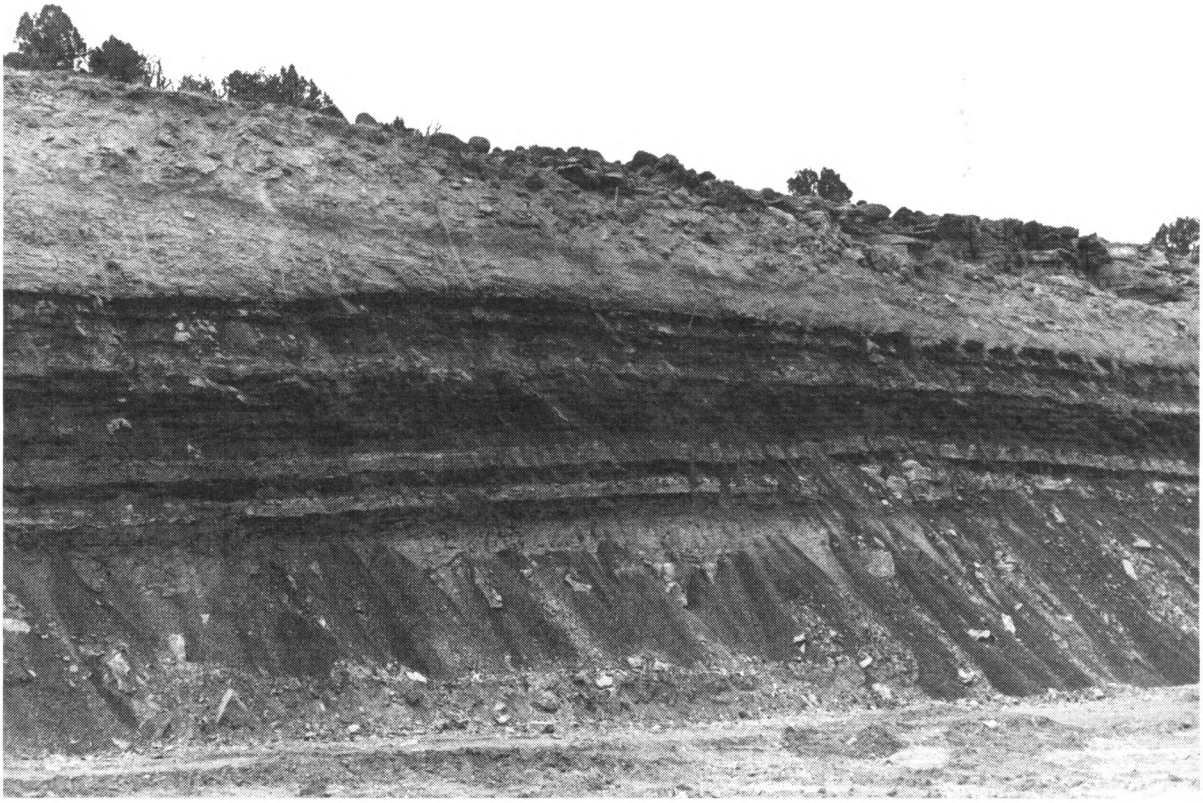
PETROGRAPHIC AND PHYSICAL CHARACTERISTICS OF UTAH COALS

by
Brigitte P. Hucka, Steven N. Sommer, and David E. Tabet
Utah Geological Survey



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Cover photo: Outcropping coal seams beside Interstate 70
near the Emery coal field, Emery County, Utah

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Figure 1. Locations of Utah's coal fields 3
Diskette with data sets . . . . . in pocket

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1997

ABSTRACT

The petrographic database consists of 705 maceral analyses, reflectance measurements, and density and porosity determinations from Utah coal samples. These data were collected by the Utah Geological Survey from 1982 to 1995. Samples were collected from seven of Utah's 22 coal fields. Coal fields sampled are the Book Cliffs (182 samples), Wasatch Plateau (262 samples), Emery (41 samples), Sego (27 samples), Henry Mountains (173 samples), Kaiparowits Plateau (12 samples), and Coalville (four samples).

The data are sorted by coal-field names; within each field the analyses are arranged alphabetically by coal-bed name to facilitate comparison. The aim of the database is to provide the industry with information on petrographic properties of Utah coals. In addition, it should help the coal operators and purchasers to determine the best uses for Utah coals.

INTRODUCTION

This petrographic database is a compilation of maceral point counts and vitrinite reflectance measurements of coal samples from various sources. The coal samples were obtained from: (1) a cooperative Utah Geological Survey (UGS) - University of Utah Department of Fuels Engineering project to sample seams from coal mines, (2) UGS's drilling projects, (3) outcrop sampling associated with various mapping projects, and (4) donations of coal samples to the UGS from private companies. Data from the following coal fields are included in this report: Book Cliffs, Wasatch Plateau, Emery, Sego, Henry Mountains, Coalville, and Kaiparowits Plateau (figure 1). The database consists of 705 maceral determinations (white and ultraviolet light), vitrinite reflectance measurements, and density and porosity determinations performed by UGS from 1982 through 1995.

The petrographic data in the database are presented in hard copy (appendices D-J) and as two computer-readable files: an ASCII text file (reflex.asc), and a Reflex © version 2.0 file (reflect.r2d). The files could be imported into other software designed for the display of petrographic data, and should execute on computers having at least 640 kilobytes of RAM, EGA graphics, and a co-processor.

The data in the appendices are organized by coal field. Information within coal fields is organized by coal seam. The database is updated regularly as new coal-characterization data become available, and an updated digital version of the data can be obtained from the UGS.

The petrographic information in this database is useful for solving problems related to the genesis of coal beds and bed identification or correlation, and for helping the mining industry and

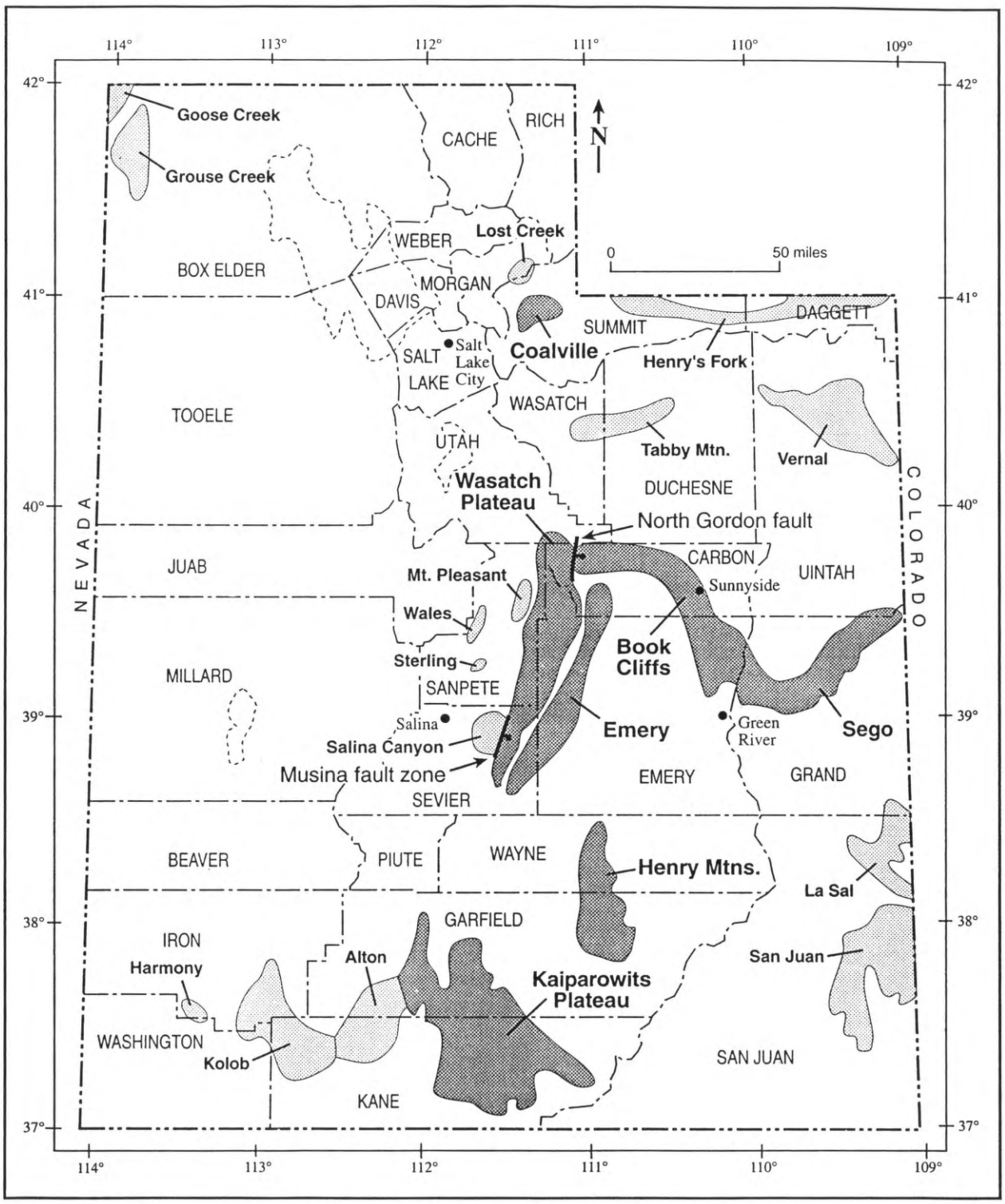

Figure 1. Locations of Utah's coal fields (data are available for the dark stippled coal fields).

PETROGRAPHIC METHODS

Coal Sample Preparation

Three crushed-particle pellets were prepared from each sample by crushing the coal to a minus 20 mesh, then mixing the coal powder in epoxy and allowing the epoxy to cure for 24 hours. Pellets were then polished in a five-step procedure: course grinding using 300-grit paper, grinding with 1,200-grit paper, and final polishing using 1.0-micron, 0.3-micron, and 0.06-micron abrasives to allow petrographic analysis in reflected light.

Maceral Analysis (White-Light Analysis)

Maceral composition was determined using a Leitz Orthoplan MPW II microscope. Crushed-particle pellets were studied at 500x magnification using a 10x ocular and a 50x oil immersion objective and oil with a refractive index of 1.5180. The maceral analyses were calculated in volume percentages from 1,000 points counted on two pellets of the same coal sample. To adhere to American Society of Testing and Materials (ASTM) Standard no. D-2796-88), the mean difference between the results of these pellets could not differ by more than ± two percent. If the difference exceeded ± two percent, a third pellet was examined to meet the required standard. With few exceptions the mineral matter was not included in the total maceral count.

