

ALTERNATIVES ANALYSIS

I. INTRODUCTION

The purpose of the proposed P Ridge South Pit Mine Amendment No. 1 is to recover coal from properties owned and/or leased by Western Kentucky Minerals, Inc. and sell this resource to local and regional utilities. The proposed action is needed to meet the energy demands of the United States, as well as to stimulate the local economy. Western Kentucky Minerals must do this in a manner that returns a reasonable profit on investments in land and mineral rights, site development, infrastructure, and equipment while being environmentally responsible and complying with regulatory requirements. Clean Water Act Section 404(b)(1) requires that all reasonable alternatives be considered for projects that impact Jurisdictional Waters of the United States. As discussed in federal guidelines established for this regulation (45 FR 85344), an alternative is considered practicable if it may be implemented considering environmental impact, cost, existing technology, and logistics as they relate to the project's purpose. An alternative is considered reasonable if it is practicable and feasible from a common sense technical or economic standpoint. The applicant first considered all alternatives, then eliminated those deemed non-practicable. Reasonable alternatives were then selected from the remaining practicable alternatives; the Preferred Alternate was then chosen from the practicable alternatives once baseline data for potential jurisdictional waters had been collected and reviewed. This document will demonstrate there are no practical offsite options for mine site development, the selected mining method is the only one practicable for the proposed mine site, and that the preferred mine configuration is the most reasonable choice.

II. NON-PRACTICABLE ALTERNATIVES

A. OFF-SITE

Alternate Sites

Use of alternate mine sites was eliminated for several reasons, most significantly relating to available coal reserves, economics, public safety, and environmental impact. Underlying geology is the primary driver for mine site selection, and a limited pool of potential sites exists. Exploratory geological core sampling of potential sites near the proposed mine area and in

adjacent counties revealed low extraction ratios and substandard coal quality. Of the sites that passed minimum geological requirements, those other than the proposed P Ridge North Pit site were unavailable due to a lack of interest in leasing mineral and surface rights by landowners, or were leased by competing companies. Additionally, most sites were significantly farther from existing WKM clients: Owensboro Municipal Utilities (10 miles from Pleasant Ridge), Kentucky Utilities Power plant (35 miles away, with loading dock just 12 miles away). The proposed P Ridge South amendment site also is immediately adjacent to KDNR Permit 892-0116, and can use its existing infrastructure and transportation plan. Development of this site also would contain impacts to a single HUC-14 watershed, rather than spreading it among several. Use of alternate sites would potentially expose the public to more heavy truck traffic on public roads and potentially more emissions of fugitive dust and exhaust gases. Finally, with the similar topography and environmental conditions of the region, alternate site development likely would have similar, if not greater, impact to jurisdictional waters than the proposed site. Considering the above factors, alternate mine site development was rejected as a non-practicable alternate.

B. ON-SITE

Alternate Mining Methods

Mining method decisions were based on geologic conditions, economic feasibility, miner safety, public safety, and potential ecological impact. Three coal seams exist in the proposed mine area, the upper seam is 24" to 36" in thickness, middle seam is 12" to 15" and the bottom seam is 28" to 40"; seams are overlain by layers of friable shale of varying thickness.

When considering underground mining, these layers provide inadequate overburden cover (less than 120 feet) for competent mine roofs, potentially leading to mine adit collapse and surface subsidence. In addition to miner safety, subsidence likely would have deleterious effects on streams and wetlands above the mine area; dewatering or significant disturbance of local hydrology could be seen as water left jurisdictional waters through fractures in the overburden and entered mine voids below. Finally, seam thickness generally needs to average 42' for underground mining to be economically feasible. Underground mining was therefore rejected as an non-practicable alternate.

Auger-highwall mining was considered but eliminated due to potential impacts to adjacent landowners and resulting economic concerns. To prevent surface subsidence, auger holes

would have to be placed such that coal recovery could only be 50%, approximately half the recovery provided by surface mining. Additionally, the amount of surface disturbance required to use this method is equivalent to that of surface mining in low-relief areas.

