chedworth Way

Mississauga, Ontario L5R 0A2

Telephone (905) 501-1700

24-HOUR EMERGENCY TELEPHONE NUMBER:

(905) 501-0802

Linde

575 Mountain Avenue

Murray Hill, NJ 07974

Telephone (908) 464-8100

24-HOUR EMERGENCY TELEPHONE NUMBER:

CHEMTREC (800) 424-9300

- **Information department:** Customer Service Centre: 1-866-385-5349

2 Composition/Data on components

- **Chemical characterization:**

- **CAS No. Description**

124-38-9 Carbon Dioxide

- **Identification number(s)**

- **EINECS Number:** 204-696-9

3 Hazards identification

- **Hazard description:**

- **WHMIS-symbols:**

A - Compressed gas



- **HMIS-ratings (scale 0 - 4)**

HEALTH	0	Health = 0
FIRE	0	Fire = 0
REACTIVITY	0	Reactivity = 0

- **NFPA ratings (scale 0 - 4)**



Health = 0

Fire = 0

Reactivity = 0

- **Information pertaining to particular dangers for man and environment:** Not applicable.

- **Classification system:**

The classification is in line with internationally approved calculation standards. It is expanded, however, by information from technical literature and by information furnished by supplier companies.

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Trade name: Carbon Dioxide

· GHS label elements Void

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4 First aid measures

- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:** Generally the product does not irritate the skin.
- **After eye contact:** Rinse opened eye for at least 15 minutes under running water. Then consult a doctor.
- **After swallowing:** Not applicable

5 Fire fighting measures

- **Suitable extinguishing agents:**
CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Protective equipment:** Wear self-contained respiratory protective device.

6 Accidental release measures

- **Person-related safety precautions:**
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation.
Stop leak - ONLY if possible to do so without risk.
- **Measures for environmental protection:** Prevent seepage into sewage system, workpits and/or cellars.
- **Measures for cleaning/collecting:** Ensure adequate ventilation.
- **Additional information:** No dangerous substances are released.

7 Handling and storage

- **Handling:**
- **Information for safe handling:**
Handle with care. Avoid jolting, friction, and impact.
Use only in well ventilated areas.
Store container in a secured area. Limit access to authorized personnel only. Report any incidents involving thefts, misuse, or inventory shortages to law enforcement and the supplier. Security shall be provided in accordance with all local, state (provincial) and federal regulations.
- **Information about protection against explosions and fires:**
Keep ignition sources away - Do not smoke.
Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C. Do not pierce or burn, even after use.
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**
Do not expose cylinder to temperatures higher than 50°C (122 °F)
- **Information about storage in one common storage facility:**
Sources of ignition should be removed from storage area.
- **Further information about storage conditions:**
Keep cylinder valve tightly closed.
Store cylinder in a well ventilated area.

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Trade name: Carbon Dioxide

Store in accordance with local fire code and/or building code or any pertaining regulations.

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8 Exposure controls and personal protection

- Additional information about design of technical systems:

Adequate local ventilation.

Safety showers and eyewash stations should be nearby.

- Components with limit values that require monitoring at the workplace:

124-38-9 Carbon Dioxide (23 - 100%)

EL	Short-term value: 15000 ppm
	Long-term value: 5000 ppm

- Additional information: The lists that were valid during the creation were used as basis.

- Personal protective equipment:

- General protective and hygienic measures:

Protective clothing should be kept free of oil and grease.

PPE should be inspected and maintained regularly to retain its effectiveness.

- Breathing equipment:

Use atmosphere-supplying respirators (e.g. supplied-air: demand, pressure-demand, or continuous-flow or self-contained breathing apparatus: demand or pressure-demand or combination supplied-air with auxiliary self-contained air supply atmosphere-supplying respirator) in case of insufficient ventilation.

- Protection of hands:



Protective gloves.

- Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

- Eye protection: Safety glasses

9 Physical and chemical properties

- General Information

Form:	Gaseous.
Color:	Colorless
Odor:	Odorless

- Change in condition

Melting point/Melting range: -56.6°C

Boiling point/Boiling range: -78°C

Flash point:	Not applicable.
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Danger of explosion:	Product does not present an explosion hazard.
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Trade name: Carbon Dioxide

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- **Solubility in / Miscibility with Water at 20°C:** 2000 g/l

10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Dangerous reactions:** No dangerous reactions known.
- **Dangerous products of decomposition:** No dangerous decomposition products known.

11 Toxicological information

- **Acute toxicity:**
- **LD/LC50 values that are relevant for classification:** LC50 > 5000ppm
- **Primary irritant effect:**
 - **on the skin:** No irritating effect.
 - **on the eye:** No irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**

When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.
The substance is not subject to classification.

12 Ecological information

- **General notes:** Generally not hazardous for water.

13 Disposal considerations

- **Product:**
- **Recommendation:** Unused product should be returned to vendor.
- **Uncleaned packagings:**
- **Recommendation:**

Cylinder and unused product should be returned to vendor. Disposable cylinder must be disposed of in accordance with local regulations.
- **Recommended cleansing agent:** None applicable.

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Trade name: Carbon Dioxide

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14 Transport information

· TDG and DOT regulations:



· Label 2.2

· Maritime transport IMDG:



· IMDG Class: 1
· UN Number: 1013
· Label 2.2
· Marine pollutant: No
· Proper shipping name: CARBON DIOXIDE

· Air transport ICAO-TI and IATA-DGR:



· ICAO/IATA Class: 1
· UN/ID Number: 1013
· Label 2.2
· Proper shipping name: CARBON DIOXIDE
· UN "Model Regulation": UN1013, CARBON DIOXIDE, 2A (2.2)

15 Regulations

· Sara

· Section 355 (extremely hazardous substances):

Substance is not listed.

· Section 313 (Specific toxic chemical listings):

Substance is not listed.

· TSCA (Toxic Substances Control Act):

Substance is listed.

· Proposition 65

· Chemicals known to cause cancer:

Substance is not listed.

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• **Chemicals known to cause reproductive toxicity for females:**

Substance is not listed.

• **Chemicals known to cause reproductive toxicity for males:**

Substance is not listed.

• **Chemicals known to cause developmental toxicity:**

Substance is not listed.

• **Carcinogenicity categories**

• **EPA (Environmental Protection Agency)**

Substance is not listed.

• **NTP (National Toxicology Program)**

Substance is not listed.

• **TLV (Threshold Limit Value established by ACGIH)**

Substance is not listed.

• **NIOSH-Ca (National Institute for Occupational Safety and Health)**

Substance is not listed.

• **OSHA-Ca (Occupational Safety & Health Administration)**

Substance is not listed.

• **Canadian substance listings:**

• **Canadian Domestic Substances List (DSL)**

Substance is listed.

• **Canadian Ingredient Disclosure list (limit 0.1%)**

Substance is not listed.

• **Canadian Ingredient Disclosure list (limit 1%)**

Substance is listed.

• **Product related hazard informations:**

Observe the general safety regulations when handling chemicals.

The substance is not subject to classification according to the sources of literature known to us.

The product was classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

• **Safety phrases:**

Keep container tightly closed in a cool place.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Please refer to the section 3 for NFPA and HMIS Hazard Codes.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences

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Trade name: Carbon Dioxide

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of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

GENERAL DISCLAIMER

For terms and conditions, including limitation of liability, please refer to the purchase agreement in effect between Linde Inc. (or any of its affiliates and subsidiaries) and the purchaser.

· **Department issuing MSDS:** Customer Service Centre: 1-866-385-5349

· **Abbreviations and Acronyms:**

ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstract Service (Division of the American Chemical Society)
DOT: US Department of Transportation
EINECS: European Inventory of Existing Commercial Chemical Substances
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
HMIS: Hazardous Material Identification System
IATA: International Air Transportation Association
IATA-DGR: Dangerous Goods Regulations by the "International Air Transportation Association"
ICAO: International Civil Aviation Association
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization (ICAO)"
IMDG: International Marine Code for Dangerous Goods
WHIMS: Workplace Hazardous Material Information System
LC50: Lethal Concentration, 50 Percent
LD50: Lethal Dose, 50 Percent
N/A: Not Applicable

CDN

MSDS #5

Product: TRONA NATURAL, T-50, T-200

Vendor: Solvay Chemicals

Process: Baghouse Treatment

SAFETY DATA SHEET
North American Version

TRONA, NATURAL, T-50, T-200

1. PRODUCT AND COMPANY IDENTIFICATION

1.1. Identification of the substance or preparation

Product name : TRONA, NATURAL, T-50, T-200
Product grade(s) : Natural Trona
T-50
T-200

1.2. Use of the Substance/Preparation

Recommended use : - Chemical industry
- Food/feedstuff additives
- pH-regulating agent
- Purifying flue gas

1.3. Company/Undertaking Identification

Address : SOLVAY CHEMICALS, INC.
3333 RICHMOND AVENUE
HOUSTON TX 77098-3099
United States

1.4. Emergency and contact telephone numbers

Emergency telephone : 1 (800) 424-9300 CHEMTREC ® (USA & Canada)
01-800-00-214-00 (MEX. REPUBLIC)

Contact telephone number : US: +1-800-765-8292 (Product information)
(product information): US: +1-713-525-6500 (Product information)

2. HAZARDS IDENTIFICATION

2.1. Emergency Overview:

NFPA : H= 1 F= 0 I= 0 S= None
HMIS : H= 1 F= 0 R= 0 PPE = Supplied by User; dependent on local conditions

General Information

Appearance : Fine powder
Colour : Off-white to tan
Odour : odourless, Musty odor

Main effects

- This substance is classified and labelled according to Annex I of Directive 67/548/EEC, as amended.
- Main symptoms
- irritant effects

2.2. Potential Health Effects:

Inhalation

- slight irritation
- Upper respiratory tract
- Repeated or prolonged exposure: Nose bleeding.

Eye contact

- Severe eye irritation
- Lachrymation
- Redness

Skin contact

- Chronic exposure may cause dermatitis.

Ingestion

- Irritation of the mouth and throat.
- Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

Other toxicity effects

- See section 11: Toxicological Information

2.3. Environmental Effects:

- See section 12: Ecological Information

3. COMPOSITION/INFORMATION ON INGREDIENTS

Trisodium hydrogencarbonate

CAS-No. : 533-96-0
Concentration : $\geq 90.0 - \leq 98.0 \%$

Silica, Crystalline Quartz

CAS-No. : 14808-60-7
Concentration : $\leq 2.0 \%$

Undefined and non-classified component

Concentration : $\geq 2.0 - \leq 10.0 \%$

4. FIRST AID MEASURES

4.1. Inhalation

- Remove to fresh air.

4.2. Eye contact

- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- If eye irritation persists, consult a specialist.

4.3. Skin contact

- Wash off with plenty of water.
- Wash contaminated clothing before re-use.

4.4. Ingestion

- Consult a physician.

If victim is conscious:

- Clean mouth with water and drink afterwards plenty of water.
- Do NOT induce vomiting.

If victim is unconscious but breathing:

- not applicable

5. FIRE-FIGHTING MEASURES

5.1. Suitable extinguishing media

- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2. Extinguishing media which shall not be used for safety reasons

- None.

5.3. Special exposure hazards in a fire

- Not combustible.

5.4. Hazardous decomposition products

- none

5.5. Special protective equipment for fire-fighters

- No special precautions required.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions

- Refer to protective measures listed in sections 7 and 8.

6.2. Environmental precautions

- Should not be released into the environment.
- Prevent any mixture with an acid into the sewer/drain (gas formations).

6.3. Methods for cleaning up

- Collect the product with suitable means.

7. HANDLING AND STORAGE

7.1. Handling

- Use only in well-ventilated areas.

7.2. Storage

- Keep in a dry place.

7.3. Packaging material

- Paper + PE coating.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Exposure Limit Values

Trisodium hydrogencarbonate

- US. ACGIH Threshold Limit Values
Remarks: none established

Silica, Crystalline Quartz

- US. ACGIH Threshold Limit Values 01 2006
time weighted average = 0.025 mg/m³
Remarks: respirable dust fraction
- US. OSHA Table Z-1-A (29 CFR 1910.1000) 1989
time weighted average = 0.1 mg/m³
Remarks: Respirable dust
- US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A 06 2008
time weighted average = 0.1 mg/m³

Remarks: Respirable dust

ACGIH® and TLV® are registered trademarks of the American Conference of Governmental Industrial Hygienists.

SAEL = Solvay Acceptable Exposure Limit, Time Weighted Average for 8 hour workdays. No Specific TLV STEL (Short Term Exposure Level) has been set. Excursions in exposure level may exceed 3 times the TLV TWA for no more than a total of 30 minutes during a workday and under no circumstances should they exceed 5 times the TLV TWA.

8.2. Engineering controls

- Ensure adequate ventilation.
- Provide appropriate exhaust ventilation at machinery.

8.3. Personal protective equipment

8.3.1. Respiratory protection

- Effective dust mask.
- Use only respiratory protection that conforms to international/ national standards.
- Use NIOSH approved respiratory protection.

8.3.2. Hand protection

- Protective gloves

8.3.3. Eye protection

- Chemical resistant goggles must be worn.

8.3.4. Skin and body protection

- none

8.3.5. Hygiene measures

- negligible

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. General Information

Appearance	: Fine powder
Colour	: Off-white to tan
Odour	: odourless, Musty odor

9.2. Important health safety and environmental information

pH	: 9.8 <i>Concentration: 2 g/l</i>
Boiling point/boiling range	: <i>Remarks: no data available</i>
Flash point	: <i>Remarks: Not applicable</i>
Flammability	: <u>Lower explosion limit:</u> <i>Remarks: The product is not flammable.</i>
Explosive properties	: <u>Explosion danger:</u> <i>Remarks: Non-explosive</i>
Oxidizing properties	: <i>Remarks: Non oxidizer</i>
Vapour pressure	: <i>Remarks: no data available</i>
Relative density / Density	: 2.11
Bulk density	: 1,000 kg/m ³ : 69 lb/ft ³
Partition coefficient:	: <i>Remarks: Not applicable</i>

n-octanol/water

Viscosity : Remarks: no data available

Vapour density : Remarks: no data available

10. STABILITY AND REACTIVITY

10.1. Stability

10.2. Conditions to avoid

- none

10.3. Materials to avoid

- Acids
- Finely divided aluminium

10.4. Hazardous decomposition products

- none

11. TOXICOLOGICAL INFORMATION

Toxicological data

Acute oral toxicity

- LD50, rat, 4,090 mg/kg (Sodium carbonate)

Acute inhalation toxicity

- LC50, 2 h, rat (Sodium carbonate)

Skin irritation

- Mild skin irritation

Eye irritation

- Mild eye irritation

Remarks

- no data available
- Information given is based on data obtained from similar substances.
- Irritating to eyes.

12. ECOLOGICAL INFORMATION

12.1. Ecotoxicity effects

Acute toxicity

- Fishes, various species, LC50, 96 h, from 30 - 1,200 mg/l (Sodium carbonate)
- Fishes, *Gambusia affinis*, LC50, 96 h, 7,550 mg/l (Sodium bicarbonate)
- Crustaceans, *Daphnia* sp., LC50, 48 h, from 115 - 150 mg/l (Sodium carbonate)
- Crustaceans, *Daphnia magna*, LC50, 48 h, 2,350 mg/l (Sodium bicarbonate)

12.2. Mobility

- Air
Remarks: not applicable
- Water
Remarks: considerable solubility and mobility
- Soil/sediments
Remarks: non-significant adsorption

12.3. Persistence and degradability

Abiotic degradation

- Air
Result: not applicable
- Water, Hydrolysis
Degradation products: carbonic acid/bicarbonate/carbonate / acid/base equilibrium as a function of pH
- Soil
Result: hydrolysis as a function of pH

Biodegradation

- Aerobic/anaerobic
Remarks: not applicable

12.4. Bioaccumulative potential

- Result: not applicable

12.5. Other adverse effects

- Study in progress

12.6. Remarks

- Observed effects are related to alkaline properties of the product.
- Product is not significantly hazardous for the environment.

13. DISPOSAL CONSIDERATIONS

13.1. Waste from residues / unused products

- In accordance with local and national regulations.
- For unused and uncontaminated product, the preferred options include sending to a licensed, permitted: recycler, reclaimer.
- Or
- Dissolve in water.
- Neutralise with acid.

13.2. Packaging treatment

- To avoid treatments, as far as possible, use dedicated containers.
- If not,
- Rinse the empty containers with plenty of water and treat the effluent in the same way as waste.
- Or
- Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.
- The empty and clean containers are to be reused in conformity with regulations.

13.3. RCRA Hazardous Waste

- Listed RCRA Hazardous Waste (40 CFR 302) - No
- Unlisted RCRA Hazardous Waste (40 CFR 302) - No

14. TRANSPORT INFORMATION

- Not subject
- It is recommended that ERG Guide number 111 be used for all non-regulated material.

15. REGULATORY INFORMATION

15.1. Other regulations

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A)

- not regulated.

SARA Hazard Designation (SARA 311/312)

- Acute Health Hazard: Yes.
- Chronic Health Hazard: Yes.

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required

- not regulated.

US. EPA CERCLA Hazardous Substances (40 CFR 302)

- not regulated.

US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

- yes.

US. Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

- yes.

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

- WARNING! This product contains a chemical known in the State of California to cause cancer..

15.2. Classification and labelling

Canada. Canadian Environmental Protection Act (CEPA). WHMIS Ingredient Disclosure List (Can. Gaz., Part II, Vol. 122, No. 2)

- Not listed

Remarks: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

EC Label

- Hazardous components which must be listed on the label: Trisodium hydrogencarbonate
- Labelling according to Article 6 of Dir. 92/32/EEC.

Symbol(s)	Xi	Irritant
R-pharse(s)	R36	Irritating to eyes.
S-pharse(s)	S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

16. OTHER INFORMATION

Ratings :

NFPA (National Fire Protection Association)

Health = 1 Flammability = 0 Instability = 0 Special =None

HMIS (Hazardous Material Information System)

Health = 1 Fire = 0 Reactivity = 0 PPE : Supplied by User; dependent on local conditions

Further information

- Update
This data sheet contains changes from the previous version in section(s): 8.1
- Distribute new edition to clients

Material Safety Data Sheets contain country specific regulatory information; therefore, the MSDS's provided are for use only by customers of the company mentioned in section 1 in North America. If you are located in a country other than Canada, Mexico or the United States, please contact the Solvay Group company in your country for MSDS information applicable to your location. The previous information is based upon our current knowledge and experience of our product and is not exhaustive. It applies to the product as defined by the specifications. In case of combinations or mixtures, one must confirm that no new hazards are likely to exist. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and integrity of the work environment. (Unless noted to the contrary, the technical information applies only to pure product). To our actual knowledge, the information contained herein is accurate as of the date of this document. However, neither the company mentioned in section 1 nor any of its affiliates makes any warranty, express or implied, including merchantability or fitness for use, or accepts any liability in connection with this information or its use. This information is for use by technically skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other substance or any other process. This is not a license under any patent or other proprietary right. The user alone must finally determine suitability of any information or material for any contemplated use in compliance with applicable law, the manner of use and whether any patents are infringed. This information gives typical properties only and is not to be used for specification purposes. The company mentioned in section 1 reserves the right to make additions, deletions or modifications to the information at any time without prior notification. Trademarks and/or other products of the company mentioned in section 1 referenced herein are either trademarks or registered trademarks of the company mentioned in section 1 or its affiliates, unless otherwise indicated.

