Kentucky Geological Survey

Agreement number: G10AC00465

Project Title: Kentucky Coal Data for the National Coal Resources Data System

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Main objectives of project tasks:
The objectives of this study are to 1) expand the KGS catalog of drill hole data for both the eastern Kentucky (central Appalachian basin) and western Kentucky (Illinois basin) coal fields, 2) compile coal quality information from both in-house sample analyses and from records of industry drill hole data for inclusion in the KGS central database, and 3) digitize Kentucky mine permit boundaries for use in assessing surface mined lands and associated resources.

BASE AGREEMENT

Coal Thickness Database
No new data have been added to the coal thickness database.

Coal Borehole Database
All remaining borehole documents were scanned and added to the KGS website. A total of 9,440 log records have been scanned in the eastern Kentucky coal field, and 5,845 logs have been scanned in the western Kentucky coal field.
The KGS borehole database now contains a total of 17,426 records. Eastern Kentucky has 11,250 holes with 5,829 being publically available. Western Kentucky has 6,176 holes with 4,114 being publically available. Thirty three new holes were added to the eastern Kentucky database this project year.
A major data acquisition was received from Peabody Coal at the end of the year and these logs will be added to the western Kentucky database during year 2.

Stearns Coal Assessment (Task 1)
The Stearns coal zone includes some of the stratigraphically lowest coals in the eastern Kentucky coal field. These resources lie primarily in McCreary County, Kentucky. All drill holes in four 7.5-minute quadrangles were examined in order to correlate beds within the coal zone.

Upper Elkhorn No.2 Assessment
Bed correlations were completed and a new coal thickness map has been prepared for this important eastern Kentucky coal bed. Future work includes digitization of the contour intervals and assessment of remaining coal resources.

Western Kentucky Coal Assessments
Revised coal isopleth maps for the Herrin and Springfield coal beds were prepared this year. These were prepared for publication in the KGS Map and Chart Series:
Kentucky Mine Permits (Task 3)

The Kentucky Division of Mine Reclamation and Enforcement began posting surface mine permit areas to 1:24,000-scale mylar base maps in 1977 and continued the practice until the 1990’s. At that time the original maps were scanned and georeferenced for public access. KGS initiated a program to convert the images to vector format with attribution that included permit numbers that relate to the state regulatory program. The digitization of all permit boundaries was completed in 2011, and the data are being compiled in geodatabase format. Individual quadrangle datasets containing all kinds of permit type were geoprocessed to create three statewide databases—surface mines, fill areas, and haul roads.

Future Goals

1. Add the Peabody Coal holes to the borehole database
2. Complete the publication of the Upper Elkhorn No.2 bed
3. Update mined out areas for all National Coal Assessment beds
4. Complete the permit areas geodatabase, prepare metadata, and publish
5. Collect and analyze coal samples for metallurgical properties

ADD-ON PROJECTS

Petrographic and Geochemical Examination of Pennsylvanian Marine Shale Beds as a Potential Petroleum (Gas, Oil) Resource in the Appalachian and Illinois Basins

A new project was initiated at the end of fiscal 2010-2011. The project involves the characterization of organic matter in Pennsylvanian shale beds of marine origin (at least in part), which occur throughout Pennsylvanian age strata in both the Appalachian and Illinois basins. Some of these beds are thick (> 5 m), laterally extensive, and occur below regional stream drainage level across much of their geographical extent. These beds, though recognized and used extensively as marker beds for correlation, are poorly-understood as a potential petroleum (gas and oil) resource. This study proposes to examine and document the organic composition, both petrographically and geochemically, of these beds in an effort to better evaluate their potential as a petroleum resource.

The project will be carried out by Cortland Eble and Steve Greb. The award amount is $26,730.