



University of Kentucky
UKnowledge

Kentucky Geological Survey Map and Chart

Kentucky Geological Survey

2000

Quality Characteristics of the Lower Elkhorn Coal Bed in Eastern Kentucky

Cortland F. Eble
University of Kentucky, eble@uky.edu

Follow this and additional works at: https://uknowledge.uky.edu/kgs_mc



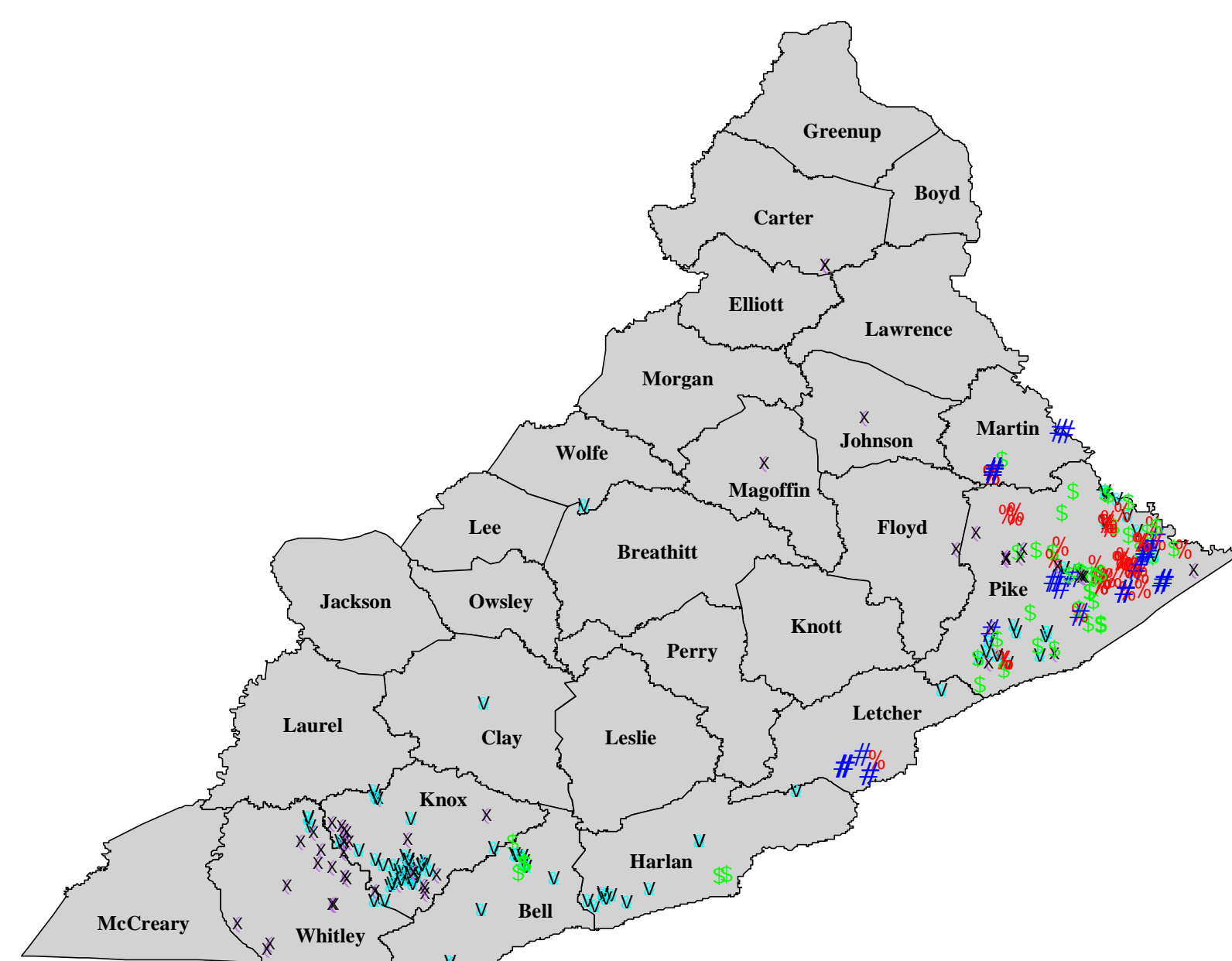
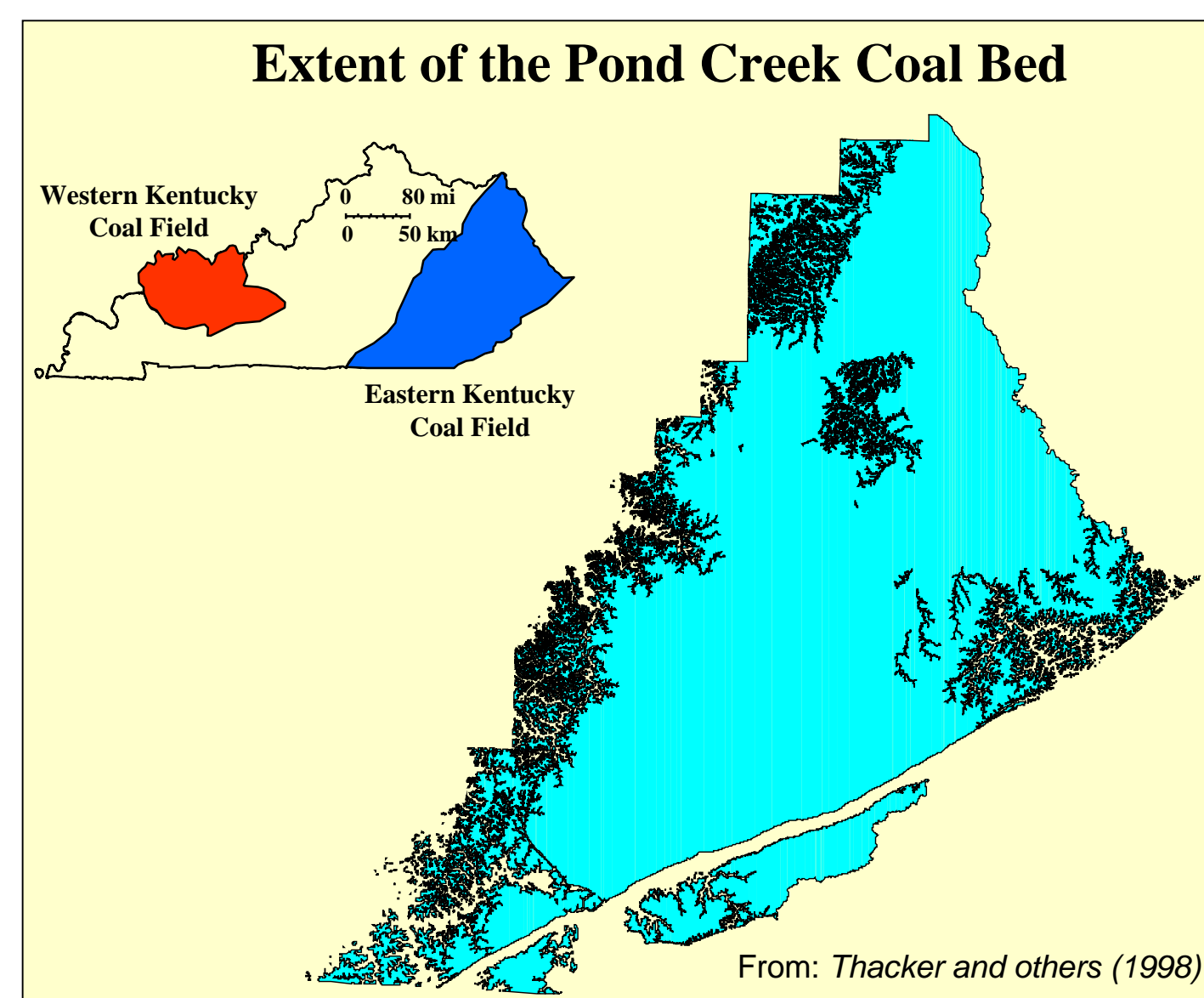
Part of the [Geology Commons](#)