No-Action Alternative

The no-action alternative for the project was found to be unacceptable as it would not allow Western Kentucky Minerals to recover coal at the P Ridge South Pit, Amendment No. 1, mine site and deliver it to the marketplace. Given the projected return from coal sales over the mine's three year lifespan and the capital investment in obtaining property and mineral rights for the area, not allowing development of the mine would place an unreasonable financial burden on the company. The local economy also would be adversely impacted by the loss of coal production. The project would create five high-paying positions at the site, and extend employment for ten more. Fourteen positions at the existing barge loading facility, five trucker positions for transport, and three employees at the test laboratory are dependant on continued operation of the Pleasant Ridge mine complex. The average wage of the mine (\$60,000 per year) nearly doubles the median personal income in the county, and is 25% higher than the median household income. A total estimated \$3.3 million in coal severance taxes, as well as an annual average of \$30,000 in income taxes and \$55,000 in property taxes would be lost to county, state, and federal collections over the life of the mine if the applicant did not develop the site. A final consideration is the existence of contracts with several energy partners. Owensboro Municipal Utilities, Kentucky Utilities are expecting deliveries of coal from the mine. In addition to loss of revenue to Western Kentucky Minerals, electric power customers potentially face an increase in rates if these providers must find alternate sources of coal.

III. REASONABLE ALTERNATIVES CONSIDERED

Mine Configuration 1

The mining method proposed for the P Ridge South Pit Amendment No.1 site has been in use in Daviess County for over thirty years, and is employed at the adjacent P Ridge South Pit. An alternative to the conventional variable cut area surface mining method, it will consist of developing a series of open pits approximately sequentially in the project area being mined. Prior to disturbing individual watersheds to be mined, sediment control structures and diversion ditches are constructed to control all surface water runoff from the area to be affected. A box

cut open pit is initially excavated to allow mining equipment access to the coal to be recovered. Overburden material from subsequent open pits is placed directly into the previously developed adjacent open pit by cast blasting, dozing or hauling with mobile equipment, and direct casting with a dragline. The pits advance through the permitted project area until all recoverable coal has been uncovered and recovered. The strip mining of as many as five different coal seams can be accomplished in one pit, with different seams blended to meet contract specifications; this gives the applicant the ability to adjust coal quality to suit the needs of different facilities. Mining will begin in an area where the top seam of coal is 12' deep, and follow the seam's dip through the permit area. As mining progresses, the overburden material placed in open pits where coal has been removed is graded to approximate original pre-mining contour by dozers and other units of mobile equipment. As mining begins at the site, employees and equipment will be moved to the South Pit and production will increase as needed. Once final reclamation grade is established, topsoil is distributed over the area and liming, fertilizing, seeding, and mulching activities are completed. Once vegetation cover is established to stabilize the individual reclaimed watersheds, final stream channels, hydraulic structures, and riparian zones are established.

Surface mining activities will begin at the southwestern point of the permit area and proceed northeast (See Exhibit 2). Mining is expected to begin in 2014 and continue until 2017.

Impacts: Mining utilizing Configuration 1 would impact 133 acres of land surface. Within this area, approximately 12 stream reaches would be impacted, totaling nearly 9,200 linear feet. Four wetlands of Cowardin PFO and PEM classifications would be directly impacted, totaling 0.769 acres. Please refer to Tables 1 and 2 for more detailed information.

Table 1. Approximate Impacts to Streams from Mine Configuration 1

Stream Type	Number Affected	Length Affected (feet)
Ephemeral	10	5,950
Intermittent	2	3,252
Total:		9,202

Table 2. Impacts to Wetlands from Mine Configuration 1

Wetland Type	Number Affected*	Acreage Affected
Forested	2	0.411
Emergent	2	0.358
Total:		0.769

Benefits: Meets project plan and purpose, allowing extraction of 424,000 tons of coal, which will produce approximately 769 million kWh of energy for the regional power grid. Operation of facility will create 5 of high-paying jobs, as well as maintain employment of several others.

Criteria for Exclusion: Significant disturbance of land surface and impacts to aquatic resources.