Maceral Analysis (Fluorescent-Light Analysis)

Like the white-light analyses, the fluorescent-maceral analyses were also made at 500x magnification. A 10-watt mercury lamp with a BG 23 filter and a B12 blue-light filter was used. In this procedure, light is passed through the microscope to a vertical illuminator adapted with a

TK 400 mirror. Light to the 10x ocular is filtered through a K510 barrier filter. The ultraviolet light excitation allows the identification of resinite subtypes (yellow, orange, and green resinite) and of secondary resinites (bituminite, fluorinite, and exsudatinite), and aids in the identification of other macerals such as alginite. The non-fluorescing macerals were totalled and compared to the white-light analysis and adjusted to reflect the correct liptinite value (Sommer and others, 1991).

Reflectance Analysis

The reflectance values of vitrinite particles (mean maximum vitrinite reflectance in oil immersion, R_o) were determined using the same microscope described above. To obtain the required accuracy, one hundred reflectance measurements were determined by using a grid system utilizing a mechanical stage. The interpoint and interline distances of the grid were equal (0.5 mm) and covered the entire surface of the pellet (ASTM Standards no. D-2798-88 and no. D-388-88). The mean value (percent R_o) of the 100 measurements was used to determine the coal rank for the particular coal bed (Davis, 1978, appendix A) and is also of interest because it can be used to determine the thermal evolution of sedimentary basins.

Density and Porosity

Density and porosity were determined pycnometrically using a Beckman Model 930 air comparison pycnometer. Crushed coal samples were heated to 110° C and dried in an oven during a four-hour period and then measured for bulk density. The density was determined as the ratio of the weight of the sample in grams to the volume of the container holding the sample in

cm^3. A reference volume cylinder was compared to the measuring volume cylinder holding the sample to obtain the values in cm^3.

The porosity (or total void volume) was determined as the ratio of the volume of a paraffin-impregnated sample (the volume of a sample enclosed by its outer surface and excluding its open voids) to the volume of the sample before it was immersed in the paraffin bath (the volume closed by its outer surface and excluding its open voids).

Porosity and density, which vary with the rank of the coal and mineral matter content, are properties which bear directly or indirectly on any assessment of the chemical behavior of coal in industrial processes such as electric-power generation or metallurgical coke production.

Vickers Microhardness and Shore (Rebound) Test

Vickers microhardness was determined using a Buhler MICRONET 4 Tester. Microhardness correlates with coal friability, an important characteristic for coal suppliers. To determine coal hardness, the Vickers microhardness test measures the size of an indentation made on the surface of a vitrinite grain left by a pyramid-shaped diamond indenter. A 100 g load is applied to the indenter for 15 seconds. The length of the indentation is measured with the measuring objective of the microscope after 15 seconds have elapsed. The resulting microhardness values calculated from Vickers formula are reported in appendices D-J (Hucka and others, 1989, Hucka, 1990, Hucka 1991a, 1991b, 1991c).

The Shore hardness was determined using a Shore tester. This test involves the dynamic deformation or indentation of the surface of a coal sample by dropping a 2 g diamond-tipped

hammer from a constant height onto the sample. The height that the hammer rebounds above the sample (Shore hardness number) is then read from the dial gauge of a scleroscope (Honda and Sanada, 1956).

The Vickers and Shore tests are two methods to measure hardness based on two different principles that can be used to assess the mechanical properties of coal, as well as to identify coal beds based on the morphology of the impressions. Further, morphology of the Vickers hardness impressions indicates the physical state of the coal, and therefore could be used as a means of predicting suitability of coal for industrial applications (such as coke production or electric-power production).

DATA ORGANIZATION

A Reflex© version 2.0 (Copyright by Borland International, Inc.), database-management system was used to enter and store the data. It provides users with easy-to-use menus that work directly from the computer screen, is reliable for handling a large amount of data, and provides graphical displays of the data. Files created by Reflex© can be easily translated into Quattro Pro, version 6.0 (™ Novell, Inc.) another database program.

In this report, the data stored in the REFLECT.R2D relational database are organized by coal field, one table for each field. Information within each coal field is organized by coal seam, and within each coal seam the data are sorted by the U.S. Geological Survey 7.5-minute topographic quadrangles (appendices D-J) where samples were obtained. At the end of each coal-seam listing is a statistical summary (average, minimum, maximum, variance, and standard deviation). Further, each sample has a cadastral location giving its section, township, and range.

The base reference line is the Salt Lake Meridian. In the "Comments" section of each table, samples that contain the name of the mine and the notations: "channel sample","upper", "middle", and "lower intervals" are samples collected and evaluated by the UGS for the University of Utah, Mining Engineering and Fuels Engineering Departments. Samples such as DH USBM (MC-172), DH MC-181, DH Shimmin Trust no. 2, NH 6-1, and so forth are samples prepared from coal cores either donated by several coal companies and property holders, or collected during a UGS exploratory drilling program. Two reports, REFLECT.RXR (for white-light analyses), and REFLECT2.RXR (for ultraviolet-light analyses, and hardness, porosity, and density values) are available for printing the data.

Appendices D-J contain printed copies of the digital petrographic database, and are provided for users who do not have other means of displaying the data. Abbreviations of the field headings and 7.5-minute quadrangle names are explained in appendices B and C, respectively.

BOOK CLIFFS COAL FIELD

The Book Cliffs coal field extends easterly from the North Gordon fault zone to Sunnyside and then south easterly to the Green River (figure 1). The field is a northward-dipping monocline in which coal is exposed along cliffs at the south boundary of the Uinta Basin. The field is roughly 4 miles wide by 70 miles long (Doelling, 1972).

The coal field covers 21 7.5-minute quadrangles; the coal-characterization data are available for samples from 12 quadrangles. Six coal zones containing a total of 14 coal beds were analyzed, all within the Upper Cretaceous Blackhawk Formation. In descending

stratigraphic order, the coal beds examined were: Upper Sunnyside, Sunnyside, Lower Sunnyside, Rock Canyon, Centennial, Gilson, Kenilworth, Castlegate A, Castlegate B, Castlegate C, Castlegate D, and Sub-seam 1, Sub-seam 2, and Sub-seam 3.

Appendix D contains complete petrographic and vitrinite-reflectance analyses of the 14 coal beds. The data indicate that the Book Cliffs coals are relatively uniform in maceral composition, having high vitrinite content, and moderate liptinite and inertinite contents. The vitrinite group fraction (consisting of vitrinite and pseudovitrinite) composes from 72.89 to 85.3 percent of the coal, the liptinite fraction (resinite, sporinite, and cutinite) and inertinite fraction (micrinite, fusinite, semifusinite, macrinite, and scleroctinite) average 6.23 and 15.21 percent, respectively. Petrographic and vitrinite-reflectance analyses completed on samples from "unknown" seams were not included in the calculation of averages for each coal field. The coals range in rank from high-volatile bituminous A to high-volatile bituminous C with the exception of sample No. 593, which is subbituminous in rank.

WASATCH PLATEAU COAL FIELD

The Wasatch Plateau coal field is located in central Utah. It is elongated north-south and covers an area of approximately 1,100 square miles in Carbon, Emery, Sevier, and Sanpete Counties (figure 1). In the north, the field is separated from the Book Cliffs coal field by the North Gordon fault zone, and in the south the field is separated from the Salina coal field by the Musina fault zone.

The field covers 22 7.5-minute quadrangles, and samples were obtained from 18 of them. The stratigraphic units sampled include 15 of 22 coal beds identified by Spieker (1931) and

Doelling (1972) for this field. The coal beds are within the Upper Cretaceous Blackhawk Formation.

Appendix E presents complete petrographic and vitrinite-reflectance analyses, and the density and porosity values for the 15 Wasatch Plateau coal beds. Petrographic data for the Wasatch Plateau coal field show a high vitrinite content, having an average of 82.1 percent. The inertinite content of these coals (average 9.75 percent) is lower than that of Book Cliffs coals. The average exinite content is 8.04 percent. The average rank is high-volatile bituminous C.

EMERY COAL FIELD

The Emery coal field is located directly east of the Wasatch Plateau coal field in central Utah, 35 miles east of Salina (figure 1). Trending northeast-southwest, it covers an area 35 miles long and has an average width of 6 miles (Doelling, 1972).

The field covers seven 7.5-minute quadrangles, and shares part of the Johns Peak quadrangle with the Wasatch Plateau coal field. Six coal beds or zones were identified by Lupton (1916), all within the Ferron Sandstone Member of the Mancos Shale (Upper Cretaceous). The coal beds are older than those of the Wasatch Plateau and Book Cliffs coal fields and few of the coal beds are of mineable thickness. Samples from all six coal beds were examined, from the Emery East, Walker Flat, and Price quadrangles.

Appendix F contains complete petrographic and vitrinite-reflectance analyses, density, and porosity values of the six Emery field coal beds. The coal-characterization data show a high inertinite content (16.45 percent) for the Emery coals, and a moderate to average vitrinite content

of 78.38 percent. The coals range in rank from high-volatile bituminous A to high-volatile bituminous C.

SEGO COAL FIELD

The Sego coal field is located in east-central Utah along the Book Cliffs, between the Green River and Colorado border (figure 1). The field is about 65 miles long and six miles wide, for a total area of 390 square miles.

The coal field covers 18 7.5-minute quadrangles; our samples come from three of them. Four coal zones, all within the Neslen Member of the Price River Formation of Cretaceous age, have been identified by Doelling and Graham (1972). Nine coal beds from the Neslen Member were analyzed. They are in ascending stratigraphic order: Lower Palisade, Palisade, Upper Palisade, Lower Ballard, Ballard, Upper Ballard, Chesterfield, and two unnamed coal beds collected from Nash Canyon.

The results of complete petrographic and vitrinite-reflectance analyses, and density and porosity determinations from nine Sego coal beds, are shown in appendix G. Analysis of the data indicates that the average contents of three main maceral groups (vitrinites, liptinites, and inertinites) are similar to those obtained for the Emery coals (76.38, 4.47, and 18.73 percent, respectively). The rank determined through vitrinite reflectance shows a uniform pattern for all beds with ranks averaging high-volatile bituminous B.

HENRY MOUNTAINS COAL FIELD

The Henry Mountains coal field is located in southeastern Utah (figure 1). The field is 48 miles long and averages 12 miles wide, for a total of roughly 450 square miles.