[Right click to open a feedback form in a new tab to let us know how this document benefits you.](#)

Repository Citation

Eble, Cortland F., "Quality Characteristics of the Lower Elkhorn Coal Bed in Eastern Kentucky" (2000).
Kentucky Geological Survey Map and Chart. 4.
https://uknowledge.uky.edu/kgs_mc/4

This Map and Chart is brought to you for free and open access by the Kentucky Geological Survey at UKnowledge. It has been accepted for inclusion in Kentucky Geological Survey Map and Chart by an authorized administrator of UKnowledge. For more information, please contact UKnowledge@lsv.uky.edu.



Quality Characteristics of the Lower Elkhorn Coal Bed in Eastern Kentucky

Cortland F. Eble

Thickness and quality data from the Kentucky Coal Resources Information System (KCRIS) are summarized in this chart for the Lower Elkhorn coal bed (and equivalents). Parameter averages and ranges of values are presented in the two tables, and average values are displayed graphically by county.

The Lower Elkhorn is one of the most heavily mined coal beds in the Eastern Kentucky Coal Field; more than 17,000 tons were mined in 1997, according to the Energy Information Administration. The Lower Elkhorn, which occurs within the Pikeville Formation of the Breathitt Group, is also one of the thickest and most laterally extensive coal beds in eastern Kentucky, averaging 55 inches in thickness where sampled in Pike and Martin Counties (mainly in and adjacent to active mines). In other counties where the Lower Elkhorn is mined, it averages 39 inches in total bed thickness. The Lower Elkhorn coal bed is characteristically low in ash and sulfur (avg. 7.5 percent and 1.2 percent, respectively), which historically has made it an attractive target for both steam and metallurgical applications. The low sulfur content renders it a "compliance coal" in many instances, meaning that when burned, it emits less than 1.2 pounds of sulfur dioxide (SO₂) for every million Btu generated.

The Environmental Protection Agency is currently interested in the amount of mercury and chlorine in coal that is burned by electric utilities. KCRIS data indicate the mercury content of the Lower Elkhorn coal varies between 0.01 and 0.57 parts per million (ppm, whole coal basis). Chlorine contents vary between 100 and 3,700 ppm.