Mine Configuration 2

For this configuration, the boundary was revised by eliminating the northeastern corner of the project area as well as a small tract in the southwest. A small area along the southeastern boundary was added. This action removed impacts to a transmission power line and large forested tract (See Exhibit 1). The general mining plan is the same as described for Mine Configuration 1, but with a smaller surface mining area (28 acres less, a 21% decrease) (See Exhibit 2). Revision of the boundary in other areas is not practical. Expansion into other areas would increase surface disturbance or overlap areas with no recoverable coal; further reduction of the permit area would reduce the amount of recoverable coal and not meet the project purpose and need. Thus, the current boundary represents the largest available adjacent minable area with the least environmental impact, while remaining economically viable.

Table 3. Impacts to Streams from Mine Configuration 2

Stream Type	Number Affected	Length Affected (feet)
Ephemeral	8	3,252
Intermittent	2	5,149
Total:		8,401

Table 4. Impacts to Wetlands from Mine Configuration 2

Wetland Type	Number Affected	Acreage Affected
Forested	2	0.411
Emergent	2	0.358
Total:		0.769

Benefits: Economic benefits largely the same as Mine Configuration 1, but impacts 21% less area (28 acres less). Slightly less direct stream impact. Meets project plan and purpose, but allows lesser extraction of 350,000 tons of coal. Mine will produce 635 million kWh of energy for the regional power grid.

Criteria for Exclusion: 20% decrease in coal extraction, significant disturbance of streams on-site.

IV. PREFERRED ALTERNATIVE AND CONCLUSION