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MSDS #6

Product: Nexguard 22310

Vendor: NALCO

Process: Scale Control for Boiler Water

**SAFETY DATA SHEET****PRODUCT****NexGuard® 22310****EMERGENCY TELEPHONE NUMBER(S)**

(800) 424-9300 (24 Hours) CHEMTREC

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**PRODUCT NAME :** NexGuard® 22310**APPLICATION :** BOILER WATER INTERNAL TREATMENT**COMPANY IDENTIFICATION :** Nalco Company
1601 W. Diehl Road
Naperville, Illinois
60563-1198**EMERGENCY TELEPHONE NUMBER(S) :** (800) 424-9300 (24 Hours) CHEMTREC

NFPA 704M/HMIS RATING

HEALTH : 0 / 1 FLAMMABILITY : 1 / 1 INSTABILITY : 0 / 0 OTHER :

0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme * = Chronic Health Hazard

2. COMPOSITION/INFORMATION ON INGREDIENTS

Our hazard evaluation has found that this product is not hazardous under 29 CFR 1910.1200.

3. HAZARDS IDENTIFICATION****EMERGENCY OVERVIEW******CAUTION**

May cause irritation with prolonged contact.

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water.

Wear suitable protective clothing.

May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of sulfur (SOx) under fire conditions.

PRIMARY ROUTES OF EXPOSURE :

Eye, Skin

HUMAN HEALTH HAZARDS - ACUTE :**EYE CONTACT :**

May cause irritation with prolonged contact.

SKIN CONTACT :

May cause irritation with prolonged contact.

INGESTION :

Not a likely route of exposure. No adverse effects expected.

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INHALATION :

Not a likely route of exposure. No adverse effects expected.

SYMPTOMS OF EXPOSURE :

Acute :

A review of available data does not identify any symptoms from exposure not previously mentioned.

Chronic :

A review of available data does not identify any symptoms from exposure not previously mentioned.

AGGRAVATION OF EXISTING CONDITIONS :

A review of available data does not identify any worsening of existing conditions.

4. FIRST AID MEASURES

EYE CONTACT :

Flush affected area with water. If symptoms develop, seek medical advice.

SKIN CONTACT :

Flush affected area with water. If symptoms develop, seek medical advice.

INGESTION :

Do not induce vomiting without medical advice. If conscious, washout mouth and give water to drink. Get medical attention.

INHALATION :

Remove to fresh air, treat symptomatically. If symptoms develop, seek medical advice.

NOTE TO PHYSICIAN :

Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

5. FIRE FIGHTING MEASURES

FLASH POINT :

None

EXTINGUISHING MEDIA :

This product would not be expected to burn unless all the water is boiled away. The remaining organics may be ignitable. Use extinguishing media appropriate for surrounding fire.

FIRE AND EXPLOSION HAZARD :

May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of sulfur (SOx) under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.



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6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS :

Restrict access to area as appropriate until clean-up operations are complete. Stop or reduce any leaks if it is safe to do so. Do not touch spilled material. Ventilate spill area if possible. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection).

METHODS FOR CLEANING UP :

SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :

Do not contaminate surface water.

7. HANDLING AND STORAGE

HANDLING :

Avoid eye and skin contact. Do not take internally. Ensure all containers are labeled. Keep the containers closed when not in use. Use with adequate ventilation.

STORAGE CONDITIONS :

Protect product from freezing. Store the containers tightly closed. Store in suitable labeled containers.

SUITABLE CONSTRUCTION MATERIAL :

PVC, Stainless Steel 304, EPDM, Buna-N, HDPE (high density polyethylene), Polyurethane, Hypalon, Viton, Neoprene, Polypropylene, Polyethylene, Stainless Steel 316L, 100% phenolic resin liner, Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

UNSUITABLE CONSTRUCTION MATERIAL :

Brass, Mild steel, Epoxy phenolic resin

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS :

This product does not contain any substance that has an established exposure limit.

ENGINEERING MEASURES :

General ventilation is recommended.

RESPIRATORY PROTECTION :

Respiratory protection is not normally needed.



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HAND PROTECTION :

When handling this product, the use of chemical gloves is recommended. The choice of work glove depends on work conditions and what chemicals are handled, but we have positive experience under light handling conditions using gloves made from PVC. Gloves should be replaced immediately if signs of degradation are observed. Breakthrough time not determined as preparation, consult PPE manufacturers.

SKIN PROTECTION :

Wear standard protective clothing.

EYE PROTECTION :

When handling this product, the use of safety glasses with side shields is recommended.

HYGIENE RECOMMENDATIONS :

Keep an eye wash fountain available. Keep a safety shower available. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

HUMAN EXPOSURE CHARACTERIZATION :

Based on our recommended product application and personal protective equipment, the potential human exposure is: Moderate

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Fluorescent Orange Yellow
ODOR	Normally None, however residual ammonia may be present in headspace of newly opened containers
SPECIFIC GRAVITY	1.19 @ 77 °F / 25 °C
DENSITY	9.9 lb/gal
SOLUBILITY IN WATER	Complete
pH (100 %)	10.5
FREEZING POINT	22 °F / -6 °C
VAPOR PRESSURE	Same as water
VOC CONTENT	0 % Calculated

Note: These physical properties are typical values for this product and are subject to change.

10. STABILITY AND REACTIVITY

STABILITY :

Stable under normal conditions.

HAZARDOUS POLYMERIZATION :

Hazardous polymerization will not occur.

**SAFETY DATA SHEET****PRODUCT****NexGuard® 22310****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****CONDITIONS TO AVOID :**

Freezing temperatures.

MATERIALS TO AVOID :

Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.

HAZARDOUS DECOMPOSITION PRODUCTS :

Under fire conditions: Oxides of carbon, Oxides of sulfur

11. TOXICOLOGICAL INFORMATION

No toxicity studies have been conducted on this product.

SENSITIZATION :

This product is not expected to be a sensitizer.

CARCINOGENICITY :

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

HUMAN HAZARD CHARACTERIZATION :

Based on our hazard characterization, the potential human hazard is: Low

12. ECOLOGICAL INFORMATION**ECOTOXICOLOGICAL EFFECTS :**

The following results are for the product.

ACUTE FISH RESULTS :

Species	Exposure	LC50	Test Descriptor
Rainbow Trout	96 hrs	7,070 mg/l	Product
Fathead Minnow	96 hrs	1,086 mg/l	Product
Inland Silverside	96 hrs	> 5,000 mg/l	Product

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna	48 hrs	1,650 mg/l		Product
Mysid Shrimp (Mysidopsis bahia)	96 hrs	> 5,000 mg/l		Product

AQUATIC PLANT RESULTS :

Species	Exposure	EC50/LC50	Test Descriptor
Algae	72 hrs	10 mg/l	

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**SAFETY DATA SHEET****PRODUCT****NexGuard® 22310****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****PERSISTENCY AND DEGRADATION :**

Total Organic Carbon (TOC) : 87,000 mg/l

Chemical Oxygen Demand (COD) : 240,000 mg/l

Biological Oxygen Demand (BOD) :

Incubation Period	Value	Test Descriptor
5 d	6,200 mg/l	Product

The organic portion of this preparation is expected to be poorly biodegradable.

MOBILITY :

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
<5%	30 - 50%	50 - 70%

The portion in water is expected to be soluble or dispersible.

BIOACCUMULATION POTENTIAL

This preparation or material is not expected to bioaccumulate.

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: Low

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: Moderate

If released into the environment, see CERCLA/SUPERFUND in Section 15.

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it is not a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

As a non-hazardous waste, it is not subject to federal regulation. Consult state or local regulation for any additional handling, treatment or disposal requirements. For disposal, contact a properly licensed waste treatment, storage, disposal or recycling facility.



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14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

LAND TRANSPORT :

Proper Shipping Name :

PRODUCT IS NOT REGULATED DURING
TRANSPORTATION

AIR TRANSPORT (ICAO/IATA) :

Proper Shipping Name :

PRODUCT IS NOT REGULATED DURING
TRANSPORTATION

MARINE TRANSPORT (IMDG/IMO) :

Proper Shipping Name :

PRODUCT IS NOT REGULATED DURING
TRANSPORTATION

15. REGULATORY INFORMATION

This section contains additional information that may have relevance to regulatory compliance. The information in this section is for reference only. It is not exhaustive, and should not be relied upon to take the place of an individualized compliance or hazard assessment. Nalco accepts no liability for the use of this information.

NATIONAL REGULATIONS, USA :

OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :

Our hazard evaluation has found that this product is not hazardous under 29 CFR 1910.1200.

CERCLA/SUPERFUND, 40 CFR 117, 302 :

Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312, AND 313 :

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355) :

This product does not contain substances listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370) :

Our hazard evaluation has found that this product is not hazardous under 29 CFR 1910.1200.

- Immediate (Acute) Health Hazard
- Delayed (Chronic) Health Hazard
- Fire Hazard
- Sudden Release of Pressure Hazard

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- Reactive Hazard

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372) :

This product does not contain substances on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA) :

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

FOOD AND DRUG ADMINISTRATION (FDA) Federal Food, Drug and Cosmetic Act :

When use situations necessitate compliance with FDA regulations, this product is acceptable under : 21 CFR 173.310 Boiler Water Additives

The following limitations apply:

Maximum dosage

1000 PPM

Limitation

as product in the boilerwater

The polymer must not be used at pressures above 1,000 PSIG (6895 kPa).

NSF NON-FOOD COMPOUNDS REGISTRATION PROGRAM (former USDA List of Proprietary Substances & Non-Food Compounds) :

NSF Registration number for this product is : 121221

This product is acceptable for use in meat, poultry, and other food processing areas as a Boiler Treatment Product (G6), for treating boiler and steam lines where the steam produced may contact edible products. Acceptable usage shall be in accordance with the dosage limitations specified on the product label.

This product has been certified as KOSHER/PAREVE for year-round use INCLUDING THE PASSOVER SEASON by the CHICAGO RABBINICAL COUNCIL.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / formerly Sec. 311 :

This product may contain trace levels (<0.1% for carcinogens, <1% all other substances) of the following substance(s) listed under the regulation. Additional components may be unintentionally present at trace levels.

Substance(s)	Citations
• Sodium Hydroxide	Sec. 311

CLEAN AIR ACT, Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.



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CALIFORNIA PROPOSITION 65 :

Substances listed under California Proposition 65 are not intentionally added or expected to be present in this product.

MICHIGAN CRITICAL MATERIALS :

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

STATE RIGHT TO KNOW LAWS :

The following substances are disclosed for compliance with State Right to Know Laws:

Sodium Sulfate

7757-82-6

NATIONAL REGULATIONS, CANADA :

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) :

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS CLASSIFICATION :

Not considered a WHMIS controlled product.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) :

The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

CHINA

All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on the Inventory of Existing Chemical Substances China (IECSC).

EUROPE

The substance(s) in this preparation are included in or exempted from the EINECS or ELINCS inventories

JAPAN

This product contains substance(s) which are not in compliance with the Law Regulating the Manufacture and Importation Of Chemical Substances and are not listed on the Existing and New Chemical Substances list (ENCS).

KOREA

This product contains substance(s) which are not in compliance with the Toxic Chemical Control Law (TCCL) and may require additional review.

NEW ZEALAND

All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996, and are listed on or are exempt from the New Zealand Inventory of Chemicals.



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PHILIPPINES

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

16. OTHER INFORMATION

Nalco Internal Number F105654

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

* The human risk is: Low

* The environmental risk is: Low

Any use inconsistent with our recommendations may affect the risk characterization. Our sales representative will assist you to determine if your product application is consistent with our recommendations. Together we can implement an appropriate risk management process.

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight® CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS® CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS® CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight® CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS® CD-ROM Version), Micromedex, Inc., Englewood, CO.

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SAFETY DATA SHEET

PRODUCT

NexGuard® 22310

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

Ariel Insight® (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight® CD-ROM Version), Ariel Research Corp., Bethesda, MD.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS® CD-ROM Version), Micromedex, Inc., Englewood, CO.

Prepared By : Product Safety Department

Date issued : 07/31/2009

Version Number : 1.25

MSDS #7

Product: Nalco 1720

Vendor: NALCO

Process: Oxygen Scavenger for Boiler Water

**SAFETY DATA SHEET**

PRODUCT

NALCO® 1720

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATIONPRODUCT NAME : **NALCO® 1720**

APPLICATION : OXYGEN SCAVENGER

COMPANY IDENTIFICATION :
Nalco Company
1601 W. Diehl Road
Naperville, Illinois
60563-1198

EMERGENCY TELEPHONE NUMBER(S) : (800) 424-9300 (24 Hours) CHEMTREC

NFPA 704M/HMIS RATING

HEALTH : 2 / 2 FLAMMABILITY : 0 / 0 INSTABILITY : 0 / 0 OTHER :

0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme * = Chronic Health Hazard

2. COMPOSITION/INFORMATION ON INGREDIENTS

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

Hazardous Substance(s)	CAS NO	% (w/w)
Sodium Bisulfite	7631-90-5	10.0 - 30.0
Potassium Bisulfite	7773-03-7	1.0 - 5.0
Cobalt Sulfate	10124-43-3	< 0.1

3. HAZARDS IDENTIFICATION****EMERGENCY OVERVIEW******WARNING**

Harmful if swallowed. Contains Sulfite. Causes asthmatic signs and symptoms in hyper-reactive individuals. May cause cancer by inhalation. Cobalt and cobalt compounds have been classified as possible carcinogens to humans (Group 2B) by IARC. The ACGIH lists cobalt and inorganic compounds as an animal carcinogen (A3).

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water.

Wear suitable protective clothing.

May evolve oxides of sulfur (SOx) under fire conditions. May evolve hydrogen sulfide (H2S) under fire conditions.

PRIMARY ROUTES OF EXPOSURE :

Eye, Skin, Inhalation

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HUMAN HEALTH HAZARDS - ACUTE :

EYE CONTACT :

Can cause mild irritation.

SKIN CONTACT :

Can cause mild irritation.

INGESTION :

Not a likely route of exposure. Contains Sulfite. May cause asthmatic-like attack. Harmful if swallowed.

INHALATION :

Irritant to respiratory system. Causes asthmatic signs and symptoms in hyper-reactive individuals. May cause cancer by inhalation.

SYMPTOMS OF EXPOSURE :

Acute :

A review of available data does not identify any symptoms from exposure not previously mentioned.

Chronic :

A review of available data does not identify any symptoms from exposure not previously mentioned.

AGGRAVATION OF EXISTING CONDITIONS :

A review of available data does not identify any worsening of existing conditions.

HUMAN HEALTH HAZARDS - CHRONIC :

This product contains cobalt compounds. The International Agency for Research on Cancer (IARC) has evaluated cobalt and cobalt compounds and found it to be a possible human carcinogen.

Ingestion of sulfite can cause a severe allergic reaction in asthmatics and some sulfite sensitive individuals. The resulting symptoms can include difficulty in breathing, flushed skin and a rash. Chronic exposure to sulfites may cause symptoms of upper respiratory disease and affect sense of taste and smell.

4. FIRST AID MEASURES

EYE CONTACT :

Immediately flush eye with water for at least 15 minutes while holding eyelids open. If irritation persists, repeat flushing. Get medical attention.

SKIN CONTACT :

Immediately flush with plenty of water for at least 15 minutes. If symptoms persist, call a physician.

INGESTION :

Do not induce vomiting without medical advice. If conscious, washout mouth and give water to drink. Get medical attention.

INHALATION :

Remove to fresh air, treat symptomatically. If breathing is difficult, administer oxygen. Get medical attention.



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NOTE TO PHYSICIAN :

Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

5. FIRE FIGHTING MEASURES

FLASH POINT : None

EXTINGUISHING MEDIA :

Not expected to burn. Use extinguishing media appropriate for surrounding fire. Keep containers cool by spraying with water.

FIRE AND EXPLOSION HAZARD :

May evolve oxides of sulfur (SOx) under fire conditions. May evolve hydrogen sulfide (H₂S) under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS :

Restrict access to area as appropriate until clean-up operations are complete. Ensure clean-up is conducted by trained personnel only. Ensure adequate ventilation. Do not touch spilled material. Stop or reduce any leaks if it is safe to do so. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Notify appropriate government, occupational health and safety and environmental authorities.

METHODS FOR CLEANING UP :

SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Wash site of spillage thoroughly with water. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :

Do not contaminate surface water.

7. HANDLING AND STORAGE

HANDLING :

Avoid eye and skin contact. Do not take internally. Do not get in eyes, on skin, on clothing. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled. Keep the containers closed when not in use. Use with adequate ventilation. Do not breathe vapors/gases/dust.

STORAGE CONDITIONS :

Store the containers tightly closed. Store in suitable labeled containers. Store separately from acids. Store separately from oxidizers. Amine and sulphite products should not be stored within close proximity or resulting vapors may form visible airborne particles.



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SUITABLE CONSTRUCTION MATERIAL :

Polypropylene, Buna-N, EPDM, Polyethylene, Polyurethane, PVC, Neoprene, Hypalon, Viton

UNSUITABLE CONSTRUCTION MATERIAL :

Brass, Mild steel, Stainless Steel 304, Stainless Steel 316L, 100% phenolic resin liner, Epoxy phenolic resin

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS :

Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below. Exposure limits are listed for sulfur dioxide (SO₂) since this product evolves SO₂ when open to the atmosphere.

Country/Source	Substance(s)	Category:	ppm	mg/m ³
	Sodium Bisulfite	ACGIH/TWA		5
	Sulfur Dioxide	ACGIH/STEL OSHA Z1/PEL	0.25 5	13

ENGINEERING MEASURES :

General ventilation is recommended. Use local exhaust ventilation if necessary to control airborne mist and vapor.

RESPIRATORY PROTECTION :

Where concentrations in air may exceed the limits given in this section, the use of a half face filter mask or air supplied breathing apparatus is recommended. A suitable filter material depends on the amount and type of chemicals being handled. Consider the use of filter type: Acid gas cartridge. with a Particulate pre-filter. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

HAND PROTECTION :

When handling this product, the use of chemical gauntlets is recommended. The choice of work glove depends on work conditions and what chemicals are handled. Please contact the PPE manufacturer for advice on what type of glove material may be suitable. Gloves should be replaced immediately if signs of degradation are observed.