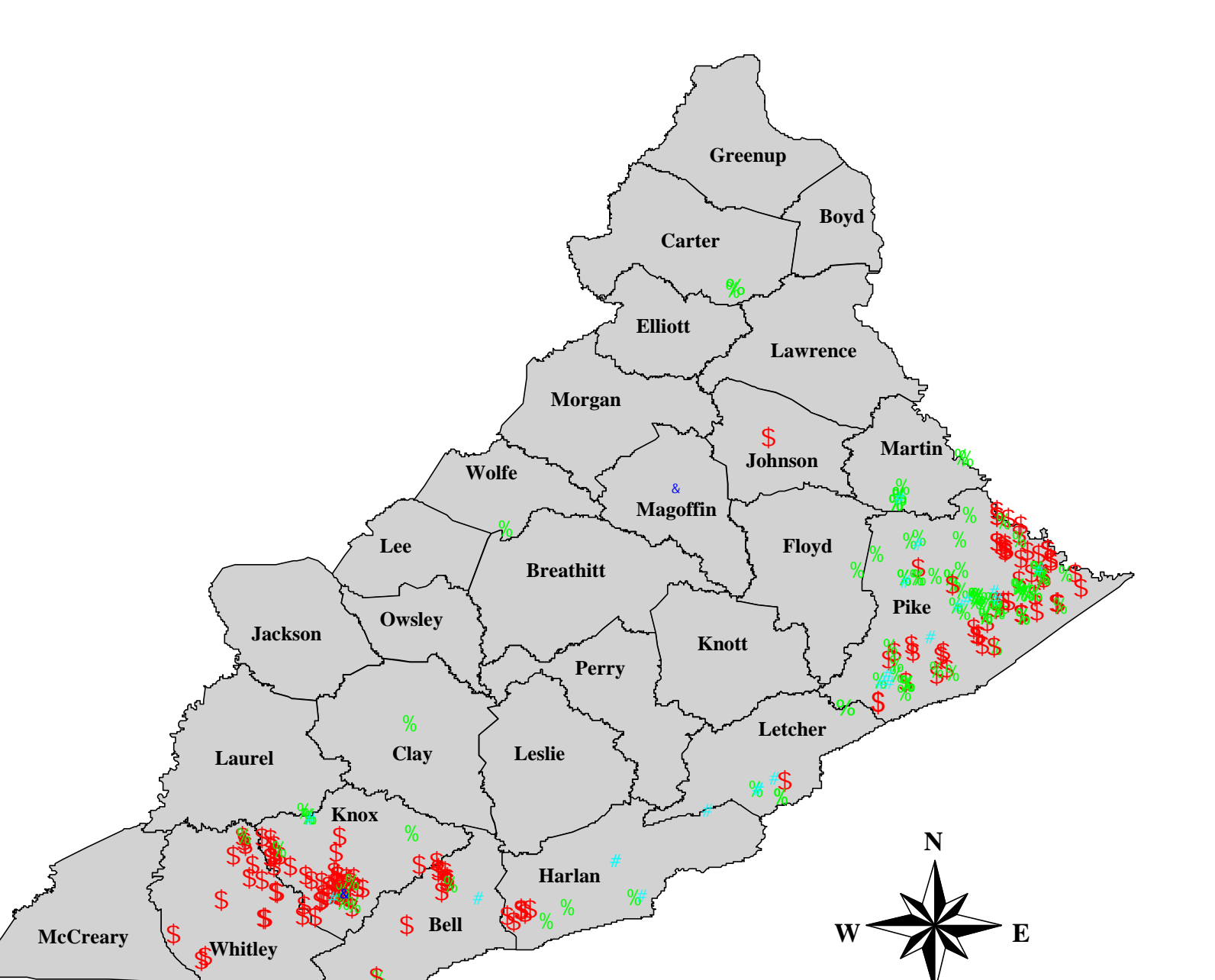
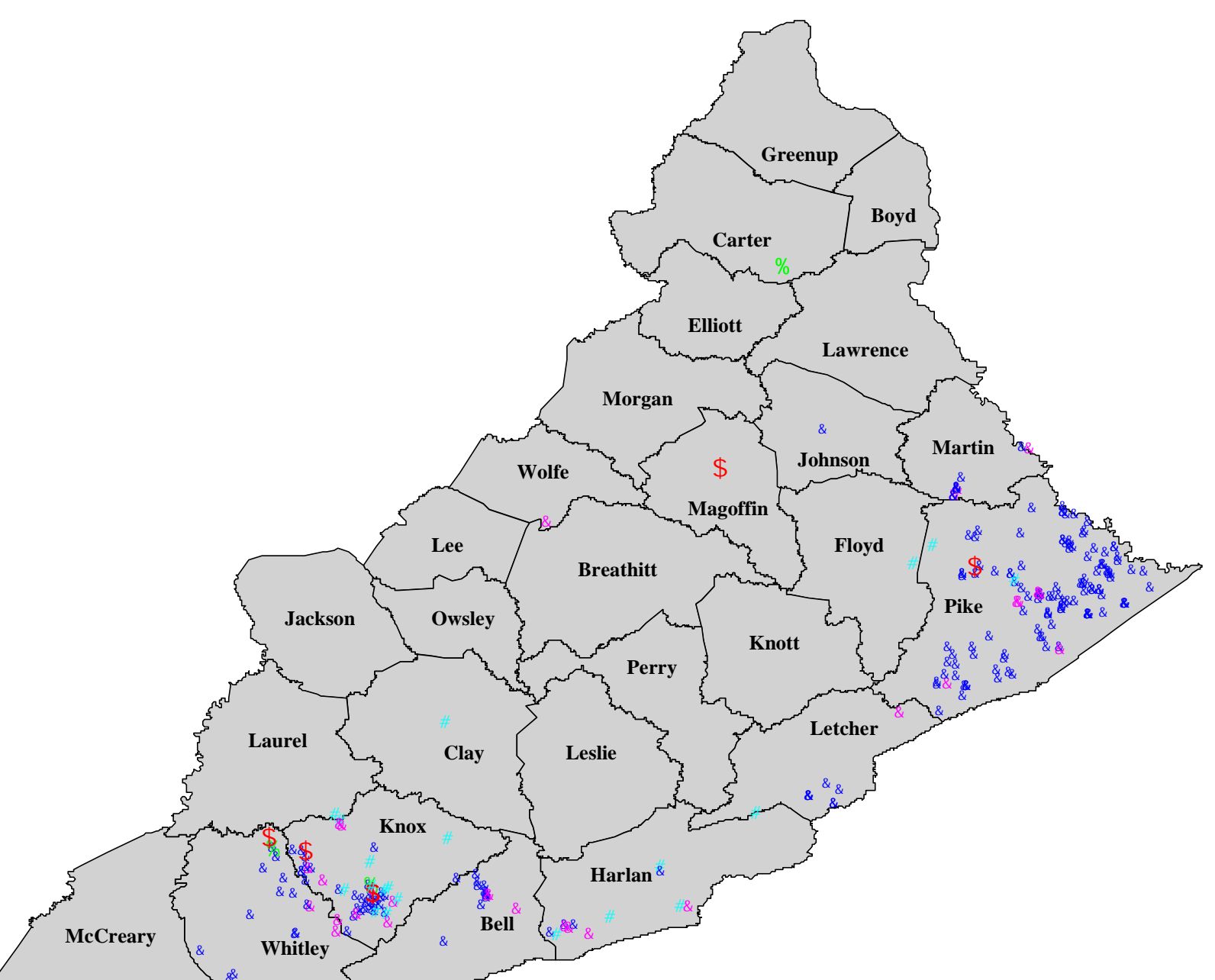