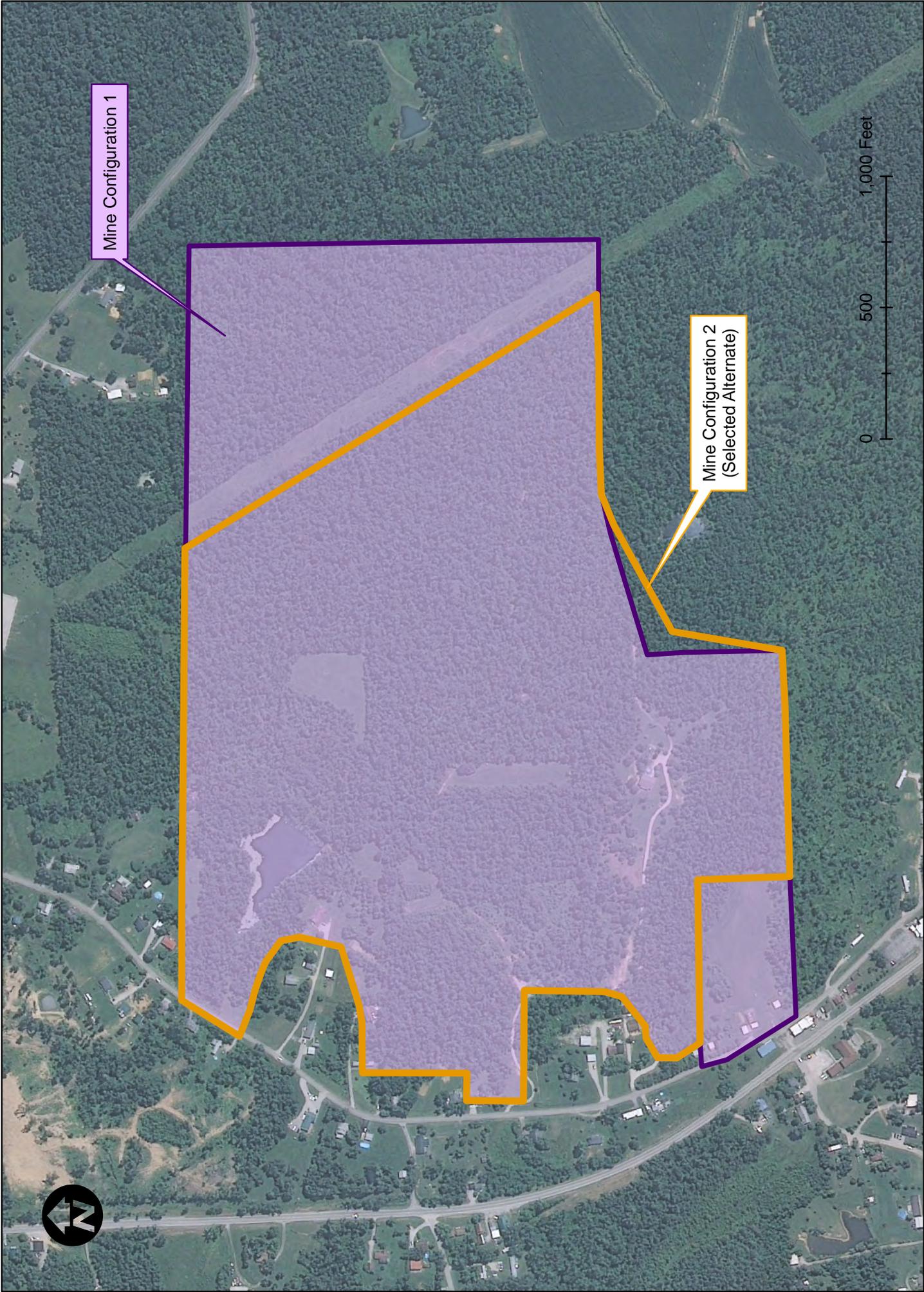
The P Ridge South Pit Amendment No. 1 mine facility Configuration 2 was selected to maximize coal extraction efficiency while minimizing impacts to jurisdictional Waters of the U.S. Underlying geology makes it economically viable to construct the mining facility at the proposed location. In addition to geological advantages, the land and mineral rights were available for purchase, making the proposed site most viable of the locations considered. Impacts were generally similar for alternate facility locations examined, however, the proposed site was most advantageous because it would be adjacent to existing mining operations and utilize the existing infrastructure. Streams that cannot be avoided by direct mining disturbance will potentially receive significant ecological “lift” over existing conditions by reclamation to current regulatory standards and mitigation and restoration efforts within the project’s watershed. Many nearby streams exhibit significant manipulation from previous land uses (*e.g.* agriculture and logging); restored channels will reflect stable, geomorphically correct streams for the proposed post-mining landforms and hydrologic conditions. Wetlands on-site are smaller, geographically (not hydrologically) isolated features, often by-products of human activities (*i.e.* pond construction). A more diverse, cohesive wetland block will be created during the in lieu fee funded mitigation to offset the impacts to wetlands within the permit boundary. This will provide a larger wetland area and will provide higher ecological function and value than what is currently present on-site.