The coal field covers 23 7.5-minute quadrangles. The coal beds are found in three units: the Emery and Ferron Sandstone Members of the Mancos Shale, and the Dakota Formation, all of Cretaceous age. Complete petrographic, vitrinite-reflectance analyses, porosity and density determination of nine coal beds are shown in appendix H. Many of the coal samples come from weathered outcrops, and were collected from 16 quadrangles during a Henry Mountains mapping project. Fresh coal samples are scarce because no active coal mines exist in this field. Therefore, the data presented are suspect since weathering might have contributed to the high inertinite of the Henry Mountains coals.

The results of maceral analyses show coals with high inertinite contents, averaging 31.98 percent. The vitrinite content of these coals represents the lowest average of all investigated coal fields (60.04 percent). Rank of these coals averages high-volatile bituminous C.

COALVILLE COAL FIELD

The Coalville coal field, located approximately 40 miles east of Salt Lake City, and covering an area of approximately 65 square miles, is by far the smallest coal field in Utah. The field is roughly oval shaped and the axis of the field parallels the northeasterly structural trend of the coal strata. Of the three known coal beds in this field, the Dry Hollow (Wanship Formation),

Wasatch (Frontier Formation), and Spring Canyon (Frontier Formation), only the Wasatch coal bed is considered of economic value. All coal-bearing strata are Upper Cretaceous.

The field covers five quadrangles; however, the coal-characterization data (maceral and vitrinite-reflectance analyses, density, and porosity) were derived from analyses of only four coal samples (Wasatch coal bed). The UGS collected the samples in the Coalville mine (Upton quadrangle) as a part of a cooperative UGS-University of Utah coal-sampling project.

KAIPAROWITS PLATEAU COAL FIELD

The Kaiparowits Plateau coal field covers approximately 1,600 square miles of Garfield and Kane Counties, in south-central Utah, south of the Wasatch Plateau and Book Cliffs coal fields. The coal beds or zones are contained in three formations: the Straight Cliffs, Dakota, and Tropic Shale of Cretaceous age, and confined to a northwest-trending belt 18 to 25 miles wide paralleling the Cretaceous seashore.

The coal field covers 45 7.5-minute quadrangles; however, only one coal zone, the Christensen, with a total of 11 samples, was analyzed. The coal zone is part of the John Henry Member, the third member in descending order of the Straight Cliffs Formation: Tibbet Canyon, Smoky Hollow, John Henry, and Drip Tank. All 11 samples are core increments of a 25-foot-thick Christensen coal zone from drill hole no. 407. The core was drilled by Andalex Resources, Inc. in the Tibbet Bench quadrangle, and evaluated by the UGS as part of a cooperative agreement between UGS and Andalex Resources, Inc.

Appendix J presents complete petrographic and vitrinite-reflectance analyses, as well as density and porosity values, for the coal of the Christensen coal zone. The vitrinite group

fraction averages 78.7 percent. The liptinite fraction, consisting of exinite and resinite, and the inertinite fraction, with the most common inertinite maceral being semifusinite, average 7.2 percent and 13 percent, respectively. The vitrinite-reflectance analyses reveal that the Christensen coal zone is subbituminous in rank, and has an average reflectance of 0.46 percent.

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REFERENCES

American Society for Testing and Materials, 1978, Standard specifications for classification of coals by rank: Philadelphia, Pensylvania, 1978 Annual Book of ASTM Standards, American Society for Testing and Materials, 460 p.

Davis, A., 1978, The reflectance of coal, *in* Carr C., Jr., editor, Analytical methods for coal and coal products: New York. Academic Press, v.1, p. 27-81.

Doelling, H.H., 1972, Central Utah coal fields: Sevier-Sanpete, Wasatch Plateau, Book Cliffs, and Emery: Utah Geological and Mineralogical Survey Monograph No. 3, 570 p.

Doelling, H.H., and Graham, R.L., 1972, Eastern and northern Utah coal fields: Vernal, Henry Mountains, Sego, La Sal-San Juan, Tabby Mountain, Coalville, Henrys Fork, Goose Creek and Lost Creek: Utah Geological and Mineralogical Survey Monograph No. 2, 409 p.

Honda, H., and Sanada, Y., 1956, Hardness of Coal: Fuel, v. 36, p. 451-461.

Hucka, B.P., 1990, Cleat and joint system evaluation and coal characterization of the Lower Sunnyside coal, Sunnyside mines, Carbon County, Utah: Utah Geological and Mineral Survey Open-File Report 190, 30 p.

--- 1991a, Cleat and joint system evaluation and coal characterization of the Castlegate "A" coal, Beaver Creek No. 8 mine, Carbon County, Utah: Utah Geological and Mineral Survey Open-File Report 202, 29 p.

--- 1991b, Cleat and joint system evaluation and coal characterization of the Sunnyside coal, Soldier Canyon mine, Carbon County, Utah: Utah Geological and Mineral Survey Open-File Report 203, 29 p.

--- 1991c, Coal hardness and rank relationships of some Utah and Colorado coals, *in* Chidsey, T.C., Jr., editor, Geology of east-central Utah: Utah Geological Association Publication 19, p. 183-191.

Hucka, B.P., Sommer, S.N., and Keith, A.C., 1989, Cleat and joint system evaluation and coal characterization of the Sub-3 seam coal, Castle Gate No. 3 mine, Carbon County, Utah: Utah Geological and Mineral Survey Open-File Report 170, 34 p.

Lupton, C.T., 1916, Geology and coal resources of Castle Valley: U.S. Geological Survey Bulletin 628, 88 p.

Sommer, S.N., Bodily, D.M., and Whitney, E.M., 1991, Characteristics of Utah coals in the University of Utah's coal sample bank, *in* Chidsey, T.C., Jr., editor, Geology of east-central Utah: Utah Geological Association Publication 19, p. 199-209.

Spieker, E.M., 1931, The Wasatch Plateau coal field, Utah: U.S. Geological Survey Bulletin 819, 210 p.

APPENDICES

Appendix A

SUGGESTED LIMITS OF ASTM RANK CLASSES IN TERMS OF VITRINITE REFLECTANCE

(Davis, 1978)

Rank	Maximum Reflectance ($\%R_o max$)	Random Reflectance ($\%R_o m$)
Subbituminous	<0.47	
High-volatile bituminous	C 0.47 - 0.57	
	B 0.57 - 0.71	0.50 - 1.12
	A 0.71 - 1.10	
Medium-volatile bituminous	1.10 - 1.50	1.12 - 1.51
Low-volatile bituminous	1.50 - 2.05	1.51 - 1.92
Semi-anthracite	2.05 - 3.00 (approx.)	1.92 - 2.50
Anthracite	>3.00	>2.50

Appendix B

ABBREVIATIONS AND UNITS IN THIS DATABASE

Database Field	Explanation
Sample	UGS coal petrographic database sample number
Fl	Coal field
Qd	7.5-minute quadrangle name
Coal seam	Name of the coal bed
V	Vitrinite (%)
PV	Pseudovitrinite (%)
Spor	Sporinite (%)
Cut	Cutinite (%)
Res	Resinite (%)
Mic	Micrinite (%)
Fus	Fusinite (%)
SF	Semifusinite (%)
Macr	Macrinite (%)
Sclr	Scleroctinite (%)
Refl (R_o)	Mean maximum vitrinite reflectance (%)
Rank	Rank of the coal
VHard	Vickers Hardness (kgf/mm^2)
SHard	Shore Hardness Number
Vitrn	Total of vitrinite and pseudovitrinite (%)
Exint	Total of resinite, sporinite, cutinite (%)
Inert	Total of fusinite, semifusinite, micrinite, macrinite, and scleroctinite (%)
C. Q. No.	UGS coal-quality database number
G	Green resinite (%)
Y	Yellow resinite (%)
O	Orange resinite (%)
Fl	Fluorinite - secondary resinite (%)
Exud	Exsudatinite - secondary resinite (%)
Bit	Bituminite - secondary resinite (%)
T. Resin	Total of resinite macerals (%)
Alg	Alginite (%)
NF	Non-reflective macerals (ultraviolet-light)
Density	Density (cc/g)
Porosity	Porosity (%)

Appendix C
7.5-MINUTE QUADRANGLE ABBREVIATIONS

ABBREVIATION	7.5-MINUTE QUADRANGLE NAME*	COAL FIELD	APPENDIX
DDC	DEADMAN CANYON	BOOK CLIFFS	D
HLP	HELPER		
KYN	KYUNE		
MBS	MOUNT BARTLES		
MMW	MINNIE MAUD CREEK WEST		
MTS	MATTS SUMMIT		
PTH	PATMOS HEAD		
PNC	PINE CANYON		
STN	STANDARDVILLE		
SNS	SUNNYSIDE		
WNE	LILA POINT		
WSE	WOODSIDE		
ACL	ACORD LAKES	WASATCH PLATEAU	E
CDM	CANDLAND MOUNTAIN		
EMW	EMERY WEST		
FRN	FERRON		
FRC	FERRON CANYON		
HLT	HELIOTROPE MOUNTAIN		
HWT	HIAWATHA		
JVR	JOES VALLEY RESERVOIR		
JPC	JUMP CREEK		
MHP	MAHOGANY POINT		
OWP	OLD WOMAN PLATEAU		
RDP	RED POINT		
SCF	SCOFIELD		
TCP	THE CAP		
WTS	WATTIS		
YGC	YOGO CREEK		
EME	EMERY EAST	EMERY	F
WKF	WALKER FLAT		
PRC	PRICE		
FMC	FLUME CANYON	SEGO	G
PCH	PREACHER CANYON		
SCSW	SEGO CANYON (Sego Canyon NW)		
FBNW	FACTORY BUTTE (Factory Butte NW)	HENRY MOUNTAINS	H
FBSE	STEAMBOAT POINT (Factory Butte SE)		
FBSW	TOWN POINT (Factory Butte SW)		
FSE	CAINVILLE (Fruita SE)		
MENE	DRY LAKES PEAK (Mt. Ellen NE)		
MENW	STEVENS MESA (Mt. Ellen NW)		
MESE	MT. ELLEN (Mt. Ellen SE)		
MESW	STEELE BUTTE (Mt. Ellen SW)		
MHSW	COPPER CREEK BENCHES (Mt. Hiller SW)		
MPNW	CAVE FLAT (Mt. Pennell NW)		
MPSE	ANT KNOLL (Mt. Pennell SE)		
MPSW	THE POST (Mt. Pennell SW)		
NNE	NOTOM (Notom NE)		
NSE	SANDY CREEK BENCHES (Notom SE)		
WBNE	BITTER CREEK DIVIDE (Wagon Box Mesa NE)		
WBSE	WAGON BOX MESA		
UPT	UPTON	COALVILLE	I
TBB	TIBBET BENCH	KAIPAROWITS PLATEAU	J

* Names in parentheses refer to former quadrangle names

Appendix D. Coal-characteristics Data for the Book Cliffs Coal Field.