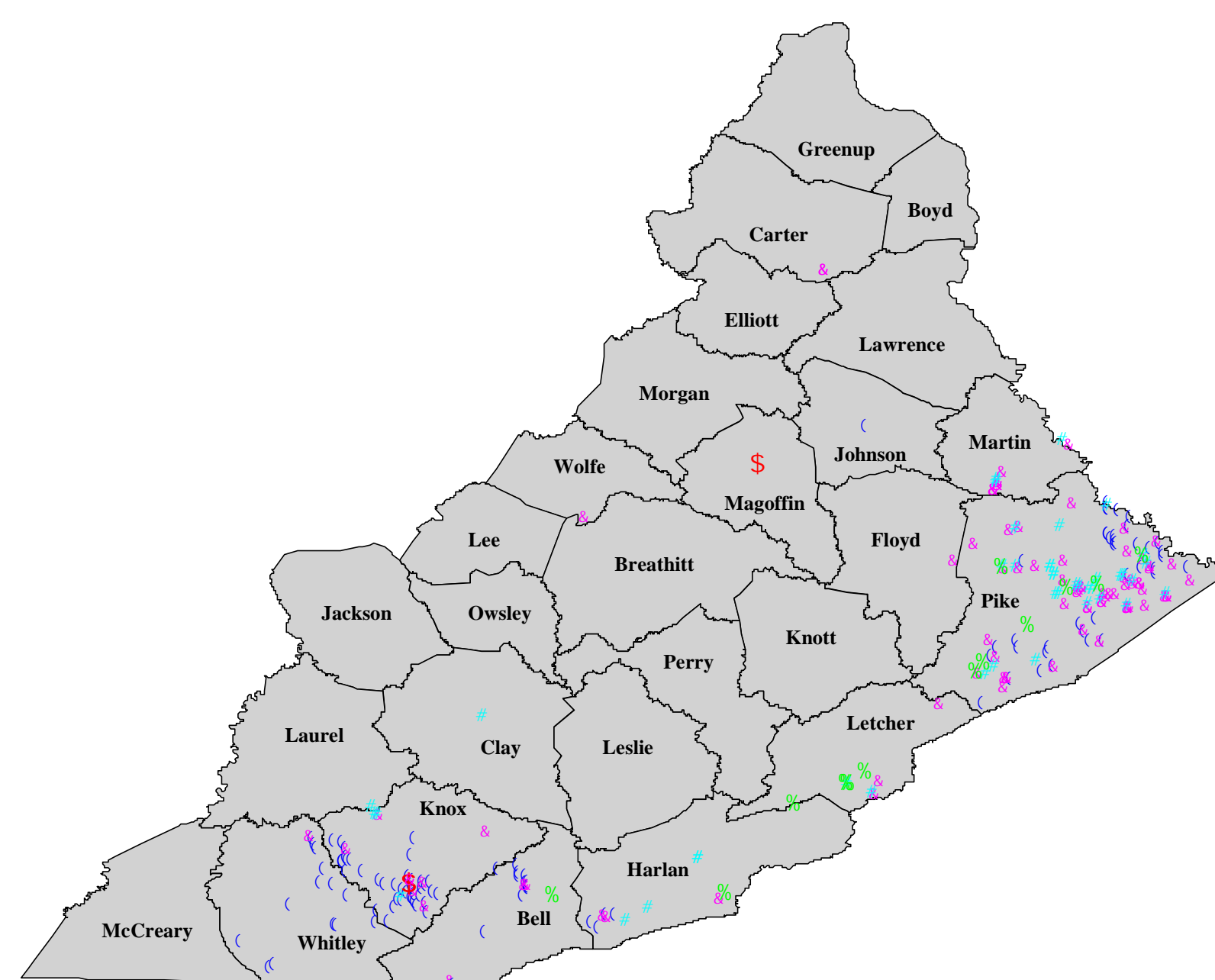
References Cited