SKIN PROTECTION :

Wear standard protective clothing.

EYE PROTECTION :

Wear chemical splash goggles.

HYGIENE RECOMMENDATIONS :

Use good work and personal hygiene practices to avoid exposure. Keep an eye wash fountain available. Keep a safety shower available. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.



SAFETY DATA SHEET

PRODUCT

NALCO® 1720

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(800) 424-9300 (24 Hours) CHEMTREC

HUMAN EXPOSURE CHARACTERIZATION :

Based on our recommended product application and personal protective equipment, the potential human exposure is:
Low

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Pink Clear
ODOR	Pungent
SPECIFIC GRAVITY	1.22 - 1.28 @ 60 °F / 15.6 °C
DENSITY	10.1 - 10.7 lb/gal
SOLUBILITY IN WATER	Complete
pH (100 %)	3.5 - 4.1
VISCOSITY	5 cps @ 60 °F / 15 °C
FREEZING POINT	11 °F / -11 °C
BOILING POINT	205 °F / 96 °C
VOC CONTENT	0 % Calculated

Note: These physical properties are typical values for this product and are subject to change.

10. STABILITY AND REACTIVITY

STABILITY :

Stable under normal conditions.

HAZARDOUS POLYMERIZATION :

Hazardous polymerization will not occur.

CONDITIONS TO AVOID :

Freezing temperatures.

MATERIALS TO AVOID :

Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Contact with strong acids (e.g. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) may generate heat, splattering or boiling and toxic vapors. Contains Sulfite. SO₂ may react with vapors from neutralizing amines and may produce a visible cloud of amine salt particles.

HAZARDOUS DECOMPOSITION PRODUCTS :

Under fire conditions: Oxides of sulfur, Hydrogen sulfide (H₂S)

11. TOXICOLOGICAL INFORMATION

The following results are for a similar product.

ACUTE ORAL TOXICITY :

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**SAFETY DATA SHEET****PRODUCT****NALCO® 1720****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

Species: Rat
LD50: 4,112 mg/kg
Test Descriptor: Similar Product

ACUTE DERMAL TOXICITY :

Species: Rabbit
LD50: > 3,000 mg/kg
Test Descriptor: Similar Product

SENSITIZATION :

Sulfites can cause an allergic reaction in sensitive individuals.

CARCINOGENICITY :

This product contains cobalt compounds. The International Agency for Research on Cancer (IARC) has evaluated cobalt and cobalt compounds and found it to be a possible human carcinogen.

HUMAN HAZARD CHARACTERIZATION :

Based on our hazard characterization, the potential human hazard is: High

12. ECOLOGICAL INFORMATION**ECOTOXICOLOGICAL EFFECTS :**

The following results are for the product.

ACUTE FISH RESULTS :

Species	Exposure	LC50	Test Descriptor
Fathead Minnow	96 hrs	382 mg/l	Product
Inland Silverside	96 hrs	> 5,000 mg/l	Product

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna	48 hrs	728 mg/l		Product
Mysid Shrimp (Mysidopsis bahia)	96 hrs	> 5,000 mg/l		Product

MOBILITY :

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
-----	-------	---------------

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**SAFETY DATA SHEET****PRODUCT****NALCO® 1720****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

<5%

30 - 50%

50 - 70%

The portion in water is expected to be soluble or dispersible.

BIOACCUMULATION POTENTIAL

The product will not bioaccumulate.

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: Low

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: High

If released into the environment, see CERCLA/SUPERFUND in Section 15.

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it is not a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility. Consult local, state, and federal regulations for specific requirements.

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

The presence of an RQ component (Reportable Quantity for U.S. EPA and DOT) in this product causes it to be regulated with an additional description of RQ for road, or as a class 9 for road and air, ONLY when the net weight in the package exceeds the calculated RQ for the product.

LAND TRANSPORT :

Proper Shipping Name :	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical Name(s) :	SODIUM BISULFITE
UN/ID No :	UN 3082
Hazard Class - Primary :	9
Packing Group :	III
Flash Point :	None
DOT Reportable Quantity (per package) :	18,347 lbs
DOT RQ Component :	SODIUM BISULFITE

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**SAFETY DATA SHEET****PRODUCT****NALCO® 1720****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****AIR TRANSPORT (ICAO/IATA) :**

Proper Shipping Name :	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical Name(s) :	SODIUM BISULFITE
UN/ID No :	UN 3082
Hazard Class - Primary :	9
Packing Group :	III
IATA Cargo Packing Instructions :	914
IATA Cargo Aircraft Limit :	450 L (Max net quantity per package)

MARINE TRANSPORT (IMDG/IMO) :

Proper Shipping Name :	PRODUCT IS NOT REGULATED DURING TRANSPORTATION
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15. REGULATORY INFORMATION

This section contains additional information that may have relevance to regulatory compliance. The information in this section is for reference only. It is not exhaustive, and should not be relied upon to take the place of an individualized compliance or hazard assessment. Nalco accepts no liability for the use of this information.

NATIONAL REGULATIONS, USA :**OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :**

Based on our hazard evaluation, the following substance(s) in this product is/are hazardous and the reason(s) is/are shown below.

Sodium Bisulfite : Respiratory irritant

Potassium Bisulfite : Irritant

Cobalt Sulfate : Systemic Effect, Irritant, Cancer suspect agent (refer to Section 3)

CERCLA/SUPERFUND, 40 CFR 117, 302 :

This product contains the following Reportable Quantity (RQ) Substance. Also listed is the RQ for the product. If a reportable quantity of product is released, it requires notification to the NATIONAL RESPONSE CENTER, WASHINGTON, D.C. (1-800-424-8802).

<u>RQ Substance</u>	<u>RQ</u>
Sodium Bisulfite	18,347 lbs

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312, AND 313 :

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355) :

This product does not contain substances listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370) :

Our hazard evaluation has found this product to be hazardous. The product should be reported under the following indicated EPA hazard categories:

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**SAFETY DATA SHEET****PRODUCT****NALCO® 1720****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

X Immediate (Acute) Health Hazard
X Delayed (Chronic) Health Hazard
- Fire Hazard
- Sudden Release of Pressure Hazard
- Reactive Hazard

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372) :

This product does not contain substances on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA) :

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

FOOD AND DRUG ADMINISTRATION (FDA) Federal Food, Drug and Cosmetic Act :

When use situations necessitate compliance with FDA regulations, this product is acceptable under : 21 CFR 173.310 Boiler Water Additives

Limitations: no more than required to produce intended technical effect.

NSF NON-FOOD COMPOUNDS REGISTRATION PROGRAM (former USDA List of Proprietary Substances & Non-Food Compounds) :

NSF Registration number for this product is : 141556

This product is acceptable for treating boilers or steam lines where steam produced may contact edible products and/or cooling systems where the treated water may not contact edible products in and around food processing areas, excluding such use in areas where meat and poultry are processed (G9).

This product has been certified as KOSHER/PAREVE for year-round use INCLUDING THE PASSOVER SEASON by the CHICAGO RABBINICAL COUNCIL.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / formerly Sec. 311 :

This product contains the following substances listed in the regulation. Additional components may be unintentionally present at trace levels.

Substance(s)	Citations
• Sodium Bisulfite	Sec. 311

CLEAN AIR ACT, Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :

This product may contain trace levels (<0.1% for carcinogens, <1% all other substances) of the following substance(s) listed under the regulation. Additional components may be unintentionally present at trace levels.

Substance(s)	Citations
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**SAFETY DATA SHEET****PRODUCT****NALCO® 1720****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

- Cobalt Sulfate

Sec. 112

CALIFORNIA PROPOSITION 65 :

This material contains trace amounts of chemicals known to the State of California to cause cancer.

Substance(s)	Concentration	EFFECTS
<ul style="list-style-type: none">Cobalt Sulfate	< .1 %	Causes Cancer

MICHIGAN CRITICAL MATERIALS :

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

STATE RIGHT TO KNOW LAWS :

The following substances are disclosed for compliance with State Right to Know Laws:

Sodium Bisulfite

7631-90-5

NATIONAL REGULATIONS, CANADA :**WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) :**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS CLASSIFICATION :

D2B - Materials Causing Other Toxic Effects - Toxic Material

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) :

The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

CHINA

All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on the Inventory of Existing Chemical Substances China (IECSC).

EUROPE

The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories.

JAPAN

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

**SAFETY DATA SHEET****PRODUCT****NALCO® 1720****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****KOREA**

All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

NEW ZEALAND

All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996, and are listed on or are exempt from the New Zealand Inventory of Chemicals.

PHILIPPINES

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

16. OTHER INFORMATION

F100777

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

* The human risk is: Low

* The environmental risk is: Low

Any use inconsistent with our recommendations may affect the risk characterization. Our sales representative will assist you to determine if your product application is consistent with our recommendations. Together we can implement an appropriate risk management process.

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight® CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS® CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS® CD-ROM Version), Micromedex, Inc., Englewood, CO.



SAFETY DATA SHEET

PRODUCT

NALCO® 1720

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight® CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS® CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight® (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight® CD-ROM Version), Ariel Research Corp., Bethesda, MD.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS® CD-ROM Version), Micromedex, Inc., Englewood, CO.

Prepared By : Product Safety Department
Date issued : 07/31/2009
Version Number : 6.2

MSDS #8

Product: Conquor 3588

Vendor: NALCO

Process: Condensate Corrosion Inhibitor Amine for Boiler Water

**MATERIAL SAFETY DATA SHEET****PRODUCT****CONQUOR® 3588****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****PRODUCT NAME :** CONQUOR® 3588**COMPANY IDENTIFICATION :** Nalco Company
1601 W. Diehl Road
Naperville, Illinois
60563-1198**EMERGENCY TELEPHONE NUMBER(S) :** (800) 424-9300 (24 Hours) CHEMTREC**NFPA 704M/HMIS RATING****HEALTH :** 3 / 3 **FLAMMABILITY :** 2 / 2 **INSTABILITY :** 0 / 0 **OTHER :**
0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

Hazardous Substance(s)	CAS NO	% (w/w)
Cyclohexylamine	108-91-8	10.0 - 30.0
Methoxypropylamine	5332-73-0	10.0 - 30.0
Diethyl-Hydroxyl-Amine	3710-84-7	1.0 - 5.0

3. HAZARDS IDENTIFICATION****EMERGENCY OVERVIEW******DANGER**

Corrosive. Combustible. May cause tissue damage. Harmful if absorbed through skin. Vapors may have a strong offensive odor which may cause sensory response including headache, nausea and vomiting.

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Keep away from sources of ignition - No smoking. Keep away from heat. Keep container tightly closed and in a well-ventilated place. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water.

Wear a face shield. Wear chemical resistant apron, chemical splash goggles, impervious gloves and boots.

Combustible Liquid; may form combustible mixtures at or above the flash point. May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) under fire conditions. May evolve ammonia (NH4) under fire conditions. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition.

PRIMARY ROUTES OF EXPOSURE :

Eye, Skin, Inhalation

**MATERIAL SAFETY DATA SHEET****PRODUCT****CONQUOR® 3588****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****HUMAN HEALTH HAZARDS - ACUTE :****EYE CONTACT :**

Corrosive. Will cause eye burns and permanent tissue damage.

SKIN CONTACT :

May cause severe irritation or tissue damage depending on the length of exposure and the type of first aid administered. Harmful if absorbed through skin.

INGESTION :

Not a likely route of exposure. Corrosive; causes chemical burns to the mouth, throat and stomach.

INHALATION :

Irritating, in high concentrations, to the eyes, nose, throat and lungs. Vapors may have a strong offensive odor which may cause sensory response including headache, nausea and vomiting.

SYMPTOMS OF EXPOSURE :**Acute :**

A review of available data does not identify any symptoms from exposure not previously mentioned.

Chronic :

A review of available data does not identify any symptoms from exposure not previously mentioned.

AGGRAVATION OF EXISTING CONDITIONS :

A review of available data does not identify any worsening of existing conditions.

4. FIRST AID MEASURES**EYE CONTACT :**

PROMPT ACTION IS ESSENTIAL IN CASE OF CONTACT. Immediately flush eye with water for at least 15 minutes while holding eyelids open. Get immediate medical attention.

SKIN CONTACT :

Immediately flush with plenty of water for at least 15 minutes. For a large splash, flood body under a shower. Remove contaminated clothing. Wash off affected area immediately with plenty of water. Get immediate medical attention. Contaminated clothing, shoes, and leather goods must be discarded or cleaned before re-use.

INGESTION :

DO NOT INDUCE VOMITING. If conscious, washout mouth and give water to drink. Get immediate medical attention.

INHALATION :

Remove to fresh air, treat symptomatically. Get medical attention.

NOTE TO PHYSICIAN :

Probable mucosal damage may contraindicate the use of gastric lavage. Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

**MATERIAL SAFETY DATA SHEET****PRODUCT****CONQUOR® 3588****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****5. FIRE FIGHTING MEASURES****FLASH POINT :** 158 °F / 70 °C (PMCC)**EXTINGUISHING MEDIA :**

Dry powder, Carbon dioxide, Foam, Other extinguishing agent suitable for Class B fires, For large fires, use water spray or fog, thoroughly drenching the burning material.

Keep containers cool by spraying with water.

FIRE AND EXPLOSION HAZARD :

Combustible Liquid; may form combustible mixtures at or above the flash point. May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) under fire conditions. May evolve ammonia (NH4) under fire conditions. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES**PERSONAL PRECAUTIONS :**

Restrict access to area as appropriate until clean-up operations are complete. Ensure clean-up is conducted by trained personnel only. Ventilate spill area if possible. Do not touch spilled material. Stop or reduce any leaks if it is safe to do so. Remove sources of ignition. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Notify appropriate government, occupational health and safety and environmental authorities.

METHODS FOR CLEANING UP :

SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Wash site of spillage thoroughly with water. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :

Do not contaminate surface water.

7. HANDLING AND STORAGE**HANDLING :**

Do not get in eyes, on skin, on clothing. Do not take internally. Do not breathe vapors/gases/dust. Use with adequate ventilation. Avoid generating aerosols and mists. Keep away from acids and oxidizing agents. Do not use, store, spill or pour near heat, sparks or open flame. Keep the containers closed when not in use. Have emergency equipment (for fires, spills, leaks, etc.) readily available.

**MATERIAL SAFETY DATA SHEET****PRODUCT****CONQUOR® 3588****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****STORAGE CONDITIONS :**

Store the containers tightly closed. Store away from heat and sources of ignition. Use proper grounding procedures. Store separately from acids. Store separately from oxidizers. Amine and sulphite products should not be stored within close proximity or resulting vapors may form visible airborne particles.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**OCCUPATIONAL EXPOSURE LIMITS :**

Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below.

ACGIH/TLV :**Substance(s)**

Cyclohexylamine TWA: 10 ppm , 41 mg/m3

OSHA/PEL :**Substance(s)**

Cyclohexylamine TWA: 10 ppm , 40 mg/m3

AIHA/WEEL :**Substance(s)**

Methoxypropylamine TWA: 5 ppm
STEL: 15 ppm

:
Substance(s)

ENGINEERING MEASURES :

General ventilation is recommended. Use local exhaust ventilation if necessary to control airborne mist and vapor.

RESPIRATORY PROTECTION :

If significant mists, vapors or aerosols are generated an approved respirator is recommended. An organic vapor cartridge with dust/mist prefilter or supplied air may be used. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection. **HALF-FACE MASK WITH BLACK CARTRIDGE AND PREFILTER**

HAND PROTECTION :

Butyl gloves, Most glove materials are of low chemical resistance. Replace gloves regularly. Neoprene gloves

SKIN PROTECTION :

Wear chemical resistant apron, chemical splash goggles, impervious gloves and boots. A full slicker suit is recommended if gross exposure is possible.

EYE PROTECTION :

Wear a face shield with chemical splash goggles.

**MATERIAL SAFETY DATA SHEET****PRODUCT****CONQUOR® 3588****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****HYGIENE RECOMMENDATIONS :**

Eye wash station and safety shower are necessary. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Clear Light yellow
ODOR	Amine
SPECIFIC GRAVITY	0.949 - 0.961
DENSITY	7.9 - 8.01 lb/gal
SOLUBILITY IN WATER	Complete
pH (100 %)	12.8 - 13.0
INITIAL BOILING POINT	205 °F /
VAPOR PRESSURE	24.8 mm Hg
VOC CONTENT	46 %

Note: These physical properties are typical values for this product and are subject to change.

10. STABILITY AND REACTIVITY**STABILITY :**

Stable under normal conditions.

HAZARDOUS POLYMERIZATION :

Hazardous polymerization will not occur.

CONDITIONS TO AVOID :

Heat and sources of ignition including static discharges.

MATERIALS TO AVOID :

Contact with strong acids (e.g. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) may generate heat, splattering or boiling and toxic vapors. Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Avoid contact with SO₂ or acidic bisulfite products, which may react to form visible airborne amine salt particles. Certain amines in contact with nitrous acid, organic or inorganic nitrites or atmospheres with high nitrous oxide concentrations may produce N-nitrosamines, many of which are cancer-causing agents to laboratory animals.

HAZARDOUS DECOMPOSITION PRODUCTS :

Under fire conditions: Oxides of carbon, Oxides of nitrogen, ammonia

11. TOXICOLOGICAL INFORMATION

No toxicity studies have been conducted on this product.

**MATERIAL SAFETY DATA SHEET****PRODUCT****CONQUOR® 3588****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****SENSITIZATION :**

This product is not expected to be a sensitizer.

CARCINOGENICITY :

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

MUTAGENICITY :

A mutagenicity test battery on cyclohexylamine was inconclusive. In a short-term test, cyclohexylamine caused mutation in human white blood cells. A bacterial mutagenicity (Ames) bioassay was negative for methoxypropylamine.

12. ECOLOGICAL INFORMATION**ECOTOXICOLOGICAL EFFECTS :**

The following results are for the product.

ACUTE FISH RESULTS :

Species	Exposure	LC50	Test Descriptor
Fathead Minnow	96 hrs	220 mg/l	Product

Rating : Essentially non-toxic

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Test Descriptor
Ceriodaphnia dubia	48 hrs	157 mg/l		Product
Daphnia magna	48 hrs	274 mg/l		Product

Rating : Essentially non-toxic

If released into the environment, see CERCLA/SUPERFUND in Section 15.

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it could meet the criteria of a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Before disposal, it should be determined if the waste meets the criteria of a hazardous waste.

Hazardous Waste: D002

Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility. Consult local, state, and federal regulations for specific requirements.