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
66	BC	HLP	05-13S-10E	Castlegate A	46.60	21.00	3.90	0.60	6.30	3.50	4.20	13.60	0.10	0.20	0.65	hvBb			67.60	10.80	21.60
67	BC	HLP	05-13S-10E	Castlegate A	42.00	29.80	3.70	0.60	5.30	3.90	2.40	11.90	0.40	0.00	0.68	hvBb			71.80	9.60	18.60
68	BC	HLP	05-13S-10E	Castlegate A	60.10	10.50	2.90	0.70	7.80	3.80	1.80	12.30	0.00	0.10	0.60	hvBb			70.60	11.40	18.00
71	BC	HLP	05-13S-10E	Castlegate A	56.30	7.10	5.70	1.10	12.90	4.40	1.40	10.40	0.40	0.30	0.58	hvBb			63.40	19.70	16.90
72	BC	KYN	28-12S-09E	Castlegate A	48.80	18.90	3.40	1.10	1.50	1.80	3.00	21.50	0.00	0.00	0.72	hvBb			67.70	6.00	26.30
73	BC	KYN	28-12S-09E	Castlegate A	71.20	8.40	2.90	0.80	2.30	3.00	3.00	8.40	0.00	0.00	0.66	hvBb			79.60	6.00	14.40
80	BC	KYN	28-12S-09E	Castlegate A	60.70	16.40	2.10	1.50	5.00	2.60	2.60	8.90	0.10	0.10	0.68	hvBb			77.10	8.60	14.30
81	BC	KYN	28-12S-09E	Castlegate A	57.50	17.10	4.50	1.70	2.30	2.10	3.80	10.90	0.10	0.00	0.69	hvBb			74.60	8.50	16.90
88	BC	KYN	28-12S-09E	Castlegate A	52.00	29.80	3.00	0.50	3.40	1.70	3.30	6.10	0.10	0.10	0.79	hvAb			81.80	6.90	11.30
95	BC	STN	05-13S-09E	Castlegate A	67.40	13.50	1.80	0.30	2.50	1.70	2.00	10.60	0.00	0.20	0.61	hvBb			80.90	4.60	14.50
99	BC	HLP	03-13S-10E	Castlegate A	65.50	15.60	2.20	0.20	4.40	2.70	1.60	7.60	0.20	0.00	0.67	hvBb			81.10	6.80	12.10
100	BC	DDC	12-13S-10E	Castlegate A	58.60	16.20	1.90	0.10	1.90	5.00	2.10	14.20	0.00	0.00	0.72	hvAb			74.80	3.90	21.30
162	BC	KYN	29-12S-09E	Castlegate A	61.90	7.30	2.20	0.20	1.20	2.70	2.90	21.60	0.00	0.00	0.63	hvBb			69.20	3.60	27.20
214	BC	KYN	28-12S-09E	Castlegate A	74.90	12.70	1.30	0.60	6.90	1.00	0.40	2.20	0.00	0.00	0.63	hvBb			87.60	8.80	3.60
246	BC	STN	33-12S-09E	Castlegate A	52.90	33.00	1.80	1.40	2.80	3.50	1.00	3.60	0.00	0.00	0.65	hvBb			85.90	6.00	8.10
381	BC	MMW	17-12S-11E	Castlegate A	64.20	7.10	2.40	0.20	1.50	6.50	5.50	12.60	0.00	0.00	0.76	hvAb			71.30	4.10	24.60
590	BC	DDC	18-13S-11E	Castlegate A	71.90	6.20	0.90	0.50	2.10	1.60	3.50	12.90	0.30	0.10	0.53	hvCb			78.10	3.50	18.40
642	BC	STN	08-13S-09E	Castlegate A	73.50	1.10	2.40	0.50	3.80	1.40	3.20	13.60	0.50	0.00	0.51	hvCb			74.60	6.70	18.70
715	BC	DDC	07-13S-11E	Castlegate A	64.80	4.20	3.30	0.80	2.80	2.30	5.00	16.30	0.40	0.10	0.56	hvCb			69.00	6.90	24.10
715.1	BC	DDC	07-13S-11E	Castlegate A	56.00	2.50	3.60	0.40	2.80	3.30	5.30	25.60	0.40	0.10	0.57	hvCb			58.50	6.80	34.70
715.2	BC	DDC	07-13S-11E	Castlegate A	77.60	7.50	3.00	0.90	2.90	0.40	1.60	5.80	0.30	0.00	0.56	hvCb			85.10	6.80	8.10
715.3	BC	DDC	07-13S-11E	Castlegate A	63.10	3.30	3.00	0.50	2.20	1.00	6.10	20.40	0.40	0.00	0.55	hvCb			66.40	5.70	27.90
721	BC	MTS	14-12S-10E	Castlegate A	68.10	10.40	1.90	0.30	2.10	0.80	4.20	12.10	0.10	0.00	0.68	hvBb			78.50	4.30	17.20
724	BC	MTS	14-12S-10E	Castlegate A	65.80	4.30	2.40	0.40	2.90	0.70	5.30	17.70	0.50	0.00	0.65	hvBb			70.10	5.70	24.20
731	BC	MTS	14-12S-10E	Castlegate A	74.60	1.10	3.50	0.30	1.60	0.40	4.20	13.60	0.60	0.10	0.68	hvBb			75.70	5.40	18.90
Summary Statistics																					
Seam: Castlegate A			Mean		62.24	12.20	2.79	0.65	3.65	2.47	3.18	12.58	0.20	0.06	0.64				74.44	7.08	18.48
			Maximum		77.60	33.00	5.70	1.70	12.90	6.50	6.10	25.60	0.60	0.30	0.79				87.60	19.70	34.70
			Minimum		42.00	1.10	0.90	0.10	1.20	0.40	0.40	2.20	0.00	0.00	0.51				58.50	3.50	3.60
			Std. Deviation		9.14	8.82	1.03	0.42	2.56	1.50	1.50	5.59	0.20	0.08	0.07				7.11	3.31	6.91
70	BC	HLP	05-13S-10E	Castlegate B	48.70	12.70	4.80	1.50	5.60	3.10	3.30	20.20	0.10	0.00	0.65	hvBb			61.40	11.90	26.70
77	BC	STN	06-13S-08E	Castlegate B	51.20	21.60	2.10	0.40	2.20	6.60	2.10	13.70	0.00	0.10	0.69	hvBb			72.80	4.70	22.50
78	BC	STN	06-13S-09E	Castlegate B	56.00	24.00	4.80	1.80	6.50	4.30	0.40	1.90	0.00	0.30	0.62	hvBb			80.00	13.10	6.90
85	BC	STN	02-13S-08E	Castlegate B	53.70	18.80	1.90	0.90	2.80	3.60	2.00	16.10	0.20	0.00	0.74	hvAb			72.50	5.60	21.90
92	BC	STN	06-13S-09E	Castlegate B	60.90	5.20	2.40	0.50	1.70	3.20	3.10	23.00	0.00	0.00	0.69	hvBb			66.10	4.60	29.30
93	BC	STN	06-13S-09E	Castlegate B	62.90	7.90	1.50	0.70	16.20	2.90	1.50	6.40	0.00	0.00	0.65	hvBb			70.80	18.40	10.80
94	BC	STN	05-13S-09E	Castlegate B	68.90	17.70	2.00	1.00	5.20	3.10	0.20	1.80	0.00	0.10	0.61	hvBb			86.60	8.20	5.20
Summary Statistics																					
Seam: Castlegate B			Mean		55.47	15.41	2.79	0.97	5.74	3.83	1.80	11.87	0.04	0.07	0.67				72.89	9.50	17.61
			Maximum		68.90	24.00	4.80	1.80	16.20	6.60	3.30	23.00	0.20	0.30	0.74				86.60	18.40	29.30
			Minimum		48.70	5.20	1.50	0.40	1.70	2.90	0.20	1.80	0.00	0.00	0.61				61.40	4.60	5.20
			Std. Deviation		6.60	6.51	1.30	0.48	4.59	1.21	1.11	7.98	0.07	0.10	0.04				7.76	4.81	9.08