Thacker, E.E., Weisenfluh, G.A., and Andrews, W.M., Jr., 1998, Total coal thickness of the Lower Elkhorn coal in eastern Kentucky: Kentucky Geological Survey, series 11, Map and Chart Series 20, 1 sheet.

Acknowledgments

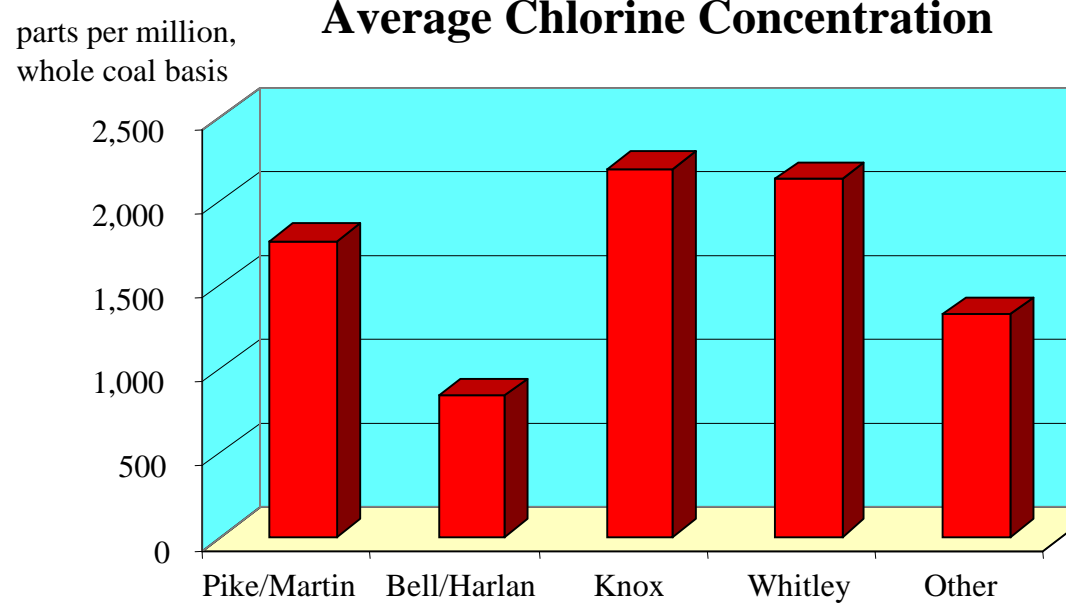
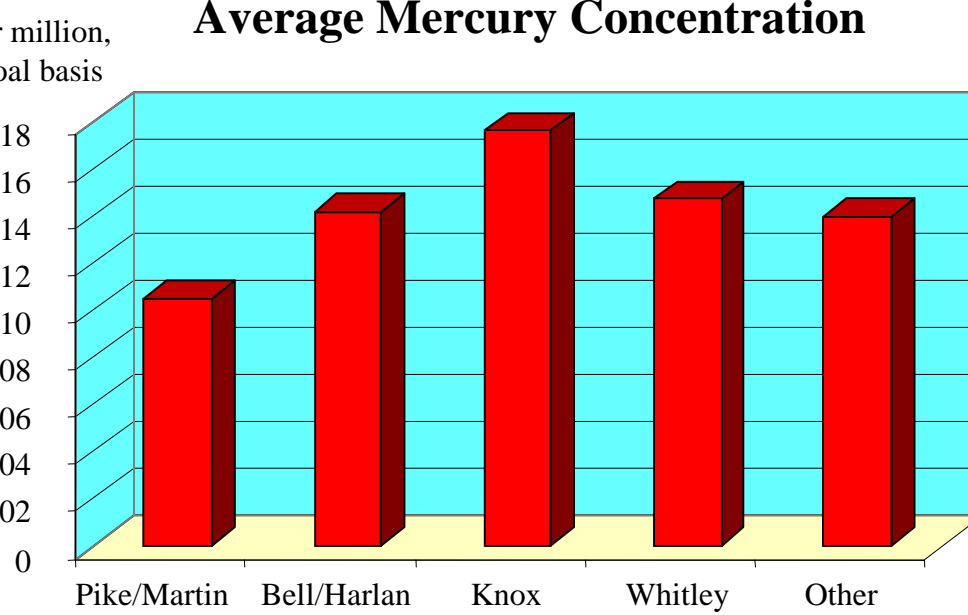
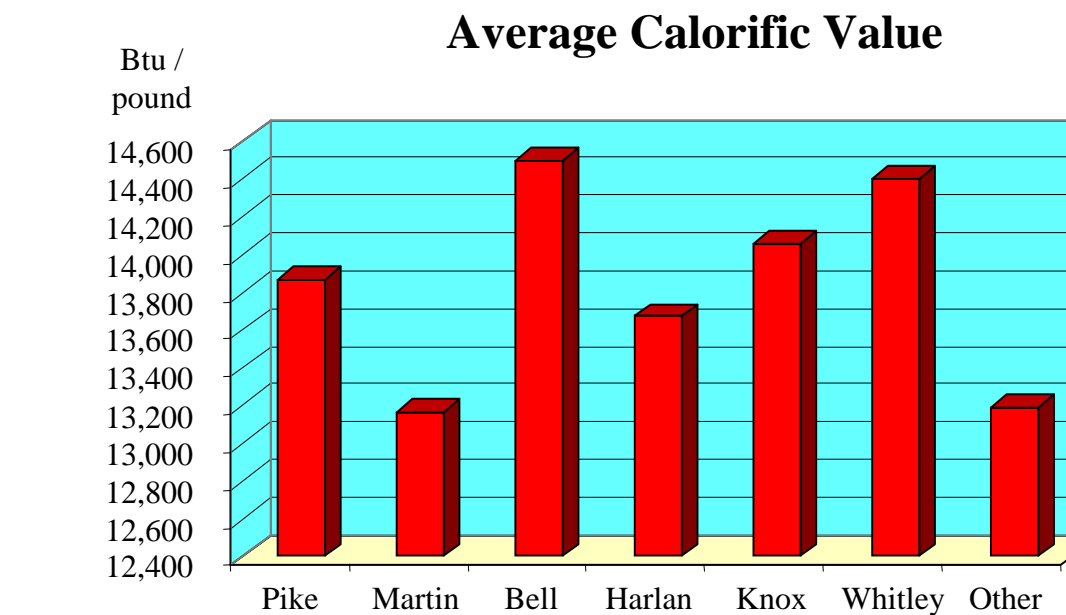
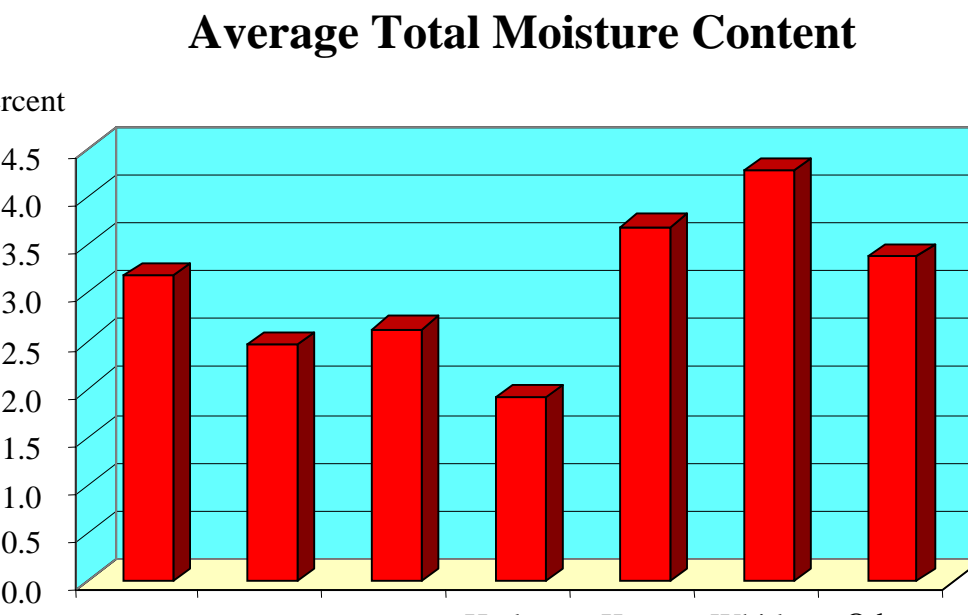
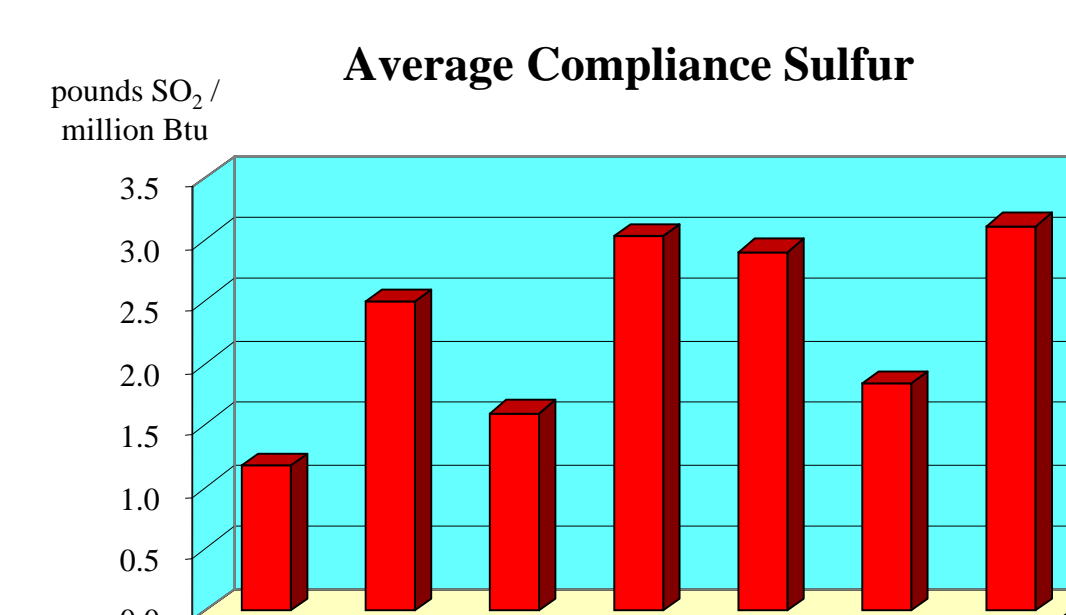
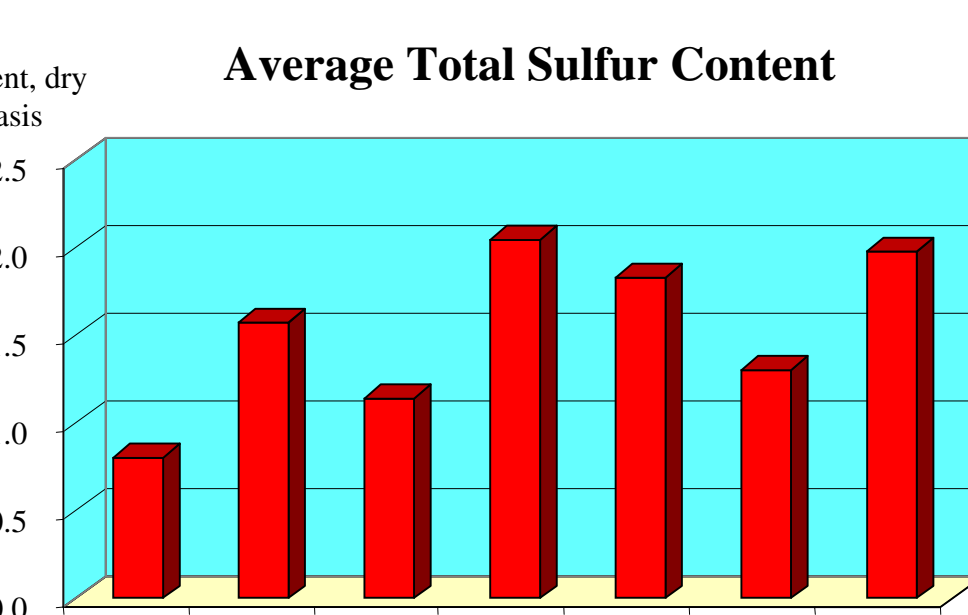