**MATERIAL SAFETY DATA SHEET****PRODUCT****CONQUOR® 3588****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****14. TRANSPORT INFORMATION**

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

LAND TRANSPORT :

Proper Shipping Name :	AMINES, LIQUID, CORROSIVE, N.O.S.
Technical Name(s) :	CYCLOHEXYLAMINE, METHOXYPROPYLAMINE
UN/ID No :	UN 2735
Hazard Class - Primary :	8
Packing Group :	III

Flash Point :	70 °C / 158 °F
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AIR TRANSPORT (ICAO/IATA) :

Proper Shipping Name :	AMINES, LIQUID, CORROSIVE, N.O.S.
Technical Name(s) :	CYCLOHEXYLAMINE, METHOXYPROPYLAMINE
UN/ID No :	UN 2735
Hazard Class - Primary :	8
Packing Group :	III
IATA Cargo Packing Instructions :	820
IATA Cargo Aircraft Limit :	60 L (Max net quantity per package)

MARINE TRANSPORT (IMDG/IMO) :

Proper Shipping Name :	AMINES, LIQUID, CORROSIVE, N.O.S.
Technical Name(s) :	CYCLOHEXYLAMINE, METHOXYPROPYLAMINE
UN/ID No :	UN 2735
Hazard Class - Primary :	8
Packing Group :	III

15. REGULATORY INFORMATION**NATIONAL REGULATIONS, USA :****OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :**

Based on our hazard evaluation, the following substance(s) in this product is/are hazardous and the reason(s) is/are shown below.

Cyclohexylamine : Corrosive, Flammable
Methoxypropylamine : Corrosive, Flammable
Diethyl-Hydroxyl-Amine : Irritant, Combustible.

CERCLA/SUPERFUND, 40 CFR 117, 302 :

Notification of spills of this product is not required.

**MATERIAL SAFETY DATA SHEET**

PRODUCT

CONQUOR® 3588

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SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312, AND 313 :

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355) :

This product contains the following substance(s) which is listed in Appendix A and B as an Extremely Hazardous Substance. Listed below are the statutory Threshold Planning Quantity (TPQ) for the substance(s) and the Reportable Quantity (RQ) of the product.

<u>Extremely Hazardous Substance</u>	<u>TPQ</u>	<u>RQ</u>
Cyclohexylamine	10,000 lbs	10,000 lbs

SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370) :

Our hazard evaluation has found this product to be hazardous. The product should be reported under the following indicated EPA hazard categories:

X	Immediate (Acute) Health Hazard
-	Delayed (Chronic) Health Hazard
X	Fire Hazard
-	Sudden Release of Pressure Hazard
-	Reactive Hazard

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372) :

This product does not contain substances on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA) :

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / formerly Sec. 311 :

None of the substances are specifically listed in the regulation.

CLEAN AIR ACT, Sec. 111 (40 CFR 60, Volatile Organic Compounds), Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :

This product contains the following substances listed in the regulation:

Substance(s)	Citations
• Cyclohexylamine	Sec. 111

CALIFORNIA PROPOSITION 65 :

This product does not contain substances which require warning under California Proposition 65.

MICHIGAN CRITICAL MATERIALS :

None of the substances are specifically listed in the regulation.



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STATE RIGHT TO KNOW LAWS :

The following substances are disclosed for compliance with State Right to Know Laws:

Cyclohexylamine
Methoxypropylamine

108-91-8
5332-73-0

NATIONAL REGULATIONS, CANADA :

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) :

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS CLASSIFICATION :

B3 - Combustible Liquids, E - Corrosive Material

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) :

The substances in this preparation are listed on the Domestic Substances List (DSL), are exempt, or have been reported in accordance with the New Substances Notification Regulations.

16. OTHER INFORMATION

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.



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Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight# (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Prepared By : Product Safety Department

Date issued : 02/19/2004

Version Number : 1.1

MSDS #9

Product: Nalco 8735

Vendor: NALCO

Process: Alkalinity Control for Boiler Water

**SAFETY DATA SHEET****PRODUCT****NALCO® 8735****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****CARCINOGENICITY :**

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

HUMAN HAZARD CHARACTERIZATION :

Based on our hazard characterization, the potential human hazard is: High

12. ECOLOGICAL INFORMATION**ECOTOXICOLOGICAL EFFECTS :**

The following results are for the product, unless otherwise indicated.

ACUTE FISH RESULTS :

Species	Exposure	LC50	Test Descriptor
Fathead Minnow	96 hrs	102 mg/l	Similar Product
Mosquito Fish (Gambusia spp.)	96 hrs	125 mg/l	Active Substance

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna	48 hrs	180 mg/l		Similar Product
Daphnia magna	48 hrs	156 mg/l		Active Substance

PERSISTENCY AND DEGRADATION :**Biological Oxygen Demand (BOD) :**

Incubation Period	Value	Test Descriptor
5 d	0 mg/l	Product

The product does not contain any organic substances.

MOBILITY :

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
<5%	30 - 50%	50 - 70%

The portion in water is expected to be soluble or dispersible.

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BIOACCUMULATION POTENTIAL

This preparation or material is not expected to bioaccumulate.

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: Low

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: High

If released into the environment, see CERCLA/SUPERFUND in Section 15.

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it could meet the criteria of a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Before disposal, it should be determined if the waste meets the criteria of a hazardous waste.

Hazardous Waste: D002

Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility. Consult local, state, and federal regulations for specific requirements.

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

LAND TRANSPORT :

Proper Shipping Name :	CAUSTIC ALKALI LIQUID, N.O.S.
Technical Name(s) :	SODIUM HYDROXIDE, POTASSIUM HYDROXIDE
UN/ID No :	UN 1719
Hazard Class - Primary :	8
Packing Group :	II

Flash Point :	None
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DOT Reportable Quantity (per package) :	3,000 lbs
DOT RQ Component :	SODIUM HYDROXIDE

AIR TRANSPORT (ICAO/IATA) :

Proper Shipping Name :	CAUSTIC ALKALI LIQUID, N.O.S.
Technical Name(s) :	SODIUM HYDROXIDE, POTASSIUM HYDROXIDE
UN/ID No :	UN 1719
Hazard Class - Primary :	8
Packing Group :	II

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IATA Cargo Packing Instructions :

813

IATA Cargo Aircraft Limit :

30 L (Max net quantity per package)

MARINE TRANSPORT (IMDG/IMO) :

Proper Shipping Name :

CAUSTIC ALKALI LIQUID, N.O.S.

Technical Name(s) :

SODIUM HYDROXIDE, POTASSIUM HYDROXIDE

UN/ID No :

UN 1719

Hazard Class - Primary :

8

Packing Group :

II

15. REGULATORY INFORMATION

This section contains additional information that may have relevance to regulatory compliance. The information in this section is for reference only. It is not exhaustive, and should not be relied upon to take the place of an individualized compliance or hazard assessment. Nalco accepts no liability for the use of this information.

NATIONAL REGULATIONS, USA :

OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :

Based on our hazard evaluation, the following substance(s) in this product is/are hazardous and the reason(s) is/are shown below.

Sodium Hydroxide : Corrosive

Potassium Hydroxide : Corrosive, HARMFUL

CERCLA/SUPERFUND, 40 CFR 117, 302 :

This product contains the following Reportable Quantity (RQ) Substance. Also listed is the RQ for the product. If a reportable quantity of product is released, it requires notification to the NATIONAL RESPONSE CENTER, WASHINGTON, D.C. (1-800-424-8802).

RQ Substance

Sodium Hydroxide

RQ

3,000 lbs

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312, AND 313 :

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355) :

This product does not contain substances listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370) :

Our hazard evaluation has found this product to be hazardous. The product should be reported under the following indicated EPA hazard categories:

- | | |
|---|-----------------------------------|
| X | Immediate (Acute) Health Hazard |
| - | Delayed (Chronic) Health Hazard |
| - | Fire Hazard |
| - | Sudden Release of Pressure Hazard |
| - | Reactive Hazard |

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**SAFETY DATA SHEET****PRODUCT****NALCO® 8735****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372) :

This product does not contain substances on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA) :

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

FOOD AND DRUG ADMINISTRATION (FDA) Federal Food, Drug and Cosmetic Act :

When use situations necessitate compliance with FDA regulations, this product is acceptable under : 21 CFR 173.310 Boiler Water Additives

Limitations: no more than required to produce intended technical effect.

NSF NON-FOOD COMPOUNDS REGISTRATION PROGRAM (former USDA List of Proprietary Substances & Non-Food Compounds) :

NSF Registration number for this product is : 062440

This product is acceptable as a compound for the treatment of entire potable water systems (G1) in official establishments in and around food processing areas. This product is acceptable for use in meat, poultry, and other food processing areas as a Boiler Treatment Product (G6), for treating boiler and steam lines where the steam produced may contact edible products. Acceptable usage shall be in accordance with the dosage limitations specified on the product label.

This product has been certified as KOSHER/PAREVE for year-round use INCLUDING THE PASSOVER SEASON by the CHICAGO RABBINICAL COUNCIL.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / formerly Sec. 311 :

This product contains the following substances listed in the regulation. Additional components may be unintentionally present at trace levels.

Substance(s)	Citations
<ul style="list-style-type: none">Sodium HydroxidePotassium Hydroxide	Sec. 311

CLEAN AIR ACT, Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

CALIFORNIA PROPOSITION 65 :

Substances listed under California Proposition 65 are not intentionally added or expected to be present in this product.



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MICHIGAN CRITICAL MATERIALS :

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

STATE RIGHT TO KNOW LAWS :

The following substances are disclosed for compliance with State Right to Know Laws:

Potassium Hydroxide	1310-58-3
Sodium Hydroxide	1310-73-2

NATIONAL REGULATIONS, CANADA :

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) :

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS CLASSIFICATION :

D1B - Materials Causing Immediate and Serious Toxic Effects - Toxic Material, E - Corrosive Material

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) :

The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

CHINA

All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on the Inventory of Existing Chemical Substances China (IECSC).

EUROPE

The substance(s) in this preparation are included in or exempted from the EINECS or ELINCS inventories

JAPAN

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

KOREA

All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

NEW ZEALAND

All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996, and are listed on or are exempt from the New Zealand Inventory of Chemicals.

PHILIPPINES

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

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16. OTHER INFORMATION

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

* The human risk is: Low

* The environmental risk is: Low

Any use inconsistent with our recommendations may affect the risk characterization. Our sales representative will assist you to determine if your product application is consistent with our recommendations. Together we can implement an appropriate risk management process.

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight® CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS® CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS® CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight® CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS® CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight® (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight® CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198 • (630)305-1000

For additional copies of an MSDS visit www.nalco.com and request access



SAFETY DATA SHEET

PRODUCT

NALCO® 8735

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPSII CD-ROM Version),
Micromedex, Inc., Englewood, CO.

Prepared By : Product Safety Department

Date issued : 07/31/2009

Version Number : 1.13

Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198 • (630)305-1000

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ATTACHMENT TO RESPONSE 10

**UPDATED PAGE 3 OF
DEP7007 AI (ADMINISTRATIVE INFORMATION FORM)**

4) SOURCE INFORMATION (CONTINUED)

Is any part of the source located on federal land? ☐ Yes ☒ No

What other environmental permits or registrations does this source currently hold in Kentucky?

None

What other environmental permits or registrations does this source need to obtain in Kentucky?

KPDES Construction Activity, KPDES Stormwater, Hazardous Waste Generator ID

5) OTHER REQUIRED INFORMATION

Indicate the type(s) and number of forms attached as part of this application.

- | | |
|--|---|
| <input checked="" type="checkbox"/> DEP7007A Indirect Heat Exchanger, Turbine, Internal Combustion Engine | <input type="checkbox"/> DEP7007R Emission Reduction Credit |
| <input checked="" type="checkbox"/> DEP7007B Manufacturing or Processing Operations | <input type="checkbox"/> DEP7007S Service Stations |
| <input type="checkbox"/> DEP7007C Incinerators & Waste Burners | <input type="checkbox"/> DEP7007T Metal Plating & Surface Treatment Operations |
| <input type="checkbox"/> DEP7007F Episode Standby Plan | <input checked="" type="checkbox"/> DEP7007V Applicable Requirements & Compliance Activities |
| <input type="checkbox"/> DEP7007J Volatile Liquid Storage | <input checked="" type="checkbox"/> DEP7007Y Good Engineering Practice (GEP) Stack Height Determination |
| <input type="checkbox"/> DEP7007K Surface Coating or Printing Operations | <input type="checkbox"/> DEP7007AA Compliance Schedule for Noncomplying Emission Units |
| <input type="checkbox"/> DEP7007L Concrete, Asphalt, Coal, Aggregate, Feed, Corn, Flour, Grain, & Fertilizer | <input type="checkbox"/> DEP7007BB Certified Progress Report |
| <input type="checkbox"/> DEP7007M Metal Cleaning Degreasers | <input type="checkbox"/> DEP7007CC Compliance Certification |
| <input checked="" type="checkbox"/> DEP7007N Emissions, Stacks, and Controls Information | <input checked="" type="checkbox"/> DEP7007DD Insignificant Activities |
| <input type="checkbox"/> DEP7007P Perchloroethylene Dry Cleaning Systems | |

Check other attachments that are part of this application.

Required DataSupplemental Data

- | | |
|--|---|
| <input checked="" type="checkbox"/> Map or Drawing Showing Location | <input checked="" type="checkbox"/> Stack Test Report |
| <input checked="" type="checkbox"/> Process Flow Diagram and Description | <input checked="" type="checkbox"/> Certificate of Authority from the Secretary of State (for Corporations and Limited Liability Companies) |
| <input checked="" type="checkbox"/> Site Plan Showing Stack Data and Locations | <input type="checkbox"/> Certificate of Limited Partnership from the Secretary of State (for Limited Partnerships) |
| <input checked="" type="checkbox"/> Emission Calculation Sheets | <input type="checkbox"/> Claim of Confidentiality (See 400 KAR 1:060) |
| <input checked="" type="checkbox"/> Material Safety Data Sheets (MSDS) | <input checked="" type="checkbox"/> Other (Specify) <u>Compact Disc with tech data</u> |

Indicate if you expect to emit, in any amount, hazardous or toxic materials or compounds or such materials into the atmosphere from any operation or process at this location.

- | | |
|---|--|
| <input type="checkbox"/> Pollutants regulated under 401 KAR 57:002 (NESHAP) | <input checked="" type="checkbox"/> Pollutants listed in 401 KAR 63:060 (HAPS) |
| <input type="checkbox"/> Pollutants listed in 40 CFR 68 Subpart F [112(r) pollutants] | <input type="checkbox"/> Other |

Has your company filed an emergency response plan with local and/or state and federal officials outlining the measures that would be implemented to mitigate an emergency release?

☐ Yes ☒ No - Plan to be compiled

Check whether your company is seeking coverage under a permit shield. If "Yes" is checked, applicable requirements must be identified on Form DEP7007V. Identify any non-applicable requirements for which you are seeking permit shield coverage on a separate attachment to the application.

☐ Yes ☒ No ☐ A list of non-applicable requirements is attached

ATTACHMENT TO RESPONSE 11

ANALYTICAL DATA GENEREATED BY

**UNIVERSITY OF KENTUCKY
CENTER FOR APPLIED ENERGY RESEARCH**

University of Kentucky-Center for Applied Energy Research

2540 Research Park Drive

Lexington, Kentucky 40511-8410

Official Reporting Form

Laboratory Analytical Information:

Date Sample Logged: 9-30-2009

Sample Name: Pop Dust (9-10-2009) Lab Sample ID #: 66910

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	0.29	D5142	9-30-2009
ADL Moisture (%)	39.76	D3302	9-28-2009
Volatile Matter (%)	54.16	E872	9-30-2009
Fixed Carbon (%)	5.79	By Difference	9-30-2009
Carbon (%)	29.51	D5373	10-1-2009
Hydrogen (%)	3.54	D5373	10-1-2009
Nitrogen (%)	0.08	D5373	10-1-2009
Total Sulfur (%)	0.01	D4239	10-6-2009
Oxygen (%)	26.81	By Difference	10-6-2009
Heating Value (BTU)	4856	D5865	10-6-2009
Cl (ppm)	45	In House XRF	10-18-2009
SiO ₂ (%)	12.76	D4326	10-5-2009
Al ₂ O ₃ (%)	3.25	D4326	10-5-2009
Fe ₂ O ₃ (%)	1.69	D4326	10-5-2009
CaO (%)	51.75	D4326	10-5-2009
MgO (%)	8.31	D4326	10-5-2009
Na ₂ O (%)	0.24	D4326	10-5-2009
K ₂ O (%)	17.95	D4326	10-5-2009
P ₂ O ₅ (%)	0.91	D4326	10-5-2009
TiO ₂ (%)	0.13	D4326	10-5-2009
SO ₃ (%)	1.83	D4326	10-5-2009
V (ppm)	15	D4326	10-5-2009
Cr (ppm)	226	D4326	10-5-2009
Mn (%)	0.22	D4326	10-5-2009
Co (ppm)	2	D4326	10-5-2009
Ni (ppm)	26	D4326	10-5-2009
Cu (ppm)	226	D4326	10-5-2009

Zn (ppm)	215	D4326	10-5-2009
As (ppm)	57	D4326	10-5-2009
Sr (%)	0.05	D4326	10-5-2009
Mo (ppm)	<1	D4326	10-5-2009
Cd (ppm)	1	D4326	10-5-2009
Sb (ppm)	<1	D4326	10-5-2009
Ba (%)	0.45	D4326	10-5-2009
Pb (ppm)	32	D4326	10-5-2009

The undersigned certifies that the analytical results reported on this form were achieved using the required procedures of the indicated ASTM Methods. Additional, I have carefully reviewed this report and verify that the laboratory met all the quality control and quality assurance requirements for the reported results or has provided reasons and/or justification acceptable to me if it did not.