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
21	BC	HLP	36-12S-09E	Castlegate C	62.20	9.30	1.40	0.80	2.90	3.40	2.50	17.50	0.00	0.00	0.73	hvAb			71.50	5.10	23.40
27	BC	HLP	31-12S-10E	Castlegate C	54.30	32.40	1.10	0.10	2.70	4.30	1.00	4.10	0.00	0.00	0.70	hvBb			86.70	3.90	9.40
64	BC	HLP	05-13S-10E	Castlegate C	44.20	14.60	3.60	0.90	11.50	3.50	2.10	19.50	0.00	0.10	0.64	hvBb			58.80	16.00	25.20
65	BC	HLP	05-13S-10E	Castlegate C	48.30	18.70	4.70	0.70	11.10	3.80	2.10	10.40	0.10	0.10	0.64	hvBb			67.00	16.50	16.50
69	BC	HLP	05-13S-10E	Castlegate C	49.70	31.90	2.10	0.50	4.40	3.00	2.00	6.30	0.10	0.00	0.69	hvBb			81.60	7.00	11.40
75	BC	STN	06-13S-09E	Castlegate C	65.00	14.40	3.00	1.00	2.70	5.60	1.70	6.50	0.00	0.10	0.65	hvBb			79.40	6.70	13.90
98	BC	HLP	03-13S-10E	Castlegate C	52.70	23.00	1.40	0.20	6.40	2.30	1.50	12.30	0.00	0.20	0.63	hvBb			75.70	8.00	16.30
114	BC	MTS	27-12S-10E	Castlegate C	70.50	12.00	2.20	0.40	2.70	1.90	1.60	8.70	0.00	0.00	0.71	hvBb			82.50	5.30	12.20
254	BC	STN	33-12S-09E	Castlegate C	48.70	17.30	2.40	2.20	10.40	4.70	4.10	10.20	0.00	0.00	0.68	hvBb			66.00	15.00	19.00
Summary Statistics																					
Seam: Castlegate C			Mean		55.07	19.29	2.43	0.76	6.09	3.61	2.07	10.61	0.02	0.06	0.67				74.36	9.28	16.37
			Maximum		70.50	32.40	4.70	2.20	11.50	5.60	4.10	19.50	0.10	0.20	0.73				86.70	16.50	25.20
			Minimum		44.20	9.30	1.10	0.10	2.70	1.90	1.00	4.10	0.00	0.00	0.63				58.80	3.90	9.40
			Std. Deviation		8.35	7.80	1.10	0.59	3.66	1.09	0.83	4.84	0.04	0.07	0.03				8.64	4.78	5.07
22	BC	HLP	31-12S-10E	Castlegate D	47.20	41.30	1.40	0.30	2.00	5.40	0.60	1.70	0.00	0.10	0.64	hvBb			88.50	3.70	7.80
23	BC	HLP	31-12S-10E	Castlegate D	53.60	35.20	1.00	0.20	1.70	6.40	0.30	1.50	0.00	0.10	0.72	hvAb			88.80	2.90	8.30
24	BC	HLP	31-12S-10E	Castlegate D	63.90	11.50	3.50	2.10	5.40	4.00	0.90	8.10	0.20	0.40	0.65	hvBb			75.40	11.00	13.60
74	BC	STN	06-13S-09E	Castlegate D	61.10	24.30	4.50	1.10	3.30	3.10	0.70	1.60	0.00	0.30	0.59	hvBb			85.40	8.90	5.70
79	BC	KYN	28-12S-09E	Castlegate D	58.30	23.10	3.50	1.00	2.70	3.10	0.80	7.40	0.00	0.10	0.71	hvBb			81.40	7.20	11.40
86	BC	KYN	28-12S-09E	Castlegate D	57.10	16.10	1.30	4.00	7.10	2.20	1.80	10.20	0.20	0.00	0.68	hvBb			73.20	12.40	14.40
101	BC	STN	32-12S-09E	Castlegate D	58.00	9.80	2.70	0.70	9.50	3.70	2.20	13.30	0.10	0.00	0.62	hvBb			67.80	12.90	19.30
229	BC	STN	33-12S-09E	Castlegate D	46.10	16.50	4.20	0.60	17.80	4.10	1.30	9.20	0.10	0.10	0.62	hvBb			62.60	22.60	14.80
237	BC	STN	28-12S-09E	Castlegate D	71.70	7.30	3.00	0.50	1.80	4.30	4.60	6.80	0.00	0.00	0.67	hvBb			79.00	5.30	15.70
625.1	BC	STN	12S-09E	Castlegate D	65.30	10.50	2.00	0.50	4.60	1.60	2.50	12.60	0.40	0.00	0.64	hvBb			75.80	7.10	17.10
625.2	BC	STN	12S-09E	Castlegate D	62.20	7.00	2.00	0.50	4.00	1.00	5.50	17.40	0.40	0.00	0.62	hvBb			69.20	6.50	24.30
625.3	BC	STN	12S-09E	Castlegate D	71.20	5.10	2.60	0.70	3.50	2.50	4.00	10.20	0.20	0.00	0.62	hvBb			76.30	6.80	16.90
733	BC	MTS	14-12S-10E	Castlegate D	80.40	2.20	3.20	0.70	3.20	0.10	2.30	7.30	0.50	0.10	0.69	hvBb			82.60	7.10	10.30
Summary Statistics																					
Seam: Castlegate D			Mean		61.24	16.15	2.68	0.99	5.12	3.19	2.12	8.25	0.16	0.09	0.65				77.38	8.80	13.82
			Maximum		80.40	41.30	4.50	4.00	17.80	6.40	5.50	17.40	0.50	0.40	0.72				88.80	22.60	24.30
			Minimum		46.10	2.20	1.00	0.20	1.70	0.10	0.30	1.50	0.00	0.00	0.59				62.60	2.90	5.70
			Std. Deviation		9.29	11.38	1.06	0.98	4.24	1.68	1.59	4.58	0.17	0.12	0.04				7.68	4.93	4.93
719	BC	DDC	07-13S-11E	Centennial	72.00	3.80	2.80	1.10	1.40	1.50	5.30	11.70	0.40	0.00	0.53	hvCb			75.80	5.30	18.90
719.1	BC	DDC	07-13S-11E	Centennial	74.50	4.10	3.10	1.00	1.30	1.50	4.60	9.50	0.40	0.00	0.52	hvCb			78.60	5.40	16.00
719.2	BC	DDC	07-13S-11E	Centennial	76.20	2.90	1.90	1.40	2.10	0.90	4.00	9.90	0.60	0.10	0.54	hvCb			79.10	5.40	15.50
719.3	BC	DDC	07-13S-11E	Centennial	71.40	3.70	4.50	0.40	2.40	2.50	4.10	10.60	0.40	0.00	0.52	hvCb			75.10	7.30	17.60
Summary Statistics																					
Seam: Centennial			Mean		73.53	3.63	3.08	0.97	1.80	1.60	4.50	10.43	0.45	0.03	0.53				77.15	5.85	17.00
			Maximum		76.20	4.10	4.50	1.40	2.40	2.50	5.30	11.70	0.60	0.10	0.54				79.10	7.30	18.90
			Minimum		71.40	2.90	1.90	0.40	1.30	0.90	4.00	9.50	0.40	0.00	0.52				75.10	5.30	15.50
			Std. Deviation		1.93	0.44	0.93	0.36	0.46	0.57	0.51	0.83	0.09	0.04	0.01				1.73	0.84	1.34

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
11	BC	PNC	10-13S-12E	Gilson	63.30	14.70	2.40	1.40	5.00	1.20	1.70	10.00	0.10	0.20	0.72	hvAb			78.00	8.80	13.20
204	BC	DDC	09-13S-11E	Gilson	46.40	25.80	1.20	0.10	1.60	3.70	2.70	18.10	0.10	0.30	0.70	hvBb			72.20	2.90	24.90
260	BC	PNC	34-12S-12E	Gilson	57.30	20.90	0.70	0.60	0.70	2.70	5.90	11.20	0.00	0.00	0.81	hvAb			78.20	2.00	19.80
262	BC	PNC	34-12S-12E	Gilson	53.30	23.80	2.90	0.30	1.20	2.30	4.60	11.30	0.20	0.10	0.81	hvAb			77.10	4.40	18.50
312	BC	PNC	15-13S-12E	Gilson	46.60	35.40	2.90	0.10	0.80	3.80	4.00	6.20	0.10	0.10	0.68	hvBb			82.00	3.80	14.20
315	BC	PNC	16-13S-12E	Gilson	59.80	12.70	2.40	0.20	0.60	3.80	13.40	7.10	0.00	0.00	0.66	hvBb			72.50	3.20	24.30
318	BC	MBS	19-13S-13E	Gilson	65.10	8.90	3.80	0.20	2.60	3.50	3.50	11.90	0.50	0.00	0.64	hvBb			74.00	6.60	19.40
371	BC	DDC	07-13S-11E	Gilson	27.50	52.30	1.30	0.30	1.00	6.20	4.00	7.20	0.10	0.10	0.62	hvBb			79.80	2.60	17.60
372	BC	DDC	07-13S-11E	Gilson	54.20	14.40	2.60	0.20	0.50	6.20	7.80	13.90	0.10	0.10	0.62	hvBb			68.60	3.30	28.10
373	BC	DDC	07-13S-11E	Gilson	54.10	17.40	2.70	0.00	1.00	6.60	6.30	11.70	0.10	0.10	0.61	hvBb			71.50	3.70	24.80
374	BC	DDC	07-13S-11E	Gilson	57.40	12.10	2.60	0.20	0.90	7.50	4.00	15.10	0.20	0.00	0.59	hvBb			69.50	3.70	26.80
375	BC	DDC	07-13S-11E	Gilson	35.10	38.00	2.60	0.20	0.50	5.80	6.30	11.00	0.40	0.10	0.59	hvBb			73.10	3.30	23.60
376	BC	DDC	07-13S-11E	Gilson	42.50	34.30	2.10	0.00	1.10	6.80	3.90	9.10	0.20	0.00	0.64	hvBb			76.80	3.20	20.00
376.1	BC	DDC	07-13S-11E	Gilson	57.40	14.20	3.20	0.30	0.80	5.70	5.10	12.80	0.50	0.00	0.60	hvBb			71.60	4.30	24.10
380	BC	MMW	17-12S-11E	Gilson	66.80	15.50	1.90	0.70	0.70	3.50	3.60	7.30	0.00	0.00	0.73	hvAb			82.30	3.30	14.40
587	BC	DDC	01-13S-11E	Gilson	59.70	8.00	1.60	0.20	0.90	4.30	4.70	20.20	0.40	0.00	0.61	hvBb			67.70	2.70	29.60
591	BC	DDC	08-13S-11E	Gilson	65.60	2.80	1.60	0.20	1.90	3.30	5.70	17.90	1.00	0.00	0.47	hvCb			68.40	3.70	27.90
592	BC	DDC	12-13S-11E	Gilson	70.10	4.70	2.30	1.70	1.40	1.40	4.00	13.70	0.70	0.00	0.52	hvCb			74.80	5.40	19.80
659	BC	DDC	08-13S-11E	Gilson	68.00	8.20	2.10	0.90	2.00	1.60	4.20	12.20	0.80	0.00	0.60	hvBb			76.20	5.00	18.80
659.1	BC	DDC	08-13S-11E	Gilson	69.50	4.50	2.00	0.00	1.60	2.60	4.60	14.30	0.90	0.00	0.60	hvBb			74.00	3.60	22.40
659.2	BC	DDC	08-13S-11E	Gilson	65.00	3.90	2.40	0.30	2.60	0.80	5.40	18.60	0.90	0.10	0.58	hvBb			68.90	5.30	25.80
659.3	BC	DDC	08-13S-11E	Gilson	68.90	8.20	1.60	1.10	1.80	1.90	4.10	11.70	0.70	0.00	0.59	hvBb			77.10	4.50	18.40
Summary Statistics																					
Seam: Gilson			Mean		56.98	17.30	2.22	0.42	1.42	3.87	4.98	12.39	0.36	0.05	0.64				74.29	4.06	21.65
			Maximum		70.10	52.30	3.80	1.70	5.00	7.50	13.40	20.20	1.00	0.30	0.81				82.30	8.80	29.60
			Minimum		27.50	2.80	0.70	0.00	0.50	0.80	1.70	6.20	0.00	0.00	0.47				67.70	2.00	13.20
			Std. Deviation		11.19	12.63	0.70	0.45	0.99	1.97	2.24	3.81	0.33	0.08	0.08				4.24	1.46	4.50
25	BC	HLP	31-12S-10E	Kenilworth	55.90	13.90	5.50	0.80	2.60	3.70	4.60	12.70	0.20	0.10	0.67	hvBb			69.80	8.90	21.30
31	BC	HLP	26-12S-10E	Kenilworth	56.50	13.80	3.30	0.70	1.30	6.90	2.40	15.00	0.10	0.00	0.75	hvAb			70.30	5.30	24.40
108	BC	HLP	35-12S-10E	Kenilworth	60.40	28.30	3.40	1.20	2.30	2.50	0.40	1.50	0.00	0.00	0.61	hvBb			88.70	6.90	4.40
109	BC	HLP	35-12S-10E	Kenilworth	43.40	5.90	3.90	0.80	3.50	4.00	2.20	36.30	0.00	0.00	0.70	hvBb			49.30	8.20	42.50
113	BC	MTS	27-12S-10E	Kenilworth	71.40	11.60	2.30	1.20	1.60	1.30	1.90	8.60	0.10	0.00	0.71	hvBb			83.00	5.10	11.90
255	BC	STN	33-12S-09E	Kenilworth	61.90	24.70	1.50	0.40	2.70	2.20	0.70	5.10	0.10	0.70	0.74	hvAb			86.60	4.60	8.80
586	BC	DDC	10-13S-11E	Kenilworth	63.30	12.60	2.90	0.10	1.10	2.50	4.20	13.00	0.30	0.00	0.61	hvBb			75.90	4.10	20.00
593	BC	DDC	12-13S-10E	Kenilworth	70.70	3.10	2.10	0.30	2.20	2.70	2.60	15.30	0.70	0.30	0.42	subb			73.80	4.60	21.60
723	BC	MTS	14-12S-10E	Kenilworth	74.80	5.70	3.10	1.20	4.00	1.10	2.40	7.00	0.70	0.00	0.59	hvBb			80.50	8.30	11.20
734	BC	MTS	14-12S-10E	Kenilworth	81.80	4.70	1.60	1.00	4.10	0.30	1.80	4.30	0.20	0.20	0.65	hvBb			86.50	6.70	6.80
735	BC	MTS	14-12S-10E	Kenilworth	83.40	1.80	3.00	0.90	2.50	0.30	2.20	5.30	0.50	0.10	0.62	hvBb			85.20	6.40	8.40
Summary Statistics																					
Seam: Kenilworth			Mean		65.77	11.46	2.96	0.78	2.54	2.50	2.31	11.28	0.26	0.13	0.64				77.24	6.28	16.48
			Maximum		83.40	28.30	5.50	1.20	4.10	6.90	4.60	36.30	0.70	0.70	0.75				88.70	8.90	42.50
			Minimum		43.40	1.80	1.50	0.10	1.10	0.30	0.40	1.50	0.00	0.00	0.42				49.30	4.10	4.40
			Std. Deviation		11.44	8.23	1.08	0.36	0.96	1.82	1.19	9.07	0.25	0.20	0.09				10.91	1.59	10.51