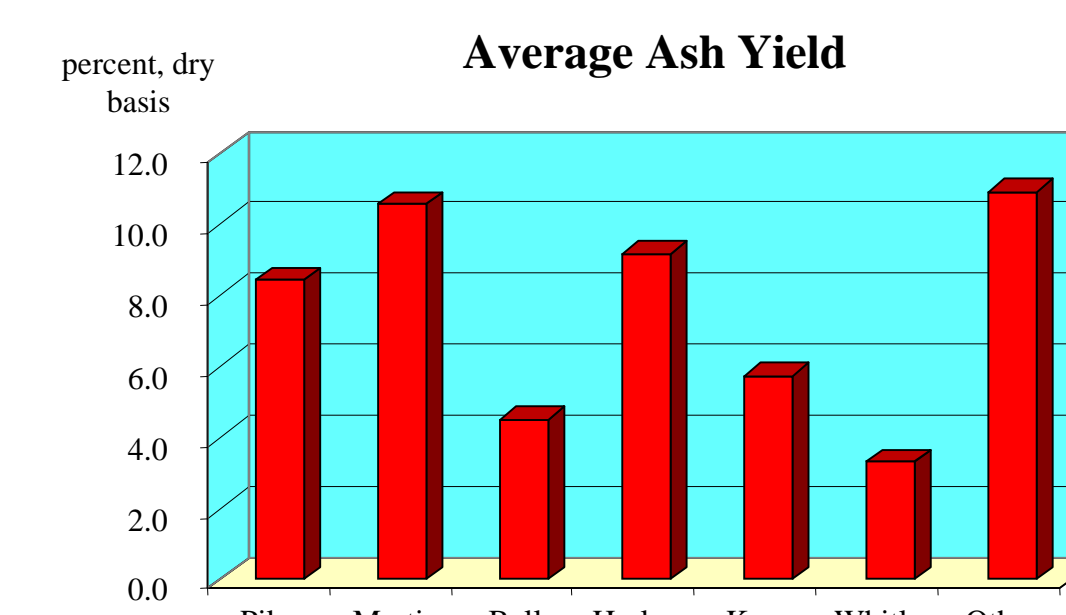
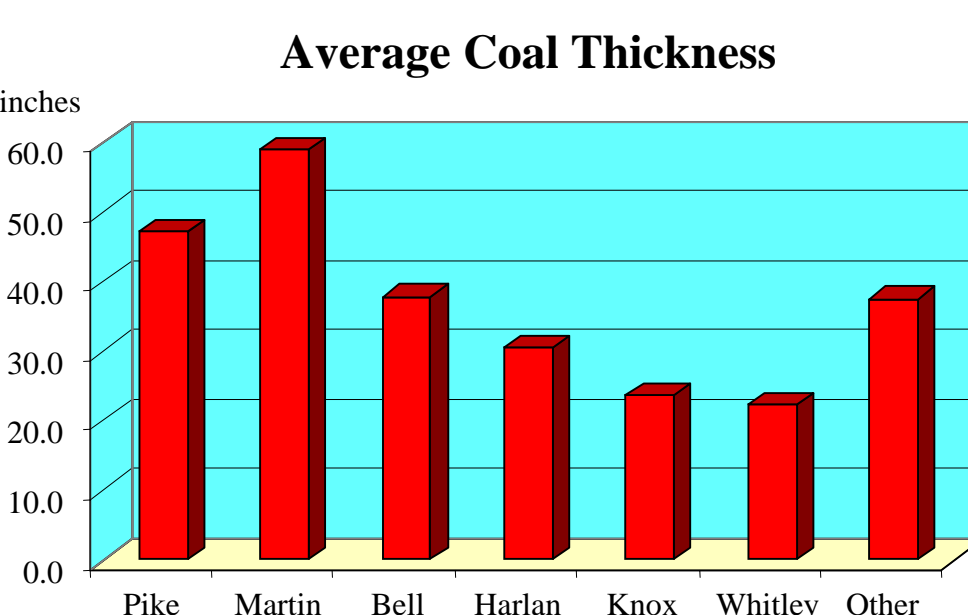
The author wishes to acknowledge the assistance of Drew Andrews, Jerry Weisenfluh, and Steve Greb in the preparation of this report.