Authorize Signature: Gerald Thomas

Date: 1-7-10

University of Kentucky-Center for Applied Energy Research

2540 Research Park Drive

Lexington, Kentucky 40511-8410

Official Reporting Form

Laboratory Analytical Information:

Date Sample Logged: 9-30-2009

Sample Name: Pop Chips (9-10-2009) Lab Sample ID #: 66911

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	0.33	D5142	9-30-2009
ADL Moisture (%)	45.00	D3302	9-28-2009
Volatile Matter (%)	49.74	E872	9-30-2009
Fixed Carbon (%)	4.94	By Difference	9-30-2009
Carbon (%)	27.11	D5373	10-1-2009
Hydrogen (%)	3.30	D5373	10-1-2009
Nitrogen (%)	0.03	D5373	10-1-2009
Total Sulfur (%)	0.03	D4239	10-6-2009
Oxygen (%)	24.21	By Difference	10-6-2009
Heating Value (BTU)	4556	D5865	10-6-2009
Cl (ppm)	43	In House XRF	10-18-2009
SiO ₂ (%)	6.28	D4326	10-5-2009
Al ₂ O ₃ (%)	2.10	D4326	10-5-2009
Fe ₂ O ₃ (%)	10.72	D4326	10-5-2009
CaO (%)	46.44	D4326	10-5-2009
MgO (%)	7.35	D4326	10-5-2009
Na ₂ O (%)	0.50	D4326	10-5-2009
K ₂ O (%)	18.67	D4326	10-5-2009
P ₂ O ₅ (%)	3.45	D4326	10-5-2009
TiO ₂ (%)	0.15	D4326	10-5-2009
SO ₃ (%)	1.22	D4326	10-5-2009
V (ppm)	14	D4326	10-5-2009
Cr (ppm)	46	D4326	10-5-2009
Mn (%)	0.21	D4326	10-5-2009
Co (ppm)	4.5	D4326	10-5-2009
Ni (ppm)	28	D4326	10-5-2009
Cu (ppm)	223	D4326	10-5-2009

Zn (ppm)	354	D4326	10-5-2009
As (ppm)	47	D4326	10-5-2009
Sr (%)	0.14	D4326	10-5-2009
Mo (ppm)	<1	D4326	10-5-2009
Cd (ppm)	6	D4326	10-5-2009
Sb (ppm)	<1	D4326	10-5-2009
Ba (%)	0.27	D4326	10-5-2009
Pb (ppm)	37	D4326	10-5-2009

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Authorize Signature: Gerald Thomas

Date: 1-7-10

University of Kentucky-Center for Applied Energy Research

2540 Research Park Drive

Lexington, Kentucky 40511-8410

Official Reporting Form

Laboratory Analytical Information:

Date Sample Logged: 9-30-2009

Sample Name: Pop Bark (9-10-2009) Lab Sample ID #: 66912

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	3.23	D5142	9-30-2009
ADL Moisture (%)	48.75	D3302	9-28-2009
Volatile Matter (%)	43.41	E872	9-30-2009
Fixed Carbon (%)	4.61	By Difference	9-30-2009
Carbon (%)	26.45	D5373	10-1-2009
Hydrogen (%)	3.31	D5373	10-1-2009
Nitrogen (%)	0.22	D5373	10-1-2009
Total Sulfur (%)	0.06	D4239	10-6-2009
Oxygen (%)	17.98	By Difference	10-6-2009
Heating Value (BTU)	4756	D5865	10-6-2009
Cl (ppm)	36	In House XRF	10-18-2009
SiO ₂ (%)	9.04	D4326	10-5-2009
Al ₂ O ₃ (%)	5.93	D4326	10-5-2009
Fe ₂ O ₃ (%)	3.23	D4326	10-5-2009
CaO (%)	62.21	D4326	10-5-2009
MgO (%)	4.01	D4326	10-5-2009
Na ₂ O (%)	0.22	D4326	10-5-2009
K ₂ O (%)	9.40	D4326	10-5-2009
P ₂ O ₅ (%)	1.48	D4326	10-5-2009
TiO ₂ (%)	0.30	D4326	10-5-2009
SO ₃ (%)	0.74	D4326	10-5-2009
V (ppm)	28	D4326	10-5-2009
Cr (ppm)	21	D4326	10-5-2009
Mn (%)	0.12	D4326	10-5-2009
Co (ppm)	5	D4326	10-5-2009
Ni (ppm)	8	D4326	10-5-2009
Cu (ppm)	70	D4326	10-5-2009

Zn (ppm)	328	D4326	10-5-2009
As (ppm)	24	D4326	10-5-2009
Sr (%)	0.10	D4326	10-5-2009
Mo (ppm)	<1	D4326	10-5-2009
Cd (ppm)	1	D4326	10-5-2009
Sb (ppm)	<1	D4326	10-5-2009
Ba (%)	0.19	D4326	10-5-2009
Pb (ppm)	15	D4326	10-5-2009

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Authorize Signature: Gerald Thomas

Date: 1-7-10

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Official Reporting Form

Laboratory Analytical Information:

Date Sample Logged: 9-30-2009

Sample Name: HM Dust (8-25-2009) Lab Sample ID #: 66913

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	0.71	D5142	9-30-2009
ADL Moisture (%)	26.73	D3302	9-28-2009
Volatile Matter (%)	64.16	E872	9-30-2009
Fixed Carbon (%)	8.40	By Difference	9-30-2009
Carbon (%)	36.09	D5373	10-1-2009
Hydrogen (%)	4.38	D5373	10-1-2009
Nitrogen (%)	0.11	D5373	10-1-2009
Total Sulfur (%)	0.04	D4239	10-6-2009
Oxygen (%)	31.94	By Difference	10-6-2009
Heating Value (BTU)	5984	D5865	10-6-2009
Cl (ppm)	113	In House XRF	10-18-2009
SiO ₂ (%)	5.84	D4326	10-5-2009
Al ₂ O ₃ (%)	3.55	D4326	10-5-2009
Fe ₂ O ₃ (%)	1.85	D4326	10-5-2009
CaO (%)	61.40	D4326	10-5-2009
MgO (%)	6.70	D4326	10-5-2009
Na ₂ O (%)	0.26	D4326	10-5-2009
K ₂ O (%)	13.20	D4326	10-5-2009
P ₂ O ₅ (%)	2.47	D4326	10-5-2009
TiO ₂ (%)	0.23	D4326	10-5-2009
SO ₃ (%)	1.60	D4326	10-5-2009
V (ppm)	5	D4326	10-5-2009
Cr (ppm)	25	D4326	10-5-2009
Mn (%)	0.55	D4326	10-5-2009
Co (ppm)	<1	D4326	10-5-2009
Ni (ppm)	46	D4326	10-5-2009
Cu (ppm)	159	D4326	10-5-2009

Zn (ppm)	439	D4326	10-5-2009
As (ppm)	16	D4326	10-5-2009
Sr (%)	0.18	D4326	10-5-2009
Mo (ppm)	<1	D4326	10-5-2009
Cd (ppm)	6	D4326	10-5-2009
Sb (ppm)	<1	D4326	10-5-2009
Ba (%)	0.10	D4326	10-5-2009
Pb (ppm)	26	D4326	10-5-2009

The undersigned certifies that the analytical results reported on this form were achieved using the required procedures of the indicated ASTM Methods. Additionally, I have carefully reviewed this report and verify that the laboratory met all the quality control and quality assurance requirements for the reported results or has provided reasons and/or justification acceptable to me if it did not.

Authorize Signature: Gerald Thomas

Date: 1-7-10

University of Kentucky-Center for Applied Energy Research

2540 Research Park Drive

Lexington, Kentucky 40511-8410

Official Reporting Form

Laboratory Analytical Information:

Date Sample Logged: 9-30-2009

Sample Name: HM Chips (8-25-2009) Lab Sample ID #: 66914

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	2.96	D5142	9-30-2009
ADL Moisture (%)	34.66	D3302	9-28-2009
Volatile Matter (%)	56.14	E872	9-30-2009
Fixed Carbon (%)	6.28	By Difference	9-30-2009
Carbon (%)	31.30	D5373	10-1-2009
Hydrogen (%)	3.75	D5373	10-1-2009
Nitrogen (%)	0.06	D5373	10-1-2009
Total Sulfur (%)	0.01	D4239	10-6-2009
Oxygen (%)	27.26	By Difference	10-6-2009
Heating Value (BTU)	5103	D5865	10-6-2009
Cl (ppm)	85	In House XRF	10-18-2009
SiO ₂ (%)	5.86	D4326	10-5-2009
Al ₂ O ₃ (%)	1.93	D4326	10-5-2009
Fe ₂ O ₃ (%)	2.87	D4326	10-5-2009
CaO (%)	56.69	D4326	10-5-2009
MgO (%)	7.26	D4326	10-5-2009
Na ₂ O (%)	0.12	D4326	10-5-2009
K ₂ O (%)	15.39	D4326	10-5-2009
P ₂ O ₅ (%)	3.08	D4326	10-5-2009
TiO ₂ (%)	0.08	D4326	10-5-2009
SO ₃ (%)	1.52	D4326	10-5-2009
V (ppm)	8	D4326	10-5-2009
Cr (ppm)	61	D4326	10-5-2009
Mn (%)	0.55	D4326	10-5-2009
Co (ppm)	3	D4326	10-5-2009
Ni (ppm)	46	D4326	10-5-2009
Cu (ppm)	168	D4326	10-5-2009

Zn (ppm)	360	D4326	10-5-2009
As (ppm)	16	D4326	10-5-2009
Sr (%)	0.11	D4326	10-5-2009
Mo (ppm)	<1	D4326	10-5-2009
Cd (ppm)	6	D4326	10-5-2009
Sb (ppm)	<1	D4326	10-5-2009
Ba (%)	0.20	D4326	10-5-2009
Pb (ppm)	18	D4326	10-5-2009

The undersigned certifies that the analytical results reported on this form were achieved using the required procedures of the indicated ASTM Methods. Additional, I have carefully reviewed this report and verify that the laboratory met all the quality control and quality assurance requirements for the reported results or has provided reasons and/or justification acceptable to me if it did not.

Authorize Signature: Gerald Thomas

Date: 1-7-10

University of Kentucky-Center for Applied Energy Research

2540 Research Park Drive

Lexington, Kentucky 40511-8410

Official Reporting Form

Laboratory Analytical Information:

Date Sample Logged: 9-30-2009

Sample Name: HM Bark (8-25-2009) Lab Sample ID #: 66915

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	6.99	D5142	9-30-2009
ADL Moisture (%)	31.38	D3302	9-28-2009
Volatile Matter (%)	54.11	E872	9-30-2009
Fixed Carbon (%)	7.53	By Difference	9-30-2009
Carbon (%)	32.69	D5373	10-1-2009
Hydrogen (%)	3.7	D5373	10-1-2009
Nitrogen (%)	0.28	D5373	10-1-2009
Total Sulfur (%)	0.02	D4239	10-6-2009
Oxygen (%)	24.95	By Difference	10-6-2009
Heating Value (BTU)	5087	D5865	10-6-2009
Cl (ppm)	60	In House XRF	10-18-2009
SiO ₂ (%)	2.20	D4326	10-5-2009
Al ₂ O ₃ (%)	2.27	D4326	10-5-2009
Fe ₂ O ₃ (%)	0.95	D4326	10-5-2009
CaO (%)	83.34	D4326	10-5-2009
MgO (%)	1.50	D4326	10-5-2009
Na ₂ O (%)	0.15	D4326	10-5-2009
K ₂ O (%)	3.95	D4326	10-5-2009
P ₂ O ₅ (%)	0.98	D4326	10-5-2009
TiO ₂ (%)	0.23	D4326	10-5-2009
SO ₃ (%)	0.42	D4326	10-5-2009
V (ppm)	6	D4326	10-5-2009
Cr (ppm)	4	D4326	10-5-2009
Mn (%)	0.55	D4326	10-5-2009
Co (ppm)	<1	D4326	10-5-2009
Ni (ppm)	19	D4326	10-5-2009
Cu (ppm)	35	D4326	10-5-2009

Zn (ppm)	169	D4326	10-5-2009
As (ppm)	18	D4326	10-5-2009
Sr (%)	0.21	D4326	10-5-2009
Mo (ppm)	<1	D4326	10-5-2009
Cd (ppm)	1	D4326	10-5-2009
Sb (ppm)	<1	D4326	10-5-2009
Ba (%)	0.27	D4326	10-5-2009
Pb (ppm)	4	D4326	10-5-2009

The undersigned certifies that the analytical results reported on this form were achieved using the required procedures of the indicated ASTM Methods. Additionally, I have carefully reviewed this report and verify that the laboratory met all the quality control and quality assurance requirements for the reported results or has provided reasons and/or justification acceptable to me if it did not.

Authorize Signature: Gerald Thomas

Date: 1-7-10

University of Kentucky-Center for Applied Energy Research

2540 Research Park Drive

Lexington, Kentucky 40511-8410

Official Reporting Form

Laboratory Analytical Information:

Date Sample Logged: 9-30-2009

Sample Name: Hic Dust (9-1-2009) Lab Sample ID #: 66916

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	0.53	D5142	9-30-2009
ADL Moisture (%)	29.51	D3302	9-28-2009
Volatile Matter (%)	61.94	E872	9-30-2009
Fixed Carbon (%)	8.03	By Difference	9-30-2009
Carbon (%)	34.84	D5373	10-1-2009
Hydrogen (%)	4.26	D5373	10-1-2009
Nitrogen (%)	0.09	D5373	10-1-2009
Total Sulfur (%)	<0.01	D4239	10-6-2009
Oxygen (%)	30.78	By Difference	10-6-2009
Heating Value (BTU)	5674	D5865	10-6-2009
Cl (ppm)	47	In House XRF	10-18-2009
SiO ₂ (%)	5.40	D4326	10-5-2009
Al ₂ O ₃ (%)	1.74	D4326	10-5-2009
Fe ₂ O ₃ (%)	2.43	D4326	10-5-2009
CaO (%)	82.05	D4326	10-5-2009
MgO (%)	1.88	D4326	10-5-2009
Na ₂ O (%)	0.19	D4326	10-5-2009
K ₂ O (%)	1.69	D4326	10-5-2009
P ₂ O ₅ (%)	1.64	D4326	10-5-2009
TiO ₂ (%)	0.05	D4326	10-5-2009
SO ₃ (%)	1.62	D4326	10-5-2009
V (ppm)	<1	D4326	10-5-2009
Cr (ppm)	10	D4326	10-5-2009
Mn (%)	1	D4326	10-5-2009
Co (ppm)	2	D4326	10-5-2009
Ni (ppm)	526	D4326	10-5-2009
Cu (ppm)	170	D4326	10-5-2009

Zn (ppm)	2091	D4326	10-5-2009
As (ppm)	22	D4326	10-5-2009
Sr (%)	0.13	D4326	10-5-2009
Mo (ppm)	<1	D4326	10-5-2009
Cd (ppm)	10	D4326	10-5-2009
Sb (ppm)	<1	D4326	10-5-2009
Ba (%)	0.45	D4326	10-5-2009
Pb (ppm)	17	D4326	10-5-2009

The undersigned certifies that the analytical results reported on this form were achieved using the required procedures of the indicated ASTM Methods. Additional, I have carefully reviewed this report and verify that the laboratory met all the quality control and quality assurance requirements for the reported results or has provided reasons and/or justification acceptable to me if it did not.

Authorize Signature: Gerald Thomas

Date: 1-7-10

University of Kentucky-Center for Applied Energy Research

2540 Research Park Drive

Lexington, Kentucky 40511-8410

Official Reporting Form

Laboratory Analytical Information:

Date Sample Logged: 9-30-2009

Sample Name: Hic Chips (9-1-2009) Lab Sample ID #: 66917

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	0.64	D5142	9-30-2009
ADL Moisture (%)	36.80	D3302	9-28-2009
Volatile Matter (%)	55.18	E872	9-30-2009
Fixed Carbon (%)	7.38	By Difference	9-30-2009
Carbon (%)	31.23	D5373	10-1-2009
Hydrogen (%)	3.75	D5373	10-1-2009
Nitrogen (%)	0.11	D5373	10-1-2009
Total Sulfur (%)	0.01	D4239	10-6-2009
Oxygen (%)	27.46	By Difference	10-6-2009
Heating Value (BTU)	5128	D5865	10-6-2009
Cl (ppm)	54	In House XRF	10-18-2009
SiO ₂ (%)	5.83	D4326	10-5-2009
Al ₂ O ₃ (%)	1.76	D4326	10-5-2009
Fe ₂ O ₃ (%)	2.23	D4326	10-5-2009
CaO (%)	81.49	D4326	10-5-2009
MgO (%)	2.14	D4326	10-5-2009
Na ₂ O (%)	0.20	D4326	10-5-2009
K ₂ O (%)	1.40	D4326	10-5-2009
P ₂ O ₅ (%)	1.52	D4326	10-5-2009
TiO ₂ (%)	0.05	D4326	10-5-2009
SO ₃ (%)	1.47	D4326	10-5-2009
V (ppm)	<1	D4326	10-5-2009
Cr (ppm)	9	D4326	10-5-2009
Mn (%)	0.88	D4326	10-5-2009
Co (ppm)	3	D4326	10-5-2009
Ni (ppm)	402	D4326	10-5-2009
Cu (ppm)	181	D4326	10-5-2009

Zn (ppm)	2315	D4326	10-5-2009
As (ppm)	14	D4326	10-5-2009
Sr (%)	0.12	D4326	10-5-2009
Mo (ppm)	<1	D4326	10-5-2009
Cd (ppm)	11	D4326	10-5-2009
Sb (ppm)	<1	D4326	10-5-2009
Ba (%)	0.43	D4326	10-5-2009
Pb (ppm)	12	D4326	10-5-2009

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Laboratory Analytical Information:

Date Sample Logged: 9-30-2009

Sample Name: Hic Bark (9-1-2009) Lab Sample ID #: 66918

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	6.41	D5142	9-30-2009
ADL Moisture (%)	21.72	D3302	9-28-2009
Volatile Matter (%)	60.22	E872	9-30-2009
Fixed Carbon (%)	11.65	By Difference	9-30-2009
Carbon (%)	39.83	D5373	10-1-2009
Hydrogen (%)	4.21	D5373	10-1-2009
Nitrogen (%)	0.41	D5373	10-1-2009
Total Sulfur (%)	0.03	D4239	10-6-2009
Oxygen (%)	27.40	By Difference	10-6-2009
Heating Value (BTU)	6594	D5865	10-6-2009
Cl (ppm)	140	In House XRF	10-18-2009
SiO ₂ (%)	5.92	D4326	10-5-2009
Al ₂ O ₃ (%)	4.20	D4326	10-5-2009
Fe ₂ O ₃ (%)	2.50	D4326	10-5-2009
CaO (%)	76.67	D4326	10-5-2009
MgO (%)	2.31	D4326	10-5-2009
Na ₂ O (%)	0.20	D4326	10-5-2009
K ₂ O (%)	3.05	D4326	10-5-2009
P ₂ O ₅ (%)	0.66	D4326	10-5-2009
TiO ₂ (%)	0.56	D4326	10-5-2009
SO ₃ (%)	0.90	D4326	10-5-2009
V (ppm)	12	D4326	10-5-2009
Cr (ppm)	13	D4326	10-5-2009
Mn (%)	0.91	D4326	10-5-2009
Co (ppm)	17	D4326	10-5-2009
Ni (ppm)	14	D4326	10-5-2009
Cu (ppm)	56	D4326	10-5-2009

Zn (ppm)	1341	D4326	10-5-2009
As (ppm)	14	D4326	10-5-2009
Sr (%)	0.20	D4326	10-5-2009
Mo (ppm)	<1	D4326	10-5-2009
Cd (ppm)	10	D4326	10-5-2009
Sb (ppm)	<1	D4326	10-5-2009
Ba (%)	0.67	D4326	10-5-2009
Pb (ppm)	9	D4326	10-5-2009