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
12	BC	SNS	17-14S-14S	Lwr.Sunnyside	57.20	29.50	3.20	2.20	2.90	1.40	0.80	2.70	0.10	0.00	0.80	hvAb			86.70	8.30	5.00
13	BC	SNS	17-14S-14E	Lwr.Sunnyside	59.10	22.70	2.40	1.00	3.00	1.30	1.50	8.80	0.20	0.00	0.83	hvAb			81.80	6.40	11.80
14	BC	SNS	17-14S-14E	Lwr.Sunnyside	63.60	19.30	1.70	1.30	2.50	1.40	2.40	7.50	0.20	0.10	0.84	hvAb			82.90	5.50	11.60
15	BC	SNS	17-14S-14E	Lwr.Sunnyside	64.50	18.60	2.70	1.40	2.60	1.80	1.70	6.50	0.10	0.10	0.83	hvAb			83.10	6.70	10.20
16	BC	SNS	17-14S-14E	Lwr.Sunnyside	64.10	24.00	3.00	4.10	2.30	0.90	0.20	1.20	0.00	0.20	0.79	hvAb			88.10	9.40	2.50
17	BC	SNS	17-14S-14E	Lwr.Sunnyside	60.70	26.60	3.70	3.10	1.60	1.60	0.60	1.60	0.30	0.20	0.83	hvAb			87.30	8.40	4.30
261	BC	PNC	34-12S-12E	Lwr.Sunnyside	53.00	4.80	5.00	1.50	1.20	4.70	12.90	16.90	0.00	0.00	0.63	hvBb			57.80	7.70	34.50
317	BC	MBS	19-13S-13E	Lwr.Sunnyside	52.50	33.10	3.30	1.20	1.20	3.40	2.30	2.80	0.20	0.00	0.63	hvBb			85.60	5.70	8.70
660	BC	DDC	08-13S-11E	Lwr.Sunnyside	71.20	11.40	1.10	0.40	0.90	0.90	5.30	8.00	0.80	0.00	0.62	hvBb			82.60	2.40	15.00
660.1	BC	DDC	08-13S-11E	Lwr.Sunnyside	68.90	10.40	1.80	0.70	1.70	0.80	5.00	10.40	0.30	0.00	0.61	hvBb			79.30	4.20	16.50
660.2	BC	DDC	08-13S-11E	Lwr.Sunnyside	71.10	8.60	1.30	0.50	0.90	1.00	4.50	11.60	0.50	0.00	0.58	hvBb			79.70	2.70	17.60
660.3	BC	DDC	08-13S-11E	Lwr.Sunnyside	73.80	8.10	1.80	0.40	2.10	1.00	4.00	8.20	0.60	0.00	0.58	hvBb			81.90	4.30	13.80
661	BC	PTH	17-14S-14E	Lwr.Sunnyside	68.60	16.40	1.70	0.50	1.40	1.10	2.50	7.50	0.30	0.00	0.72	hvAb			85.00	3.60	11.40
661.1	BC	PTH	17-14S-14E	Lwr.Sunnyside	59.10	28.60	1.10	0.40	0.80	0.70	1.70	7.30	0.30	0.00	0.73	hvAb			87.70	2.30	10.00
661.2	BC	PTH	17-14S-14E	Lwr.Sunnyside	68.60	11.90	2.00	0.50	0.80	1.60	3.00	10.90	0.70	0.00	0.73	hvAb			80.50	3.30	16.20
661.3	BC	PTH	17-14S-14E	Lwr.Sunnyside	70.40	20.60	0.60	1.00	1.40	0.70	1.20	4.10	0.00	0.00	0.72	hvAb			91.00	3.00	6.00
702	BC	PTH	21-14S-14E	Lwr.Sunnyside	64.60	9.60	3.30	1.90	2.50	1.50	3.10	13.20	0.30	0.00	0.79	hvAb			74.20	7.70	18.10
702.1	BC	PTH	21-14S-14E	Lwr.Sunnyside	66.30	9.60	2.70	1.10	2.40	1.20	3.50	12.90	0.20	0.10	0.81	hvAb			75.90	6.20	17.90
702.2	BC	PTH	21-14S-14E	Lwr.Sunnyside	67.70	9.00	3.70	2.20	3.20	1.10	3.70	8.90	0.40	0.10	0.78	hvAb			76.70	9.10	14.20
702.3	BC	PTH	21-14S-14E	Lwr.Sunnyside	72.80	7.40	2.00	1.80	2.20	1.20	4.80	7.50	0.30	0.00	0.76	hvAb			80.20	6.00	13.80
737	BC	WSE	06-17S-15E	Lwr.Sunnyside	77.40	4.90	2.60	1.50	1.80	0.40	3.20	7.50	0.60	0.10	0.66	hvBb			82.30	5.90	11.80
738	BC	WNE	36-16S-14E	Lwr.Sunnyside	79.90	3.00	2.50	1.20	1.60	0.90	1.70	8.80	0.30	0.10	0.60	hvBb			82.90	5.30	11.80
Summary Statistics																					
Seam: Lwr.Sunnyside				Mean	66.14	15.37	2.42	1.36	1.86	1.39	3.16	7.95	0.30	0.05	0.72				81.51	5.64	12.85
				Maximum	79.90	33.10	5.00	4.10	3.20	4.70	12.90	16.90	0.80	0.20	0.84				91.00	9.40	34.50
				Minimum	52.50	3.00	0.60	0.40	0.80	0.40	0.20	1.20	0.00	0.00	0.58				57.80	2.30	2.50
				Std. Deviation	7.05	8.77	1.02	0.91	0.73	0.92	2.56	3.82	0.22	0.07	0.09				6.57	2.16	6.41
9	BC	PNC	04-13S-12E	Rock Canyon	59.90	19.40	3.00	1.00	3.00	1.80	1.00	10.60	0.30	0.00	0.78	hvAb			79.30	7.00	13.70
10	BC	PNC	04-13S-12E	Rock Canyon	61.10	14.80	3.70	1.20	4.50	2.00	2.00	10.30	0.40	0.00	0.76	hvAb			75.90	9.40	14.70
213	BC	DDC	09-13S-11E	Rock Canyon	50.20	39.50	0.90	0.00	2.30	1.10	1.60	4.40	0.00	0.00	0.72	hvAb			89.70	3.20	7.10
258	BC	PNC	34-12S-12E	Rock Canyon	76.70	12.40	1.20	0.20	1.30	0.80	2.30	5.10	0.00	0.00	0.74	hvAb			89.10	2.70	8.20
311	BC	PNC	15-13S-12E	Rock Canyon	46.60	32.80	3.00	0.20	1.00	1.40	8.90	6.00	0.10	0.00	0.67	hvBb			79.40	4.20	16.40
313	BC	PNC	13-13S-12E	Rock Canyon	39.20	48.80	2.70	0.30	1.00	0.90	5.20	1.80	0.00	0.10	0.68	hvBb			88.00	4.00	8.00
314	BC	PNC	16-13S-12E	Rock Canyon	55.50	30.20	3.00	0.30	0.60	1.40	5.80	2.90	0.30	0.00	0.65	hvBb			85.70	3.90	10.40
352	BC	PNC	18-13S-12E	Rock Canyon	64.50	18.90	3.30	1.00	0.90	1.70	4.20	5.50	0.00	0.00	0.62	hvBb			83.40	5.20	11.40
369	BC	PNC	18-13S-12E	Rock Canyon	60.80	14.70	3.50	1.00	0.90	4.30	5.70	9.00	0.10	0.00	0.61	hvBb			75.50	5.40	19.10
379	BC	MMW	17-12S-11E	Rock Canyon	60.80	19.90	3.50	1.80	1.10	2.80	4.40	5.70	0.00	0.00	0.77	hvAb			80.70	6.40	12.90
385	BC	PNC	18-13S-12E	Rock Canyon	48.00	29.40	2.00	0.40	1.40	3.60	4.70	10.00	0.40	0.10	0.64	hvBb			77.40	3.80	18.80
495	BC	PNC	18-13S-12E	Rock Canyon	60.20	10.00	1.60	0.30	1.60	3.10	7.40	15.40	0.30	0.10	0.61	hvBb			70.20	3.50	26.30
589	BC	DDC	10-13S-11E	Rock Canyon	62.40	12.60	1.70	0.80	1.20	2.00	4.30	14.40	0.60	0.00	0.61	hvBb			75.00	3.70	21.30
594	BC	PNC	18-13S-12E	Rock Canyon	67.50	2.00	2.40	0.10	1.70	2.00	2.90	20.50	0.70	0.20	0.63	hvBb			69.50	4.20	26.30
595	BC	PNC	18-13S-12E	Rock Canyon	73.80	10.10	1.40	1.00	1.30	1.90	1.60	8.70	0.20	0.00	0.62	hvBb			83.90	3.70	12.40
596	BC	PNC	18-13S-12E	Rock Canyon	64.10	12.70	1.90	0.60	0.50	2.00	4.60	13.20	0.30	0.10	0.67	hvBb			76.80	3.00	20.20