The proposed mine site is able to transport coal in the most environmentally, socially, and economically responsible manner. Public safety will be protected by minimizing heavy vehicle traffic on county roads, thereby limiting automobile encounters with coal trucks. In addition, fugitive dust, noise and exhaust emissions associated with coal truck traffic will be reduced below *de minimis* levels in areas used by the general public. In addition, short-distance use of public roads also avoids the introduction of these potential pollutants to new geographic areas.

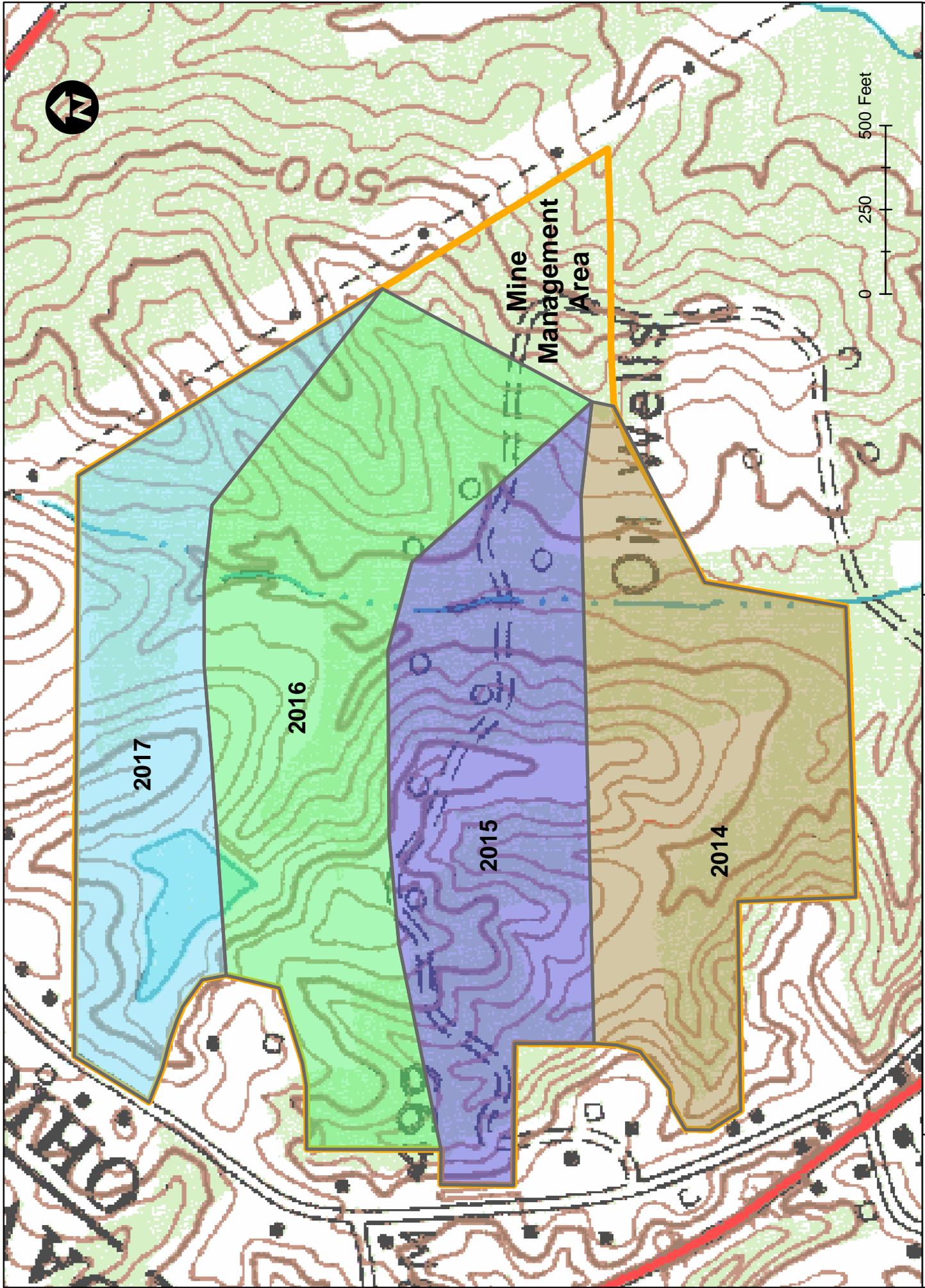
Coal recovery at the P Ridge South Pit Amendment No. 1 mine and its delivery it to the marketplace has significant economic benefits. The local economy would gain high-quality employment for 3 years at the mine site; it is anticipated that around 5 persons will be directly employed with an average salary of \$60,000. The facility will also ensure the continued employment of 10 mining positions at the P Ridge complex, as well as 14 positions at the existing barge loading facility, 5 trucker positions for transport, and 3 employees at the test laboratory. The mine would continue to significantly raise the per capita and household income, and the state and county stand to gain significant coal severance tax revenues over the lifetime of the project. Finally, the applicant has existing contracts with Owensboro Municipal Utilities and Kentucky Utilities; electric power customers potentially face an increase in rates if these providers must find alternate sources of coal.

Nationally, coal represents 21% of the energy supply and is used to produce 50% of our electricity. Approximately 93% of the Kentucky's electricity comes from coal fired plants, and over 50% of the coal comes from western Kentucky. Given a yield of 1,814 kWh per ton for coal, the P Ridge South Pit Mine will produce approximately 635 million kWh of electric power over its lifespan. Thus, the mine will produce enough coal to satisfy approximately 0.7% of Kentucky's annual electricity demand of 97 GWh.

Overall, the proposed facility location and mine Configuration 2 is believed to be the least environmentally invasive option resulting in the most cost-effective recovery of the natural resource. The facility will accomplish this while maximizing public safety and minimizing its environmental footprint.



		PROJECT: Pleasant Ridge South Pit COUNTY: Ohio	
STATE: Kentucky		Comparison of Alternate Mine Boundaries NEAR: Pleasant Ridge	
		EXHIBIT 1	



	PROJECT: Pleasant Ridge South Pit	Preferred Alternate Mining Progression
	COUNTY: Ohio	NEAR: Pleasant Ridge
STATE: Kentucky		EXHIBIT 2