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Laboratory Analytical Information:

Date Sample Logged: 9-30-2009

Sample Name: R. Oak Dust (8-24-2009) Lab Sample ID #: 66919

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	0.20	D5142	9-30-2009
ADL Moisture (%)	43.39	D3302	9-28-2009
Volatile Matter (%)	49.83	E872	9-30-2009
Fixed Carbon (%)	5.68	By Difference	9-30-2009
Carbon (%)	27.99	D5373	10-1-2009
Hydrogen (%)	3.37	D5373	10-1-2009
Nitrogen (%)	0.08	D5373	10-1-2009
Total Sulfur (%)	0.01	D4239	10-6-2009
Oxygen (%)	24.96	By Difference	10-6-2009
Heating Value (BTU)	4483	D5865	10-6-2009
Cl (ppm)	63	In House XRF	10-18-2009
SiO ₂ (%)	8.70	D4326	10-5-2009
Al ₂ O ₃ (%)	5.25	D4326	10-5-2009
Fe ₂ O ₃ (%)	4.34	D4326	10-5-2009
CaO (%)	50.40	D4326	10-5-2009
MgO (%)	2.07	D4326	10-5-2009
Na ₂ O (%)	0.40	D4326	10-5-2009
K ₂ O (%)	23.42	D4326	10-5-2009
P ₂ O ₅ (%)	0.66	D4326	10-5-2009
TiO ₂ (%)	0.27	D4326	10-5-2009
SO ₃ (%)	2.20	D4326	10-5-2009
V (ppm)	35	D4326	10-5-2009
Cr (ppm)	59	D4326	10-5-2009
Mn (%)	0.60	D4326	10-5-2009
Co (ppm)	12	D4326	10-5-2009
Ni (ppm)	70	D4326	10-5-2009
Cu (ppm)	275	D4326	10-5-2009

Zn (ppm)	498	D4326	10-5-2009
As (ppm)	15	D4326	10-5-2009
Sr (%)	0.01	D4326	10-5-2009
Mo (ppm)	<1	D4326	10-5-2009
Cd (ppm)	4	D4326	10-5-2009
Sb (ppm)	<1	D4326	10-5-2009
Ba (%)	0.18	D4326	10-5-2009
Pb (ppm)	24	D4326	10-5-2009

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Laboratory Analytical Information:

Date Sample Logged: 9-30-2009

Sample Name: R. Oak Chips (8-24-2009) Lab Sample ID #: 66920

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	0.35	D5142	9-30-2009
ADL Moisture (%)	43.90	D3302	9-28-2009
Volatile Matter (%)	49.44	E872	9-30-2009
Fixed Carbon (%)	6.32	By Difference	9-30-2009
Carbon (%)	27.67	D5373	10-1-2009
Hydrogen (%)	3.33	D5373	10-1-2009
Nitrogen (%)	0.08	D5373	10-1-2009
Total Sulfur (%)	0.01	D4239	10-6-2009
Oxygen (%)	24.67	By Difference	10-6-2009
Heating Value (BTU)	4480	D5865	10-6-2009
Cl (ppm)	35	In House XRF	10-18-2009
SiO ₂ (%)	6.70	D4326	10-5-2009
Al ₂ O ₃ (%)	2.38	D4326	10-5-2009
Fe ₂ O ₃ (%)	6.25	D4326	10-5-2009
CaO (%)	59.20	D4326	10-5-2009
MgO (%)	3.58	D4326	10-5-2009
Na ₂ O (%)	0.18	D4326	10-5-2009
K ₂ O (%)	17.60	D4326	10-5-2009
P ₂ O ₅ (%)	1.45	D4326	10-5-2009
TiO ₂ (%)	0.20	D4326	10-5-2009
SO ₃ (%)	0.20	D4326	10-5-2009
V (ppm)	14	D4326	10-5-2009
Cr (ppm)	34	D4326	10-5-2009
Mn (%)	0.58	D4326	10-5-2009
Co (ppm)	11	D4326	10-5-2009
Ni (ppm)	58	D4326	10-5-2009
Cu (ppm)	191	D4326	10-5-2009

Zn (ppm)	158	D4326	10-5-2009
As (ppm)	16	D4326	10-5-2009
Sr (%)	0.11	D4326	10-5-2009
Mo (ppm)	<1	D4326	10-5-2009
Cd (ppm)	7	D4326	10-5-2009
Sb (ppm)	<1	D4326	10-5-2009
Ba (%)	0.10	D4326	10-5-2009
Pb (ppm)	5	D4326	10-5-2009

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Laboratory Analytical Information:

Date Sample Logged: 9-30-2009

Sample Name: R. Oak Bark (8-24-2009) Lab Sample ID #: 66921

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	7.22	D5142	9-30-2009
ADL Moisture (%)	28.99	D3302	9-28-2009
Volatile Matter (%)	56.68	E872	9-30-2009
Fixed Carbon (%)	7.11	By Difference	9-30-2009
Carbon (%)	34.07	D5373	10-1-2009
Hydrogen (%)	3.60	D5373	10-1-2009
Nitrogen (%)	0.20	D5373	10-1-2009
Total Sulfur (%)	0.02	D4239	10-6-2009
Oxygen (%)	25.90	By Difference	10-6-2009
Heating Value (BTU)	5634	D5865	10-6-2009
Cl (ppm)	50	In House XRF	10-18-2009
SiO ₂ (%)	0.27	D4326	10-5-2009
Al ₂ O ₃ (%)	0.76	D4326	10-5-2009
Fe ₂ O ₃ (%)	0.94	D4326	10-5-2009
CaO (%)	91.04	D4326	10-5-2009
MgO (%)	0.91	D4326	10-5-2009
Na ₂ O (%)	0.05	D4326	10-5-2009
K ₂ O (%)	1.84	D4326	10-5-2009
P ₂ O ₅ (%)	0.32	D4326	10-5-2009
TiO ₂ (%)	0.07	D4326	10-5-2009
SO ₃ (%)	0.27	D4326	10-5-2009
V (ppm)	<1	D4326	10-5-2009
Cr (ppm)	1	D4326	10-5-2009
Mn (%)	0.41	D4326	10-5-2009
Co (ppm)	<1	D4326	10-5-2009
Ni (ppm)	15	D4326	10-5-2009
Cu (ppm)	19	D4326	10-5-2009

Zn (ppm)	14	D4326	10-5-2009
As (ppm)	7	D4326	10-5-2009
Sr (%)	0.01	D4326	10-5-2009
Mo (ppm)	<1	D4326	10-5-2009
Cd (ppm)	1	D4326	10-5-2009
Sb (ppm)	<1	D4326	10-5-2009
Ba (%)	0.04	D4326	10-5-2009
Pb (ppm)	5	D4326	10-5-2009

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Laboratory Analytical Information:

Date Sample Logged: 9-30-2009

Sample Name: W. Oak Dust (8-21-2009) Lab Sample ID #: 66922

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	0.26	D5142	9-30-2009
ADL Moisture (%)	38.01	D3302	9-28-2009
Volatile Matter (%)	52.93	E872	9-30-2009
Fixed Carbon (%)	8.80	By Difference	9-30-2009
Carbon (%)	30.82	D5373	10-1-2009
Hydrogen (%)	3.53	D5373	10-1-2009
Nitrogen (%)	0.13	D5373	10-1-2009
Total Sulfur (%)	0.06	D4239	10-6-2009
Oxygen (%)	27.19	By Difference	10-6-2009
Heating Value (BTU)	5025	D5865	10-6-2009
Cl (ppm)	104	In House XRF	10-18-2009
SiO ₂ (%)	1.63	D4326	10-5-2009
Al ₂ O ₃ (%)	2.33	D4326	10-5-2009
Fe ₂ O ₃ (%)	0.55	D4326	10-5-2009
CaO (%)	87.67	D4326	10-5-2009
MgO (%)	1.37	D4326	10-5-2009
Na ₂ O (%)	0.23	D4326	10-5-2009
K ₂ O (%)	3.11	D4326	10-5-2009
P ₂ O ₅ (%)	0.41	D4326	10-5-2009
TiO ₂ (%)	0.08	D4326	10-5-2009
SO ₃ (%)	0.10	D4326	10-5-2009
V (ppm)	6	D4326	10-5-2009
Cr (ppm)	6	D4326	10-5-2009
Mn (%)	0.10	D4326	10-5-2009
Co (ppm)	<1	D4326	10-5-2009
Ni (ppm)	15	D4326	10-5-2009
Cu (ppm)	280	D4326	10-5-2009

Zn (ppm)	181	D4326	10-5-2009
As (ppm)	11	D4326	10-5-2009
Sr (%)	0.10	D4326	10-5-2009
Mo (ppm)	<1	D4326	10-5-2009
Cd (ppm)	1	D4326	10-5-2009
Sb (ppm)	<1	D4326	10-5-2009
Ba (%)	0.21	D4326	10-5-2009
Pb (ppm)	16	D4326	10-5-2009

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Laboratory Analytical Information:

Date Sample Logged: 9-30-2009

Sample Name: W. Oak Chips (8-21-2009) Lab Sample ID #: 66923

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	0.49	D5142	9-30-2009
ADL Moisture (%)	33.08	D3302	9-28-2009
Volatile Matter (%)	58.49	E872	9-30-2009
Fixed Carbon (%)	7.95	By Difference	9-30-2009
Carbon (%)	34.09	D5373	10-1-2009
Hydrogen (%)	3.80	D5373	10-1-2009
Nitrogen (%)	0.09	D5373	10-1-2009
Total Sulfur (%)	0.01	D4239	10-6-2009
Oxygen (%)	28.44	By Difference	10-6-2009
Heating Value (BTU)	5460	D5865	10-6-2009
Cl (ppm)	55	In House XRF	10-18-2009
SiO ₂ (%)	1.79	D4326	10-5-2009
Al ₂ O ₃ (%)	2.32	D4326	10-5-2009
Fe ₂ O ₃ (%)	0.68	D4326	10-5-2009
CaO (%)	88.19	D4326	10-5-2009
MgO (%)	1.25	D4326	10-5-2009
Na ₂ O (%)	0.14	D4326	10-5-2009
K ₂ O (%)	2.96	D4326	10-5-2009
P ₂ O ₅ (%)	0.50	D4326	10-5-2009
TiO ₂ (%)	0.15	D4326	10-5-2009
SO ₃ (%)	0.21	D4326	10-5-2009
V (ppm)	8	D4326	10-5-2009
Cr (ppm)	9	D4326	10-5-2009
Mn (%)	0.20	D4326	10-5-2009
Co (ppm)	<1	D4326	10-5-2009
Ni (ppm)	30	D4326	10-5-2009
Cu (ppm)	182	D4326	10-5-2009

Zn (ppm)	178	D4326	10-5-2009
As (ppm)	10	D4326	10-5-2009
Sr (%)	0.10	D4326	10-5-2009
Mo (ppm)	<1	D4326	10-5-2009
Cd (ppm)	4	D4326	10-5-2009
Sb (ppm)	<1	D4326	10-5-2009
Ba (%)	0.22	D4326	10-5-2009
Pb (ppm)	17	D4326	10-5-2009

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Laboratory Analytical Information:

Date Sample Logged: 9-30-2009

Sample Name: W. Oak Bark (8-21-2009) Lab Sample ID #: 66924

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	6.60	D5142	9-30-2009
ADL Moisture (%)	3.25	D3302	9-28-2009
Volatile Matter (%)	47.24	E872	9-30-2009
Fixed Carbon (%)	5.96	By Difference	9-30-2009
Carbon (%)	30.24	D5373	10-1-2009
Hydrogen (%)	3.17	D5373	10-1-2009
Nitrogen (%)	0.21	D5373	10-1-2009
Total Sulfur (%)	0.01	D4239	10-6-2009
Oxygen (%)	22.57	By Difference	10-6-2009
Heating Value (BTU)	4797	D5865	10-6-2009
Cl (ppm)	60	In House XRF	10-18-2009
SiO ₂ (%)	1.43	D4326	10-5-2009
Al ₂ O ₃ (%)	0.63	D4326	10-5-2009
Fe ₂ O ₃ (%)	0.68	D4326	10-5-2009
CaO (%)	89.14	D4326	10-5-2009
MgO (%)	1.13	D4326	10-5-2009
Na ₂ O (%)	0.14	D4326	10-5-2009
K ₂ O (%)	3.37	D4326	10-5-2009
P ₂ O ₅ (%)	0.55	D4326	10-5-2009
TiO ₂ (%)	0.15	D4326	10-5-2009
SO ₃ (%)	0.08	D4326	10-5-2009
V (ppm)	6	D4326	10-5-2009
Cr (ppm)	9	D4326	10-5-2009
Mn (%)	0.46	D4326	10-5-2009
Co (ppm)	1	D4326	10-5-2009
Ni (ppm)	4	D4326	10-5-2009
Cu (ppm)	39	D4326	10-5-2009

Zn (ppm)	45	D4326	10-5-2009
As (ppm)	6	D4326	10-5-2009
Sr (%)	0.15	D4326	10-5-2009
Mo (ppm)	<1	D4326	10-5-2009
Cd (ppm)	1	D4326	10-5-2009
Sb (ppm)	<1	D4326	10-5-2009
Ba (%)	0.24	D4326	10-5-2009
Pb (ppm)	6	D4326	10-5-2009

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Official Reporting Form

Laboratory Analytical Information:

Date Sample Logged: 10-20-2009

Sample Name: K.D. Cutoffs and other scraps (10-12-2009) Lab Sample ID #: 67015

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	0.28	D5142	10-20-2009
ADL Moisture (%)	1.83	D3302	10-18-2009
Volatile Matter (%)	84.22	E872	10-20-2009
Fixed Carbon (%)	13.67	By Difference	10-20-2009
Carbon (%)	48.60	D5373	10-26-2009
Hydrogen (%)	5.95	D5373	10-26-2009
Nitrogen (%)	0.19	D5373	10-26-2009
Total Sulfur (%)	0.03	D4239	10-27-2009
Oxygen (%)	44.95	By Difference	10-27-2009
Heating Value (BTU)	7821	D5865	10-27-2009
Cl (ppm)	81	In House XRF	10-29-2009
SiO ₂ (%)	0.05	D4326	10-28-2009
Al ₂ O ₃ (%)	5.76	D4326	10-28-2009
Fe ₂ O ₃ (%)	4.09	D4326	10-28-2009
CaO (%)	68.19	D4326	10-28-2009
MgO (%)	4.56	D4326	10-28-2009
Na ₂ O (%)	0.84	D4326	10-28-2009
K ₂ O (%)	11.17	D4326	10-28-2009
P ₂ O ₅ (%)	1.67	D4326	10-28-2009
TiO ₂ (%)	0.30	D4326	10-28-2009
SO ₃ (%)	1.94	D4326	10-28-2009
V (ppm)	<1	D4326	10-28-2009
Cr (ppm)	153	D4326	10-28-2009
Mn (%)	0.84	D4326	10-28-2009
Co (ppm)	<1	D4326	10-28-2009
Ni (ppm)	110	D4326	10-28-2009
Cu (ppm)	360	D4326	10-28-2009

Zn (ppm)	5201	D4326	10-28-2009
As (ppm)	13	D4326	10-28-2009
Sr (%)	0.17	D4326	10-28-2009
Mo (ppm)	2	D4326	10-28-2009
Cd (ppm)	24	D4326	10-28-2009
Sb (ppm)	11	D4326	10-28-2009
Ba (%)	0.39	D4326	10-28-2009
Pb (ppm)	81	D4326	10-28-2009

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Laboratory Analytical Information:

Date Sample Logged: 10-20-2009

Sample Name: K.D. Sawdust, Molder, Planer Shaving (10-12-2009) Lab Sample ID #: 67016

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	0.55	D5142	10-20-2009
ADL Moisture (%)	2.42	D3302	10-18-2009
Volatile Matter (%)	84.13	E872	10-20-2009
Fixed Carbon (%)	12.90	By Difference	10-20-2009
Carbon (%)	48.25	D5373	10-26-2009
Hydrogen (%)	5.98	D5373	10-26-2009
Nitrogen (%)	0.15	D5373	10-26-2009
Total Sulfur (%)	0.08	D4239	10-27-2009
Oxygen (%)	44.99	By Difference	10-27-2009
Heating Value (BTU)	7681	D5865	10-27-2009
Cl (ppm)	66	In House XRF	10-29-2009
SiO ₂ (%)	0.19	D4326	10-28-2009
Al ₂ O ₃ (%)	7.11	D4326	10-28-2009
Fe ₂ O ₃ (%)	2.66	D4326	10-28-2009
CaO (%)	65.86	D4326	10-28-2009
MgO (%)	5.41	D4326	10-28-2009
Na ₂ O (%)	0.40	D4326	10-28-2009
K ₂ O (%)	11.01	D4326	10-28-2009
P ₂ O ₅ (%)	1.70	D4326	10-28-2009
TiO ₂ (%)	0.37	D4326	10-28-2009
SO ₃ (%)	1.17	D4326	10-28-2009
V (ppm)	23	D4326	10-28-2009
Cr (ppm)	86	D4326	10-28-2009
Mn (%)	0.54	D4326	10-28-2009
Co (ppm)	<1	D4326	10-28-2009
Ni (ppm)	67	D4326	10-28-2009
Cu (ppm)	296	D4326	10-28-2009

Zn (ppm)	653	D4326	10-28-2009
As (ppm)	14	D4326	10-28-2009
Sr (%)	0.15	D4326	10-28-2009
Mo (ppm)	2	D4326	10-28-2009
Cd (ppm)	13	D4326	10-28-2009
Sb (ppm)	6	D4326	10-28-2009
Ba (%)	0.32	D4326	10-28-2009
Pb (ppm)	76	D4326	10-28-2009

The undersigned certifies that the analytical results reported on this form were achieved using the required procedures of the indicated ASTM Methods. Additional, I have carefully reviewed this report and verify that the laboratory met all the quality control and quality assurance requirements for the reported results or has provided reasons and/or justification acceptable to me if it did not.