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
650	BC	PNC	08-13S-12E	Rock Canyon	67.50	7.10	1.50	0.40	1.40	1.80	3.90	15.90	0.40	0.10	0.63	hvBb			74.60	3.30	22.10
650.1	BC	PNC	08-13S-12E	Rock Canyon	69.10	9.60	2.70	0.20	0.70	1.20	3.90	12.10	0.50	0.00	0.63	hvBb			78.70	3.60	17.70
650.2	BC	PNC	08-13S-12E	Rock Canyon	68.70	8.50	2.20	0.70	1.50	1.70	2.70	13.40	0.60	0.00	0.61	hvBb			77.20	4.40	18.40
650.3	BC	PNC	08-13S-12E	Rock Canyon	65.30	7.30	2.50	0.20	0.80	2.50	5.50	15.70	0.20	0.00	0.64	hvBb			72.60	3.50	23.90
Summary Statistics																					
Seam: Rock Canyon			Mean		61.10	18.03	2.38	0.59	1.44	2.00	4.13	10.03	0.27	0.04	0.66				79.13	4.41	16.46
			Maximum		76.70	48.80	3.70	1.80	4.50	4.30	8.90	20.50	0.70	0.20	0.78				89.70	9.40	26.30
			Minimum		39.20	2.00	0.90	0.00	0.50	0.80	1.00	1.80	0.00	0.00	0.61				69.50	2.70	7.10
			Std. Deviation		9.12	11.84	0.81	0.45	0.90	0.87	1.96	4.92	0.22	0.06	0.06				5.77	1.57	5.77
76	BC	KYN	28-12S-09E	Sub-seam 1	64.00	25.50	3.80	1.30	0.90	2.80	0.20	1.50	0.00	0.00	0.70	hvBb			89.50	6.00	4.50
82	BC	KYN	28-12S-09E	Sub-seam 1	64.80	12.60	4.40	0.80	3.70	2.70	2.20	8.70	0.00	0.10	0.69	hvBb			77.40	8.90	13.70
89	BC	KYN	28-12S-09E	Sub-seam 1	71.30	17.30	4.40	0.90	1.10	2.50	0.10	2.40	0.00	0.00	0.71	hvBb			88.60	6.40	5.00
Summary Statistics																					
Seam: Sub-seam1			Mean		66.70	18.47	4.20	1.00	1.90	2.67	0.83	4.20	0.00	0.03	0.70				85.17	7.10	7.73
			Maximum		71.30	25.50	4.40	1.30	3.70	2.80	2.20	8.70	0.00	0.10	0.71				89.50	8.90	13.70
			Minimum		64.00	12.60	3.80	0.80	0.90	2.50	0.10	1.50	0.00	0.00	0.69				77.40	6.00	4.50
			Std. Deviation		3.27	5.33	0.28	0.22	1.28	0.12	0.97	3.20	0.00	0.05	0.01				5.50	1.28	4.22
83	BC	KYN	28-12S-09E	Sub-seam 2	50.20	36.90	3.30	0.50	2.30	2.10	0.60	3.90	0.10	0.10	0.72	hvAb			87.10	6.10	6.80
90	BC	KYN	28-12S-09E	Sub-seam 2	64.50	21.50	2.80	0.70	3.40	1.50	0.80	4.70	0.00	0.10	0.63	hvBb			86.00	6.90	7.10
97	BC	STN	03-13S-10E	Sub-seam 2	56.80	34.80	1.40	0.70	2.20	3.20	0.00	0.90	0.00	0.00	0.70	hvBb			91.60	4.30	4.10
102	BC	STN	32-12S-09E	Sub-seam 2	42.80	24.40	1.50	0.10	1.50	4.40	2.40	22.80	0.00	0.10	0.72	hvAb			67.20	3.10	29.70
639	BC	STN	15-13S-09E	Sub-seam 2	85.00	2.80	1.90	0.00	2.60	1.70	1.80	4.00	0.10	0.10	0.51	hvCb			87.80	4.50	7.70
Summary Statistics																					
Seam: Sub-seam 2			Mean		59.86	24.08	2.18	0.40	2.40	2.58	1.12	7.26	0.04	0.08	0.66				83.94	4.98	11.08
			Maximum		85.00	36.90	3.30	0.70	3.40	4.40	2.40	22.80	0.10	0.10	0.72				91.60	6.90	29.70
			Minimum		42.80	2.80	1.40	0.00	1.50	1.50	0.00	0.90	0.00	0.00	0.51				67.20	3.10	4.10
			Std. Deviation		14.47	12.16	0.75	0.30	0.62	1.08	0.86	7.88	0.05	0.04	0.08				8.58	1.35	9.39
103	BC	STN	32-12S-09E	Sub-seam 3	67.30	12.20	1.50	0.50	1.40	1.60	1.90	13.60	0.00	0.00	0.68	hvBb	31.00		79.50	3.40	17.10
626	BC	STN	09-13S-09E	Sub-seam 3	67.60	15.90	2.90	0.50	3.00	2.30	1.00	6.80	0.00	0.00	0.60	hvBb	30.60	64.60	83.50	6.40	10.10
627	BC	STN	09-13S-09E	Sub-seam 3	60.90	12.30	2.90	0.70	2.60	4.10	4.00	11.80	0.60	0.10	0.62	hvBb	29.30	61.20	73.20	6.20	20.60
640	BC	STN	11-13S-09E	Sub-seam 3	75.10	1.30	1.90	0.40	1.60	1.80	5.50	11.90	0.40	0.10	0.49	hvCb			76.40	3.90	19.70
643	BC	STN	15-13S-09E	Sub-seam 3	77.70	0.50	2.90	0.30	2.60	1.40	2.70	11.50	0.40	0.00	0.50	hvCb			78.20	5.80	16.00
644	BC	STN	16-13S-09E	Sub-seam 3	80.40	1.60	2.80	1.50	2.20	0.70	2.40	7.70	0.50	0.20	0.51	hvCb			82.00	6.50	11.50
648	BC	STN	03-13S-09E	Sub-seam 3	82.20	3.70	2.90	0.40	2.30	1.70	1.40	5.30	0.10	0.00	0.56	hvCb	32.40	67.60	85.90	5.60	8.50
648.1	BC	STN	03-13S-09E	Sub-seam 3	73.70	3.00	2.20	0.60	7.20	2.20	3.10	7.30	0.50	0.20	0.54	hvCb	32.05	57.70	76.70	10.00	13.30
648.2	BC	STN	03-13S-09E	Sub-seam 3	81.80	7.10	2.40	1.60	1.00	0.80	0.80	4.40	0.00	0.10	0.59	hvBb	33.60	73.40	88.90	5.00	6.10
648.3	BC	STN	03-13S-09E	Sub-seam 3	79.70	8.70	3.10	0.80	1.60	2.10	0.40	3.00	0.40	0.20	0.60	hvBb	33.60	61.70	88.40	5.50	6.10
694	BC	HLP	34-13S-09E	Sub-seam 3	69.60	6.80	3.90	0.40	1.60	3.70	3.00	10.50	0.30	0.20	0.65	hvBb			76.40	5.90	17.70
694.1	BC	HLP	34-13S-09E	Sub-seam 3	70.20	5.00	2.50	0.80	3.00	1.80	3.70	12.50	0.40	0.10	0.61	hvBb			75.20	6.30	18.50
694.2	BC	HLP	34-13S-09E	Sub-seam 3	70.00	4.70	4.90	0.60	1.10	1.30	2.40	14.40	0.50	0.10	0.61	hvBb			74.70	6.60	18.70
694.3	BC	HLP	34-13S-09E	Sub-seam 3	78.90	9.40	3.80	0.30	1.20	2.00	0.60	3.60	0.20	0.00	0.61	hvBb			88.30	5.30	6.40