Western Europe Stage	Mid-continent USA Series	North American Series	Eastern Kentucky Group	Eastern Kentucky Formation	Major Coal Beds and Coal Zones
Westphalian D	Desmoinesian	Princess	Princess	Princess	Princess No. 9
					Princess No. 8
Bolsovian	Middle Pennsylvanian	Four Corners	Four Corners	Four Corners	Princess No. 7
					Princess No. 6
Duckmantian	Atokan	Breathitt	Hyden	Hyden	Princess No. 5a, 5b
					Stoney Fork Member
Langsettian	Morrowan	Lower	Pikeville	Pikeville	Broas
					Lower
					Peach Orchard
					Arnett Member
					Hazard
					Haddix
					Magoffin Member
					Taylor
					Hamlin
					Fire Clay rider
					Fire Clay
					Whitesburg
					Kendrick Shale Member
					Amburgy
					Elkins Fork Shale
					Upper Elkhorn No. 3
					Alma
					Crummies Member
					Lower Elkhorn
					Little Eagle
					Betsie Shale Member
					Clintwood
					Millard
					Unnamed marine zone
					Hagy
					Splash Dam / Barren Fork
					Elswick / Stearns



County	Coal Thickness (inches)	Total Moisture (%)	Ash Yield (%)	Total Sulfur (%)	Calorific Value (Btu/lb)	Compliance Sulfur (ppm)
Pike	47.3	3.2	8.4	0.8	13,869	1.2
Maximum	131.6	7.7	18.1	5.2	15,051	7.7
Minimum	14.4	1.2	1.6	0.4	12,215	0.6
Count	134	78	134	134	134	134
Martin	62.1	2.1	9.3	1.3	13,367	1.9
Maximum	73.8	2.2	12.6	1.8	13,696	2.7
Minimum	46.9	1.9	7.4	0.6	12,866	0.8
Count	12	3	12	12	12	12
Bell	37.9	2.6	4.5	1.1	14,499	1.6
Maximum	45.7	4.6	15.8	2.5	15,082	3.6
Minimum	30.7	1.5	1.2	0.7	12,593	0.9
Count	15	14	15	15	15	15
Harlan	30.5	1.9	9.2	2.0	13,672	3.0
Maximum	43.0	2.5	18.3	3.2	14,840	5.1
Minimum	20.5	1.3	2.9	0.6	12,141	0.9
Count	14	6	14	14	14	14
Knox	23.7	3.7	5.7	1.8	14,057	2.9
Maximum	33.0	6.4	11.8	3.2	14,916	22.0
Minimum	14.0	1.7	1.1	0.5	7,970	0.7
Count	58	18	58	58	58	58
Whitley	22.3	4.3	3.3	1.3	14,404	1.8
Maximum	26.5	7.3	6.5	4.8	14,955	6.9
Minimum	14.2	2.2	1.0	0.6	13,878	0.8
Count	18	11	18	18	18	18
Other	37.5	3.4	10.9	2.0	13,194	3.1
Maximum	74.0	7.6	25.0	5.4	14,602	10.0
Minimum	15.6	1.1	1.8	0.7	10,779	1.0
Count	16	12	16	16	16	16

County	As	Be	Cd	Cl	Co	Cr	Hg	Mn	Ni	Pb	P	Sb	Se	Th	U
Pike/Martin	12.5	2.7	0.0	1.7647	4.1	17.5	0.1	39.7	12.1	6.5	48.5	1.0	4.3	2.5	1.2
Maximum	110.0	6.9	0.1	3.7000	16.0	33.8	0.3	249.1	42.9	12.0	120.0	2.1	6.6	4.0	2.2
Minimum	0.7	0.7	0.0	500.0	1.0	4.1	0.0	3.0	4.0	1.9	44.0	0.2	2.3	0.4	0.3
Count	17	18	17	17	82	83	17	82	83	18	17	17	17	17	18
Bell/Harlan	11.4	1.4	0.1	840.0	3.6	13.4	0.1	22.5	7.4	5.6	265.8	0.6	3.6	2.5	1.1
Maximum	34.0	2.0	0.2	2.7000	8.6	31.7	0.4	59.0	14.0	9.9	830.0	1.1	5.6	4.2	1.9
Minimum	2.0	0.5	0.0	100.0	1.2	3.1	0.0	3.8	3.1	1.4	44.0	0.3	1.6	0.6	0.2
Count	6	6	6	6	13	13	6	13	13	6	6	6	6	6	6
Knox	39.8	2.0	0.0	2.1917	4.5	9.0	0.2	23.5	11.8	2.5	91.0	0.9	2.6	1.0	0.8
Maximum	110.0	3.7	0.1	3.1000	11.0	24.1	0.6	100.0	23.8	10.0	420.0	2.0	3.4	4.9	3.0
Minimum	1.3	0.7	0.0	1.0000	1.3	2.5	0.0	3.5	3.5	0.5	22.0	0.2	1.4	0.2	0.2
Count	12	12	12	12	28	30	12	30	30	12	12	12	12	12	12
Whitley	16.9	1.6	0.0	2.1286	5.8	5.0	0.1	29.2	11.0	1.5	61.1	0.8	2.1	0.4	0.5
Maximum	40.0	2.2	0.1	2.6000	11.0	8.1	0.5	210.0	19.9	2.0	87.0	1.1	3.6	0.5	1.0
Minimum	1.8	0.9	0.0	1.6000	0.2	1.8	0.0	4.4	4.6	0.9	44.0	0.4	1.2	0.3	0.3
Count	7	7	7	7	12	14	7	14	14	7	7	7	7	7	7
Other	41.8	2.2	0.1	1.3250	5.9	17.4	0.1	75.3	27.5	8.8	51.5	1.6	4.5	2.7	2.2
Maximum	63.0	3.7	0.4	2.1000	13.9	47.7	0.2	673.6	105.5	11.0	70.0	2.4	6.7	4.0	3.6
Minimum	14.0	1.5	0.0	200.0	1.5	2.9	0.1	4.8	9.6	5.1	44.0	0.7	2.2	0.5	0.4
Count	4	6	4	4	13	13	4	13	13	6	4	4	4	4	6



For information on obtaining copies of this chart and other KGS maps and publications call: Publication Sales (859) 257-3896 View the KGS World Wide Web site at: www.uky.edu/KGS/