Authorize Signature: Gerald Thomas

Date: 1-7-10

University of Kentucky-Center for Applied Energy Research

2540 Research Park Drive

Lexington, Kentucky 40511-8410

Official Reporting Form

Laboratory Analytical Information:

Date Sample Logged: 10-20-2009

Sample Name: Basswood Bark (10-13-2009) Lab Sample ID #: 67017

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	2.59	D5142	10-20-2009
ADL Moisture (%)	42.23	D3302	10-18-2009
Volatile Matter (%)	47.97	E872	10-20-2009
Fixed Carbon (%)	7.20	By Difference	10-20-2009
Carbon (%)	28.22	D5373	10-26-2009
Hydrogen (%)	3.17	D5373	10-26-2009
Nitrogen (%)	0.18	D5373	10-26-2009
Total Sulfur (%)	0.02	D4239	10-27-2009
Oxygen (%)	23.57	By Difference	10-27-2009
Heating Value (BTU)	4697	D5865	10-28-2009
Cl (ppm)	123	In House XRF	10-29-2009
SiO ₂ (%)	1.11	D4326	10-28-2009
Al ₂ O ₃ (%)	16.38	D4326	10-28-2009
Fe ₂ O ₃ (%)	3.40	D4326	10-28-2009
CaO (%)	69.37	D4326	10-28-2009
MgO (%)	1.99	D4326	10-28-2009
Na ₂ O (%)	0.39	D4326	10-28-2009
K ₂ O (%)	3.42	D4326	10-28-2009
P ₂ O ₅ (%)	1.03	D4326	10-28-2009
TiO ₂ (%)	0.27	D4326	10-28-2009
SO ₃ (%)	0.95	D4326	10-28-2009
V (ppm)	44	D4326	10-28-2009
Cr (ppm)	58	D4326	10-28-2009
Mn (%)	0.13	D4326	10-28-2009
Co (ppm)	<1	D4326	10-28-2009
Ni (ppm)	35	D4326	10-28-2009
Cu (ppm)	198	D4326	10-28-2009

Zn (ppm)	122	D4326	10-28-2009
As (ppm)	16	D4326	10-28-2009
Sr (%)	0.12	D4326	10-28-2009
Mo (ppm)	7	D4326	10-28-2009
Cd (ppm)	3	D4326	10-28-2009
Sb (ppm)	2	D4326	10-28-2009
Ba (%)	0.25	D4326	10-28-2009
Pb (ppm)	12	D4326	10-28-2009

The undersigned certifies that the analytical results reported on this form were achieved using the required procedures of the indicated ASTM Methods. Additional, I have carefully reviewed this report and verify that the laboratory met all the quality control and quality assurance requirements for the reported results or has provided reasons and/or justification acceptable to me if it did not.

Authorize Signature: Gerald Thomas

Date: 1-7-10

University of Kentucky-Center for Applied Energy Research

2540 Research Park Drive

Lexington, Kentucky 40511-8410

Official Reporting Form

Laboratory Analytical Information:

Date Sample Logged: 10-20-2009

Sample Name: Basswood Dust (10-13-2009) Lab Sample ID #: 67018

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	0.40	D5142	10-20-2009
ADL Moisture (%)	49.29	D3302	10-18-2009
Volatile Matter (%)	44.51	E872	10-20-2009
Fixed Carbon (%)	5.80	By Difference	10-20-2009
Carbon (%)	25.30	D5373	10-26-2009
Hydrogen (%)	3.00	D5373	10-26-2009
Nitrogen (%)	0.17	D5373	10-26-2009
Total Sulfur (%)	0.01	D4239	10-27-2009
Oxygen (%)	21.82	By Difference	10-27-2009
Heating Value (BTU)	4271	D5865	10-28-2009
Cl (ppm)	52	In House XRF	10-29-2009
SiO ₂ (%)	0.49	D4326	10-28-2009
Al ₂ O ₃ (%)	9.88	D4326	10-28-2009
Fe ₂ O ₃ (%)	2.57	D4326	10-28-2009
CaO (%)	67.70	D4326	10-28-2009
MgO (%)	3.76	D4326	10-28-2009
Na ₂ O (%)	0.50	D4326	10-28-2009
K ₂ O (%)	8.78	D4326	10-28-2009
P ₂ O ₅ (%)	3.25	D4326	10-28-2009
TiO ₂ (%)	0.20	D4326	10-28-2009
SO ₃ (%)	1.12	D4326	10-28-2009
V (ppm)	98	D4326	10-28-2009
Cr (ppm)	119	D4326	10-28-2009
Mn (%)	0.13	D4326	10-28-2009
Co (ppm)	<1	D4326	10-28-2009

Ni (ppm)	189	D4326	10-28-2009
Cu (ppm)	585	D4326	10-28-2009
Zn (ppm)	621	D4326	10-28-2009
As (ppm)	16	D4326	10-28-2009
Sr (%)	0.17	D4326	10-28-2009
Mo (ppm)	6	D4326	10-28-2009
Cd (ppm)	68	D4326	10-28-2009
Sb (ppm)	4	D4326	10-28-2009
Ba (%)	0.47	D4326	10-28-2009
Pb (ppm)	73	D4326	10-28-2009

The undersigned certifies that the analytical results reported on this form were achieved using the required procedures of the indicated ASTM Methods. Additional, I have carefully reviewed this report and verify that the laboratory met all the quality control and quality assurance requirements for the reported results or has provided reasons and/or justification acceptable to me if it did not.

Authorize Signature: Gerald Thomas

Date: 1-7-10

University of Kentucky-Center for Applied Energy Research

2540 Research Park Drive

Lexington, Kentucky 40511-8410

Official Reporting Form

Laboratory Analytical Information:

Date Sample Logged: 10-20-2009

Sample Name: Basswood Chips (10-13-2009) Lab Sample ID #: 67019

Analysis	Analytical Results	Analytical Method	Date Analyzed
Ash (%)	0.48	D5142	10-20-2009
ADL Moisture (%)	46.95	D3302	10-18-2009
Volatile Matter (%)	46.12	E872	10-20-2009
Fixed Carbon (%)	6.45	By Difference	10-20-2009
Carbon (%)	46.24	D5373	10-26-2009
Hydrogen (%)	3.18	D5373	10-26-2009
Nitrogen (%)	0.11	D5373	10-26-2009
Total Sulfur (%)	0.07	D4239	10-27-2009
Oxygen (%)	22.97	By Difference	10-27-2009
Heating Value (BTU)	4361	D5865	10-28-2009
Cl (ppm)	141	In House XRF	10-29-2009
SiO ₂ (%)	0.71	D4326	10-28-2009
Al ₂ O ₃ (%)	25.53	D4326	10-28-2009
Fe ₂ O ₃ (%)	7.16	D4326	10-28-2009
CaO (%)	50.01	D4326	10-28-2009
MgO (%)	2.66	D4326	10-28-2009
Na ₂ O (%)	0.80	D4326	10-28-2009
K ₂ O (%)	7.12	D4326	10-28-2009
P ₂ O ₅ (%)	2.34	D4326	10-28-2009
TiO ₂ (%)	0.93	D4326	10-28-2009
SO ₃ (%)	1.00	D4326	10-28-2009
V (ppm)	79	D4326	10-28-2009
Cr (ppm)	302	D4326	10-28-2009
Mn (%)	0.14	D4326	10-28-2009
Co (ppm)	<1	D4326	10-28-2009

Ni (ppm)	117	D4326	10-28-2009
Cu (ppm)	743	D4326	10-28-2009
Zn (ppm)	801	D4326	10-28-2009
As (ppm)	19	D4326	10-28-2009
Sr (%)	0.14	D4326	10-28-2009
Mo (ppm)	29	D4326	10-28-2009
Cd (ppm)	13	D4326	10-28-2009
Sb (ppm)	8	D4326	10-28-2009
Ba (%)	0.28	D4326	10-28-2009
Pb (ppm)	12	D4326	10-28-2009

The undersigned certifies that the analytical results reported on this form were achieved using the required procedures of the indicated ASTM Methods. Additional, I have carefully reviewed this report and verify that the laboratory met all the quality control and quality assurance requirements for the reported results or has provided reasons and/or justification acceptable to me if it did not.

Authorize Signature: Gerald Thomas

Date: 1-7-10

Additional Submission

February 4, 2010

ecoPower Generation, LLC
Application to the KY State Board on
Electric Generation and Transmission Siting

February 4, 2010

Energy and Environment Cabinet
Department for Environmental Protection
Division for Air Quality
Attn: Chris Walling
200 Fair Oaks Lane, 1st Floor
Frankfort, Kentucky 40601

RE: February 2, 2010 Notice of Deficiency
Permittee Name: ecoPower Generation, LLC
Source ID No.: 21-193-00113
AI No.: 106405
Activity: APE20100001
Permit No.: V-10-013

Dear Mr. Walling:

On February 2, 2010, ecoPower Generation, LLC received a Notice of Deficiency (NOD) requesting additional information regarding a permit application submitted for the ecoPower Generating facility located in Chavies, Kentucky. Per the Kentucky Division for Air Quality's (KYDAQ) request, on behalf of ecoPower Generation, LLC, Smith Management Group (SMG) has prepared the enclosed responses.

Generally, in order to provide clarification to the KYDAQ's NOD, "Calculations of Potential to Emit" submitted in the original January 2010 application have been revised and are included in this package as **Attachment 1**. Also Tables 2-5, 4-5, 4-6, 4-7, 4-8, and 4-9, contained in the Sargent & Lundy Air Permit Application Technical Support Document, submitted as Attachment 3 of the original application, have been revised and included as **Attachment 2**. Finally, drawings, labeled EM-1, EM-2, EM-3, EM-4, and EM-5, depicting the proposed material handling system are included in **Attachment 3**. This revised data is intended to replace the previously submitted information.

Comment 1:

"Table 2-5 lists an Emission Point called a "Biomass active storage reclaim tunnel exhaust fan." This Emission Point is not included elsewhere in the application. Please clarify."

Response 1:

Please see the revised Table 2-5 and Table 4-6, which lists this Emission Point (EP). This EP is identified as EP-11 on the "Calculations of Potential to Emit" (see **Attachment 1** and **2** of this document).

Comment 2:

"Emission Points 13, 14, 15, the Fly Ash Silo, Bed Ash Silo, and Sand Storage Bin, are listed in the "Calculation of Potential to Emit" table as being single emission units, each controlled by a bin vent filter with an efficiency of 99.9%. Table 2-5 lists the same three structures as having two emission points each – the vent filter and ventilation fan. Please clarify."

Response 2:

There is only one emission point for each of these referenced emission points (EP 13, 14, and 15). As depicted on Tables 4-7 and 4-9 of the Sargent & Lundy Air Permit Application Technical Support Document in the original application, these are building exhaust fans and not emission points. Emissions from the fly ash and bed ash silos, and sand storage bin will be vented from bin-vent filters associated with each emission point. To clarify, references to exhaust fans that are *not* emission sources have been removed from the attached revised Tables 4-7 and 4-9 (see **Attachment 2**).

Comment 3:

"Emission Unit 09, the Transfer Tower, is described in the "Calculation of Potential to Emit" table as having biomass moisture and enclosure as control mechanisms, and as having an efficiency of 85%. Table 2-5 lists the "Transfer tower ventilation fan" as having an Emission Point." A ventilation fan would be expected to work in conjunction with a bin vent filter, which would have an efficiency similar to others, near 99%. Please clarify."

Response 3:

Emissions from the transfer tower will result from an exhaust fan located on top of the tower (EP-09). There is no bin-vent filter on the transfer tower, just an exhaust fan (see **Attachment 3, Figure EM-1** for illustration). The primary emission control associated with this EP is from an enclosed transfer tower and residual moisture from the fog control system; thus, for determining a potential to emit from this source a control efficiency was assumed at 85%.

Comment 4:

"A similar issue exists with Emission Point 12, the Chain Conveyors/Surge Bins. The surge bins are listed in the "Calculation of Potential to Emit" table as being controlled by biomass moisture and enclosure. Table 2-5 lists an Emission Point called "Surge bin vent filter exhaust," which seems to indicate a different control method. This may also affect the control efficiency. Please clarify."

Response 4:

An inadvertent error was made on the "Calculation of Potential to Emit." Emissions from each of the four surge bins and the chain conveyor that feeds the surge bins will be ventilated through one bin vent filter in the boiler building. A revised "Calculation of Potential to Emit" (see **Attachment 1**) has been revised to reflect a 99.9% control efficiency from this emission point.

Comment 5:

"The lower third of Table 2-5 is the Fugitive Sources. The first two entries in this section refer to the storage and handling of logs. The ecoPower facility has been described elsewhere in the application as burning wood waste, storm debris, and lumbering waste, but never as burning logs. There are widespread concerns regarding the potential for biomass energy sources to contribute to deforestation. Please clarify."

Response 5:

Any reference in this air permit application to wood, roundwood, low quality wood fiber or logs refers to the following:

- Hardwood wood industry byproducts such as shavings, saw dust, bark and similar materials that do not contain preservatives, resins, or other additives.



- Low quality hardwood logs and hardwood blocks that are trimmed in the production of sawlogs.
- Hardwood tree stems removed during pre-commercial thinning operations.
- Storm and fire damaged hardwood trees and tree parts.
- Low quality hardwood logs and hardwood wood chips produced during right-of-way operations and during urban forestry operations.
- Unrecyclable hardwood pallets and dunnage.

American Forest Management, Inc. (AFM), a nationally recognized expert in the assessment of wood resources, has prepared an independent assessment of the availability of low quality trees (trees that will not yield grade lumber if sawn) that could be used as fuel for the ecoPower plant within a 55 mile driving radius. The report indicates that the standing low grade tree resource in the subject area is 67.7 million green tons, annually the low grade tree resource is adding 1.01 million green tons and current annual removals of the low grade resource is 0.61 million green tons, resulting in an annual net increase of over 0.4 million green tons. Should the ecoPower project use only low grade resources already being removed, it would use less than 0.4 million green tons of low grade logs annually.

ecoPower also plans to leverage existing wood supplies (see explanation above) from its sister company, Pine Mountain Lumber and will use existing relationships with large landowners, timber harvesting and wood manufacturing suppliers to procure low-cost sources of mill byproducts and roundwood (see explanation above).

In addition to traditional sources of low quality wood fiber that are available in the area, ecoPower can use non-traditional sources of "opportunity wood" that become available through sources such as the Asplundh Tree Expert Company.

ecoPower support sustainable forestry practices. ecoPower is taking its power plant to the resource. Its location is in an area that has a significant supply but lacks a significant demand for low quality wood fiber (note explanation above). The ecoPower project will use resources that are currently being discarded or transported out of the central eastern Kentucky, help strengthen the local tax base, create local jobs and provide a clean source of power.

Comment 6:

"On the 'Calculation of Potential to Emit' table there are three conveyors, Emission Points 10, 11, and 12, which are not listed on Table 2-5, although the surge bins, which are considered part of the same emission point as the chain conveyor, emission point 12, are listed on table 2-5. Please clarify."

Response 6:

Table 2-5 and Table 4-6 have been revised to clarify the corresponding emission points contained on the "Calculations of Potential to Emit" (see **Attachments 1 and 2**). In addition, an inadvertent error was made on the "Calculations of Potential to Emit". EP-10 (Tripper Conveyor) is actually a transfer point, not an emission point (see **Attachment 2**, revised Table



Smith
Management
Group

An inadvertent error was made on the "Calculations of Potential to Emit". EP-10 (Tripper Conveyor) is actually a transfer point, not an emission point (see **Attachment 2**, revised Table 4-5 for a description); thus, this was removed from the "Calculations of Potential to Emit" spreadsheet as an emission point (see **Attachment 1**).

Comment 7:

"The surge bins are listed as plural in the "Calculation of Potential to Emit" table, and singular in the second table. Please clarify how many surge bins there are."

Response 7:

There will be four surge bins in the boiler building. These four surge bins will feed four chain conveyors that will supply woody biomass to the boiler (see **Attachment 3, Figure EM-1** for illustration).

Comment 8:

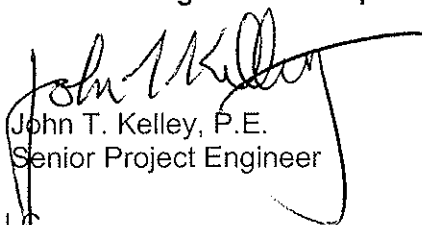
"The "Calculation of Potential to Emit" table lists Emission Points 06 and 07 as the oversize reclaim hopper and truck dump, respectively. The same units are not listed on Table 2-5, although they do seem to be referred to in Table 4-5. Table 4-5 also lists the maximum capacities of each unit, which are not often the same numbers that appear in the "Calculation of Potential to Emit" table; for example, the oversize hopper has 250 tons/hr in the "Calculation of Potential to Emit," table and 120 tons/hr in Table 4-5. Please clarify."

Response 8:

Tables 2-5, 4-6, 4-7, 4-8, and 4-9 have been revised to clarify the corresponding emission points and rated equipment capacity to correspond with the values contained on the "Calculation of Potential to Emit" (see **Attachments 1 and 2**). Note: The truck dump will be comprised of two tippers with a rated capacity of 125 tons per hour each. For ease on the "Calculations of Potential to Emit" spreadsheet, these values were totaled to 250 tons per hour.

If you have any questions or require any additional information please feel free to contact me at (859) 231-8936, Extension 102.

Respectfully,
Smith Management Group


John T. Kelley, P.E.
Senior Project Engineer

cc: Gary Crawford, ecoPower Generation, LLC
Ken Snell, Sargent & Lundy



ATTACHMENT 1

ecoPower Generation, LLC
REVISED - FEBRUARY 2010

Calculations of Potential to Emit - Wood Yard Storage and Handling Emission Points
Calculations of Potential to Emit - Fly Ash Silo, Bed Ash Silo, and Sand Storage Bin Emission Points

Emission Point #	Emission Point	Production Rate (tons/hr)	Pollutant	Emission Factor (lb/ton)	Uncontrolled Emissions		Control Efficiency (%)	Controlled Emissions	
					Emission Rate (lb/hr)	Emission Rate (ton/yr)		Emission Rate (lb/hr)	Emission Rate (ton/yr)
5	Chipper Building ^{1,2,3} (250 tons per hour) (biomass moisture, enclosed, bin vent, fog mist)	250	PM	0.10	25.00	30.66	99.9	0.02	0.03
			PM 10	0.0473	11.825	14.50	99.9	0.01	0.01
			PM 2.5	0.0473	11.825	14.50	99.9	0.01	0.01
6	Oversize Reclaim Hopper ^{1,2,3,6} (250 tons per hour) (biomass moisture)	250	PM	0.10	25.00	30.66	85	3.75	4.60
			PM 10	0.0473	11.825	14.50	85	1.77	2.18
			PM 2.5	0.0473	11.825	14.50	85	1.77	2.18
7	Truck Dump ^{1,2,4,6} (250 tons per hour) (biomass moisture)	250	PM	0.00129	0.32	0.40	85	0.05	0.06
			PM 10	0.00129	0.3225	0.40	85	0.05	0.06
			PM 2.5	0.00129	0.3225	0.40	85	0.05	0.06
8	Wood Hog Building ^{1,2,3,7} (250 tons per hour) (biomass moisture, enclosed, bin vent, fog mist)	250	PM	0.10	25.00	30.66	99.9	0.025	0.03
			PM 10	0.0473	11.83	14.50	99.9	0.012	0.01
			PM 2.5	0.0473	11.83	14.50	99.9	0.012	0.01
9	Transfer Tower ^{1,2,3,6} (250 tons per hour) (biomass moisture, enclosed)	250	PM	0.10	25.00	30.66	85	3.750	4.60
			PM 10	0.0473	11.83	14.50	85	1.774	2.18
			PM 2.5	0.0473	11.83	14.50	85	1.774	2.18
11	Reclaim Conveyor ^{1,3,6} (70 tons per hour) (biomass moisture, enclosed)	70	PM	0.10	7.00	30.66	85	1.050	4.60
			PM 10	0.0473	3.31	14.50	85	0.497	2.18
			PM 2.5	0.0473	3.31	14.50	85	0.497	2.18
12	Chain Conveyor/Surge Bins ^{1,3,6} (70 tons per hour) (biomass moisture, enclosed)	70	PM	0.10	7.00	30.66	99.9	0.007	0.03
			PM 10	0.0473	3.31	14.50	99.9	0.003	0.01
			PM 2.5	0.0473	3.31	14.50	99.9	0.003	0.01
13	Fly Ash Silo ^{1,5,7} (1 ton per hour) (bin vent, enclosed)	1.0	PM	110	110.00	481.80	99.9	0.11	0.48
			PM 10	110	110.00	481.80	99.9	0.11	0.48
			PM 2.5	110	110.00	481.80	99.9	0.11	0.48
14	Bed Ash Silo ^{1,5,7} (1 ton per hour) (bin vent, enclosed)	1.0	PM	110	110.00	481.80	99.9	0.11	0.48
			PM 10	110	110.00	481.80	99.9	0.11	0.48
			PM 2.5	110	110.00	481.80	99.9	0.11	0.48
15	Sand Storage Bin ^{1,5,7} (1.0 tons per hour) (bin vent)	1.0	PM	110	110.00	481.80	99.9	0.11	0.48
			PM 10	110	110.00	481.80	99.9	0.11	0.48
			PM 2.5	110	110.00	481.80	99.9	0.11	0.48
							Total PM	8.99	15.39
							Total PM ₁₀	4.45	8.07
							Total PM _{2.5}	4.45	8.07

NOTES:

- 1 Production data obtained from Air Permit Application Technical Support Document, Figure 4, Fuel Handling System Flow Diagram.
- 2 The reclaim conveyor would act as a bottleneck at the facility, and limit the operation of emission points (EP) 5-10; thus, the maximum hours of operation assumed for EP 5-10 was 2,453 hours per year.
- 3 Emission factor for PM and PM10 taken from KYDAQ SOB dated June 17, 2008, for Kingsford Manufacturing Company in Burnside, KY. The facility operates wood handling operations similar to the proposed ecoPower facility. Note: No emission factor provided for PM2.5.
- 4 Emission factor for PM and PM10 taken from KYDAQ KYEIS Detailed Plant Information summary for Kingsford Manufacturing Company in Burnside, KY. The facility operates a truck dump with similar materials as the proposed plant. Kingsford has a sawdust truck dump. Note: No emission factor provided for PM2.5.
- 5 PM emission rate for the fly ash silo, bed ash silo, and sand storage bin based on AP-42, Chapter 11.8, "Clay and Fly Ash Sintering," Table 11.8-2. Note: No data provided for PM10 and PM 2.5.
- 6 Assumed a 85% control efficiency for material handling operations due to moisture in wood, enclosures, and use of wet suppression.
- 7 Control efficiencies for PM and PM10 from engineering judgment based on common bin vent control efficiency.

ATTACHMENT 2

Table 2-5 – eGF Emission Points

Emission Unit Description ⁽¹⁾	Emission Point ID
Combustion Sources	
eGF Main Boiler, 672 mmBtu/hr	EP-01
eGF Auxiliary Boiler, 92 mmBtu/hr	EP-02
eGF Emergency Generator, 14.9 mmBtu/hr	EP-03
eGF Diesel Fire-Water Pump, 3.24 mmBtu/hr	EP-04
Material Handling – Emission Points (EP)	
Log chipper building exhaust fan	EP-05
Oversize Reclaim Hopper emissions	EP-06
Truck Tripper emissions	EP-07
Wood hog building exhaust fan	EP-08
Transfer tower exhaust fan	EP-09
Biomass reclaim tunnel exhaust fan	EP-11
Chain Conveyor/Surge Bins vent filter exhaust	EP-12
Fly ash storage silo bin-vent filter	EP-13
Bed ash storage silo bin-vent filter	EP-14
Sand storage bin-vent filter	EP-15
Material Handling – Fugitive (F) Sources	
Wind Erosion from the Wood Chip storage pile	F-01
Wind Erosion from the Saw Dust storage pile	F-02
Wind Erosion from the Bark storage pile	F-03
Fugitive dust emissions from haul roads	F-04
Wind Erosion from round wood storage	F-05
Fugitive dust from ground equipment manipulation of fuel	F-06

(1) Emission point designations have been assigned to match designations in the air construction permit application.

(2) Emission point EP-10 (Tripper Conveyor Emissions) has been removed from the list of emission points. Emissions associated with the tripper conveyor are accounted for in F-01, F-02, and F-03.

Table 4-5 – Biomass Handling System: Transfer Point Descriptions

Transfer Point Designation*	Transfer Point Description	Short-Term Maximum Capacity		Emission Controls	Associated Emission Point Designation*
		Value	Unit		
TP-01	Round wood and pulp wood receiving	70	Tons/hr	biomass moisture	F-05
TP-02	Round wood and pulp wood manipulation and transfer to chipper feeder	70	Tons/hr	biomass moisture	F-06
TP-03	Round wood and pulp wood transfer from chipper feeder to chipper	250	Tons/hr	enclosed fog type dust control system	EP-05
TP-04	Transfer from chipper to biomass receiving conveyor	250	Tons/hr	enclosed fog type dust control system	EP-05
TP-05	Oversize Hopper loading	250	Tons/hr	biomass moisture	EP-06
TP-06	Transfer from oversize hopper to biomass receiving conveyor	250	Tons/hr	enclosed biomass moisture	EP-06
TP-07 / TP-08	Truck unloading tippers	125 ea	Tons/hr	biomass moisture	EP-07
TP-09 / TP-10	Transfer from truck hopper to biomass receiving conveyor	125 ea	Tons/hr	enclosed biomass moisture	EP-07
TP-11	Transfer from biomass receiving conveyor to disk screen in the Wood Hog Building	250	Tons/hr	enclosed fog type dust control system	EP-08
TP-12	Transfer from disk screen to wood hog in the Wood Hog Building	250	Tons/hr	enclosed fog type dust control system	EP-08
TP-13	Transfer from disk screen to transfer conveyor in the Wood Hog Building	250	Tons/hr	enclosed fog type dust control system	EP-08
TP-14	Transfer from wood hog to transfer conveyor in the Wood Hog Building	250	Tons/hr	enclosed fog type dust control system	EP-08

* Transfer points and emissions points summarized in this table are shown in Figure 8 (Drawing EM-1).

Table 4-5 continued:

Transfer Point Designation*	Transfer Point Description	Short-Term Maximum Capacity		Emission Controls	Associated Emission Point Designation*
		Value	Unit		
TP-15	Transfer from transfer conveyor to storage shed tripper conveyor in the Transfer Tower	250	Tons/hr	enclosed biomass moisture	EP-09
TP-16	Transfer from storage shed tripper conveyor to storage piles	250	Tons/hr	enclosed biomass moisture	F-01, F-02, F-03
TP-17 / TP-18 TP-19 / TP-20	Transfers from storage piles to reclaim conveyor	70 ea	Tons/hr	enclosed biomass moisture	F-01, F-02, F-03
TP-21 / TP-22	Transfer from storage pile reclaim conveyors to reclaim conveyor	70 ea	Tons/hr	enclosed biomass moisture	EP-11
TP-23	Transfer from reclaim conveyor to chain conveyor within Boiler Building	70	Tons/hr	enclosed biomass moisture	EP-12
TP-24	Transfers from chain conveyor to surge bins (4) within Boiler Building	70	Tons/hr	enclosed biomass moisture	EP-12
TP-25 / TP-26 TP-27 / TP-28	Transfers from surge bins to boiler feed chain conveyor within Boiler Building	70	Tons/hr	enclosed biomass moisture	EP-12
TP-29 / TP-30 TP-31 / TP-32	Transfers from boiler feed chain conveyors to boiler within Boiler Building	70	Tons/hr	enclosed biomass moisture	EP-12

* Transfer points and emissions points summarized in this table are shown in Figure 8 (Drawing EM-1).

Table 4-6 — Biomass Handling System: Fugitive Dust and Emission Point Data

Emission Point ID No*	Emission Point Description	Short-Term Maximum Capacity		Emission Controls
		Value	Unit	
F-05	Fugitives from Wind Erosion associated with round wood storage	20 ft high pile	---	biomass moisture
F-06	Fugitives from ground equipment manipulation of fuel	---	---	biomass moisture
EP-06	Emissions from transfer operations at the Oversize Hopper	250	Tons/hr	biomass moisture
EP-07	Emissions from the truck tipper operations (Tipper A)	125	Tons/hr	biomass moisture
EP-07	Emissions from the truck tipper operations (Tipper B)	125	Tons/hr	biomass moisture
F-01	Fugitives from Wind Erosion at Wood Chip storage pile	50 ft high pile	---	storage pile is located within an open ended storage shed
F-02	Fugitives from Wind Erosion at Bark storage pile	50 ft high pile	---	storage pile is located within an open ended storage shed
F-03	Fugitives from Wind Erosion at Saw Dust storage pile	50 ft high pile	---	storage pile is located within an open ended storage shed
EP-05	Emissions from Log Chipper Building exhaust fan	1,000	CFM	fog type dust control system
EP-08	Emissions from Wood Hog Building exhaust fan	1,600	CFM	fog type dust control system
EP-09	Emissions from Transfer Tower exhaust fan	1,500	CFM	enclosed transfer point and residual moisture from fog control
EP-11	Emissions from Biomass Active Storage reclaim tunnel exhaust fan	9,000	CFM	enclosed transfer points and residual moisture
EP-12	Emissions from chain conveyor/ surge bins vent filter exhaust	1,500	CFM	bin vent filter

* Emission points and the emission point ID numbers summarized in this table are shown in Figure 8 (Drawing EM-1).

Table 4-7 — Fly Ash Handling System: Transfer Point Descriptions and Emission Point Data

Transfer Point and Emission Point Designations*	Transfer Point / Emission Point Description	Short-Term Maximum Capacity		Emission Controls	Associated Emission Point Designation*
		Value	Unit		
TP-33 / TP-34	Baghouse drag chain collecting conveyor to drag chain transfer conveyor	1	Tons/hr	enclosed and exhausted through bin vent filter	EP-13
TP-35	Transfer from drag chain conveyor to fly ash storage silo	1	Tons/hr	enclosed and exhausted through bin vent filter	EP-13
TP-36	Storage silo to truck via dry loadout spout	200	Tons/hr	vented back to storage silo	NA - vented back to storage silo
TP-37	Storage silo to truck via pin mixer	200	Tons/hr	fly ash is mixed with water to approximately 20% moisture	EP-13
EP-13	Emissions from fly ash storage silo bin-vent filter	2,000	CFM	bin vent filter	Emission Point

* Transfer points and emission points summarized in this table are shown in Figure 9 (Drawing EM-2).

Table 4-8 — Sand Handling System: Transfer Point Descriptions and Emission Point Data

Transfer Point and Emission Point Designations*	Transfer Point / Emission Point Description	Short-Term Maximum Capacity		Emission Controls	Associated Emission Point Designation*
		Value	Unit		
TP-46	Self unloading truck to storage bin	25	Tons/hr	exhausted through bin vent filter	EP-15
EP-15	Emissions from sand storage bin-vent filter	2,000	CFM	bin vent filter	Emission Point

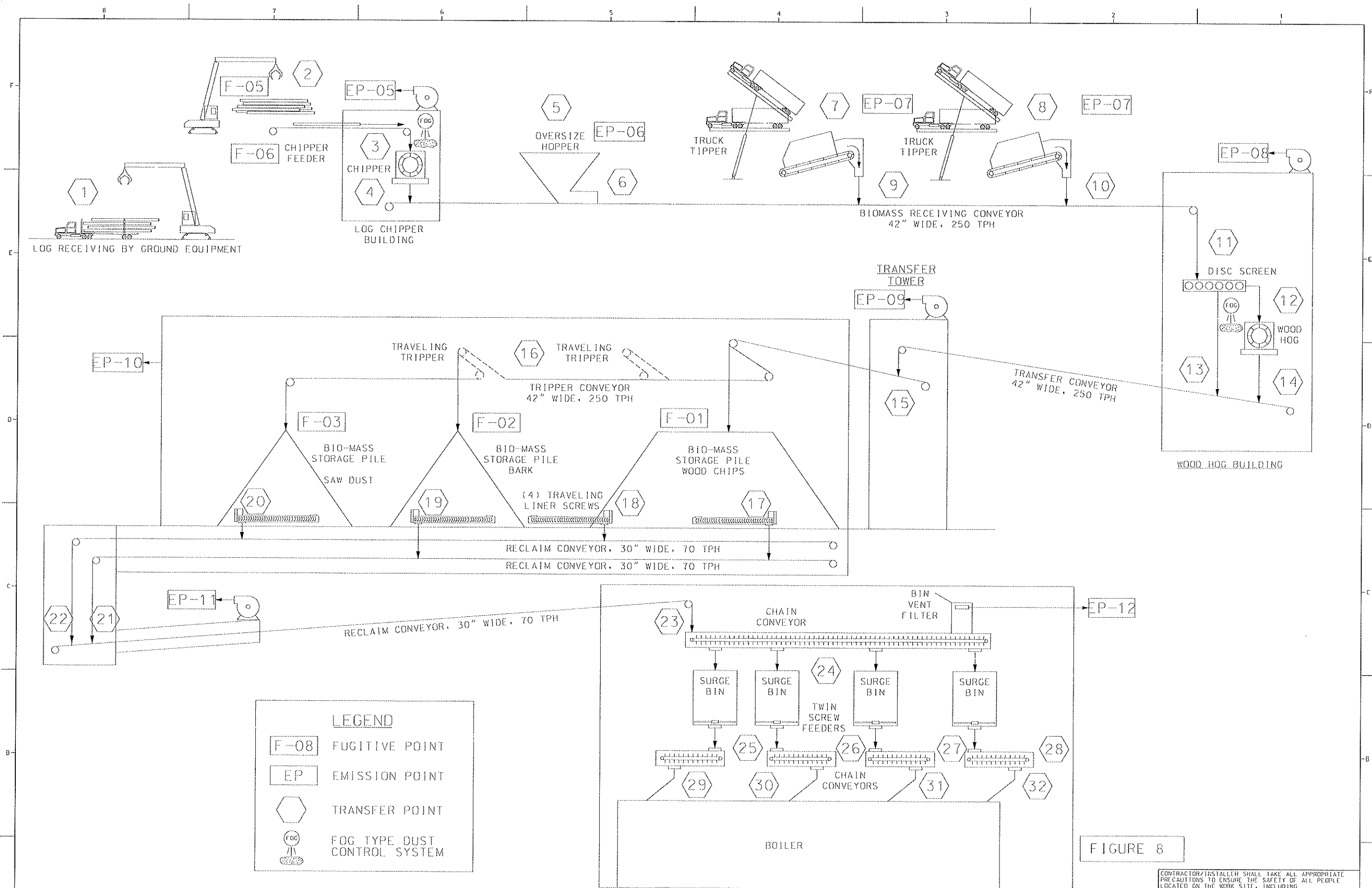
* Transfer points and emission points summarized in this table are shown in Figure 11 (Drawing EM-4).

Table 4-9 — Bed Ash Handling System: Transfer Point Descriptions and Emission Point Data

Transfer Point and Emission Point Designations*	Transfer Point / Emission Point Description	Short-Term Maximum Capacity		Emission Controls	Associated Emission Point Designation*
		Value	Unit		
TP-38 / TP-39	Boiler ash cooler to drag chain conveyors	1	Tons/hr	enclosed and exhausted through bin vent filter	EP-14
TP-40 / TP-41	Drag chain conveyors to drag chain transfer conveyors	1	Tons/hr	enclosed and exhausted through bin vent filter	EP-14
TP-42 / TP-43	Drag chain conveyors to bed ash storage silo	1	Tons/hr	enclosed and exhausted through bin vent filter	EP-14
TP-44	Bed ash storage silo to truck via dry loadout spout	200	Tons/hr	vented back to storage silo	NA – vented back to storage silo
TP-45	Bed ash storage silo to truck via pin mixer	200	Tons/hr	bottom ash is mixed with water to approximately 20% moisture	EP-14
EP-14	Emissions from bed ash storage silo bin-vent filter	2,000	CFM	bin vent filter	Emission Point

* Transfer points and emission points summarized in this table are shown in Figure 10 (Drawing EM-3).

ATTACHMENT 3



CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL FOR THAT OF ITS SUBCONTRACTOR(S) PERFORMING THE WORK.

DRAWING RELEASE RECORD						DRAWING RELEASE RECORD						SCALE	PROJECT NUMBER	DRAWING NO.	REV.
REV.	DATE	REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE	REV.	DATE	REL'D.	PREPARED	REVIEWED	APPROVED			
							0	10-09-2009	D. LODGEWYCK	S. MADAN			NONE		
							1	1-25-2010	D. LODGEWYCK	S. MADAN			12616-002	EM-1	0

FILENAME: ECO-EM-1.DGN

FUEL HANDLING SYSTEM EMISSIONS DIAGRAM

50 MW UNIT

ecoPower

Sargent & Lundy

17/2/2010 1:11:12 PM

For reasons of Homeland Security, this document is not available on-line:

Case Number: 2009-00530

*Description of Document: Exhibit K, Air Permit, Attachment 3, Figure 12,
Site Emissions Point Locations, 42" x 30"*

Persons requiring access to this document may contact the Public Service Commission in person or in writing at:

Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602
Attn: GIS Coordinator
Phone (502) 564-3940

Written requests must include a signature, name, title of organization (if applicable), mailing address, phone number and optional e-mail address and the following statement: *I understand that since September 11, 2001, location data of critical utility structures is considered sensitive information for security reasons. I will not publish this map or any part of it on the World Wide Web. I will not redistribute this map to others, but shall refer requests by others for such information to the Kentucky Public Service Commission.*

Maps will be sent as pdf files by e-mail or on CD at no cost to the party. If printed "oversized" maps are requested, there will be a charge of \$8 per sheet.

Maps will be available for viewing at the Public Service Commission and at any public hearing.