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
695	BC	HLP	34-13S-09E	Sub-seam 3	72.70	7.70	2.90	0.50	3.50	3.20	2.00	7.20	0.20	0.10	0.61	hvBb			80.40	6.90	12.70
695.1	BC	HLP	34-13S-09E	Sub-seam 3	65.30	7.70	4.30	0.40	2.20	1.70	3.60	14.40	0.30	0.10	0.62	hvBb			73.00	6.90	20.10
695.2	BC	HLP	34-13S-09E	Sub-seam 3	64.90	3.80	5.20	0.50	2.80	1.80	5.90	14.80	0.30	0.00	0.61	hvBb			68.70	8.50	22.80
695.3	BC	HLP	34-13S-09E	Sub-seam 3	70.50	14.60	5.10	0.80	4.00	1.30	0.90	2.50	0.20	0.10	0.63	hvBb			85.10	9.90	5.00
Summary Statistics																					
Seam: Sub-seam 3			Mean		72.69	7.00	3.23	0.64	2.49	1.97	2.52	9.07	0.29	0.09	0.59		31.79	64.37	79.69	6.37	13.94
			Maximum		82.20	15.90	5.20	1.60	7.20	4.10	5.90	14.80	0.60	0.20	0.68		33.60	73.40	88.90	10.00	22.80
			Minimum		60.90	0.50	1.50	0.30	1.00	0.70	0.40	2.50	0.00	0.00	0.49		29.30	57.70	68.70	3.40	5.00
			Std. Deviation		6.19	4.42	1.05	0.36	1.41	0.88	1.56	4.12	0.18	0.07	0.05		1.48	5.06	5.81	1.68	5.67
8	BC	PNC	04-13S-12E	Sunnyside	54.50	26.00	1.10	1.60	2.70	1.40	2.30	10.20	0.20	0.00	0.73	hvAb			80.50	5.40	14.10
250	BC	DDC	09-13S-11E	Sunnyside	44.70	42.60	1.20	0.00	0.90	0.90	3.50	6.20	0.00	0.00	0.75	hvAb			87.30	2.10	10.60
584	BC	DDC	08-13S-11E	Sunnyside	48.40	1.00	1.30	0.10	0.50	1.80	11.00	35.80	0.10	0.00	0.00				49.40	1.90	48.70
585	BC	DDC	03-13S-11E	Sunnyside	59.70	19.30	2.20	0.40	1.50	1.30	4.00	11.30	0.30	0.00	0.63	hvBb			79.00	4.10	16.90
716	BC	PNC	18-13S-12E	Sunnyside	65.90	5.30	2.50	1.50	1.50	1.30	16.60	4.80	0.60	0.00	0.62	hvBb			71.20	5.50	23.30
716.1	BC	PNC	18-13S-12E	Sunnyside	71.80	5.90	1.50	0.70	2.50	0.90	3.60	12.50	0.60	0.00	0.62	hvBb			77.70	4.70	17.60
716.2	BC	PNC	18-13S-12E	Sunnyside	78.40	7.60	1.60	1.30	2.10	0.60	2.00	5.90	0.40	0.10	0.63	hvBb			86.00	5.00	9.00
716.3	BC	PNC	18-13S-12E	Sunnyside	77.80	4.00	2.40	1.20	2.80	0.70	2.80	7.90	0.40	0.00	0.63	hvBb			81.80	6.40	11.80
720	BC	PNC	18-13S-12E	Sunnyside	73.60	2.70	2.70	0.50	1.60	1.40	3.30	13.70	0.40	0.10	0.59	hvBb			76.30	4.80	18.90
720.1	BC	PNC	18-13S-12E	Sunnyside	72.70	1.90	2.60	1.10	1.40	0.60	4.00	15.50	0.20	0.00	0.59	hvBb			74.60	5.10	20.30
720.2	BC	PNC	18-13S-12E	Sunnyside	77.80	4.60	2.10	1.10	1.10	0.60	3.60	8.70	0.40	0.00	0.57	hvBb			82.40	4.30	13.30
720.3	BC	PNC	18-13S-12E	Sunnyside	70.70	1.70	3.30	1.00	1.30	1.20	5.90	14.60	0.30	0.00	0.59	hvBb			72.40	5.60	22.00
736	BC	WSE	06-17S-15E	Sunnyside	80.70	3.80	2.20	0.90	1.30	0.30	2.90	7.00	0.80	0.10	0.66	hvBb			84.50	4.40	11.10
739	BC	WSE	06-17S-15E	Sunnyside	75.40	2.80	2.00	0.80	1.70	1.00	4.50	11.00	0.40	0.40	0.59	hvBb			78.20	4.50	17.30
Summary Statistics																					
Seam: Sunnyside			Mean		68.01	9.23	2.05	0.87	1.64	1.00	5.00	11.79	0.36	0.06	0.63				77.24	4.56	18.21
			Maximum		80.70	42.60	3.30	1.60	2.80	1.80	16.60	35.80	0.80	0.40	0.75				87.30	6.40	48.70
			Minimum		44.70	1.00	1.10	0.00	0.50	0.30	2.00	4.80	0.00	0.00	0.00				49.40	1.90	9.00
			Std. Deviation		11.26	11.54	0.62	0.47	0.65	0.40	3.86	7.41	0.20	0.11	0.05				9.01	1.20	9.46
378	BC	MMW	17-12S-11E	Unknown	64.00	20.60	2.70	0.30	1.50	2.30	3.70	4.60	0.20	0.10	0.81	hvAb			84.60	4.50	10.90
588	BC	DDC	10-13S-11E	Unknown	70.50	13.20	2.30	0.50	2.90	2.00	1.70	6.40	0.30	0.20	0.59	hvBb			83.70	5.70	10.60
641	BC	STN	02-13S-09E	Unknown	71.50	3.40	1.40	0.40	2.40	1.70	4.10	14.30	0.80	0.00	0.53	hvCb			74.90	4.20	20.90
722	BC	MTS	14-12S-10E	Unknown	69.50	0.70	3.40	1.70	2.70	1.50	4.40	15.60	0.50	0.00	0.60	hvBb			70.20	7.80	22.00
732	BC			Unknown	81.70	0.20	3.00	0.50	1.30	0.90	4.30	7.10	0.50	0.50	0.62	hvBb			81.90	4.80	13.30
Summary Statistics																					
Seam: Unknown			Mean		71.44	7.62	2.56	0.68	2.16	1.68	3.64	9.60	0.46	0.16	0.63				79.06	5.40	15.54
			Maximm		81.70	20.60	3.40	1.70	2.90	2.30	4.40	15.60	0.80	0.50	0.81				84.60	7.80	22.00
			Minimm		64.00	0.20	1.40	0.30	1.30	0.90	1.70	4.60	0.20	0.00	0.53				70.20	4.20	10.60
			Std.Deviation		5.75	8.00	0.68	0.52	0.64	0.47	1.00	4.46	0.21	0.19	0.09				5.59	1.30	4.93

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
317.1	BC	MBS	19-13S-13E	Upper Sunnyside	39.10	51.00	2.20	0.70	1.20	4.70	0.80	0.30	0.00	0.00	0.65	hvBb			90.10	4.10	5.80
658	BC	PTH	34-14S-14E	Upper Sunnyside	68.10	16.90	1.50	0.60	1.10	1.60	2.10	7.70	0.40	0.00	0.68	hvBb			85.00	3.20	11.80
658.1	BC	PTH	34-14S-14E	Upper Sunnyside	67.90	8.30	2.20	0.30	0.70	1.20	4.10	14.70	0.60	0.00	0.69	hvBb			76.20	3.20	20.60
658.2	BC	PTH	34-14S-14E	Upper Sunnyside	72.10	12.00	2.10	0.10	1.00	0.60	3.70	8.10	0.30	0.00	0.68	hvBb			84.10	3.20	12.70
658.3	BC	PTH	34-14S-14E	Upper Sunnyside	71.30	19.80	1.60	1.10	0.30	0.20	1.90	3.50	0.30	0.00	0.68	hvBb			91.10	3.00	5.90
Summary Statistics																					
Seam: Upper Sunnyside				Mean	63.70	21.60	1.92	0.56	0.86	1.66	2.52	6.86	0.32	0.00	0.68				85.30	3.34	11.36
				Maximum	72.10	51.00	2.20	1.10	1.20	4.70	4.10	14.70	0.60	0.00	0.69				91.10	4.10	20.60
				Minimum	39.10	8.30	1.50	0.10	0.30	0.20	0.80	0.30	0.00	0.00	0.65				76.20	3.00	5.80
				Std. Deviation	12.41	15.22	0.31	0.34	0.33	1.59	1.22	4.86	0.19	0.00	0.01				5.31	0.39	5.44

Appendix D. Coal-characteristics Data for the Book Cliffs Coal Field (continued)

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
66	BC	Castlegate A	HLP-A060	DH USBM-364 (MC-173)	3.80	0.60	1.10	0.00	0.80	0.00	6.30	89.20	0.60	3.90	0.00	1.29	3.80
67	BC	Castlegate A	HLP-A061	DH USBM-365 (MC-173)	2.70	0.90	1.20	0.00	0.50	0.00	5.30	90.40	0.60	3.70	0.00	1.34	2.94
68	BC	Castlegate A	HLP-A062	DH USBM-366 (MC-175)	6.40	0.30	0.80	0.00	0.30	0.00	7.80	88.60	0.70	2.90	0.00	1.31	3.63
71	BC	Castlegate A	HLP-A065	DH USBM-369 (MC-176)	9.00	0.80	2.30	0.00	0.70	0.10	12.90	80.30	1.10	5.70	0.00	1.31	4.16
72	BC	Castlegate A	KYN-A008	DH USBM-696 (MC-172)	0.70	0.50	0.20	0.00	0.30	0.00	1.70	93.80	1.10	3.40	0.00	1.32	
73	BC	Castlegate A	KYN-A009	DH USBM-717 (MC-172)	0.70	0.10	0.50	0.00	0.90	0.10	2.30	94.00	0.80	2.90	0.00	1.30	
80	BC	Castlegate A	KYN-A012	DH MC-181	0.50	0.30	3.50	0.00	0.70	0.00	5.00	91.40	1.50	2.10	0.00	1.31	2.37
81	BC	Castlegate A	KYN-A013	DH MC-181	0.50	0.30	0.60	0.00	0.60	0.30	2.30	91.50	1.70	4.50	0.00	1.32	
88	BC	Castlegate A	KYN-A018	DH USBM-802 (MC-186)	0.00	0.80	1.70	0.00	0.80	0.10	3.40	93.10	0.50	3.00	0.00	1.30	
95	BC	Castlegate A	STN-A074	DH USBM-826 (MC-188)	1.10	0.20	0.90	0.00	0.30	0.00	2.50	95.40	0.30	1.80	0.00	1.33	
99	BC	Castlegate A	HLP-A067	DH USBM-514 (MC-189)	3.70	0.50	0.10	0.00	0.10	0.00	4.40	93.20	0.20	2.20	0.00	1.32	3.95
100	BC	Castlegate A	DDC-A009	DH USBM-719	0.50	0.50	0.80	0.00	0.00	0.10	1.90	96.10	0.10	1.90	0.00	1.34	
162	BC	Castlegate A	KYN-A006	DH USBM-823 (MC-204)	0.40	0.30	0.30	0.00	0.20	0.00	1.20	96.40	0.20	2.20	0.00	1.37	
214	BC	Castlegate A	KYN-A022	DH MC-207;1186.6-1187.8'	0.10	0.10	6.70	0.00	0.00	0.00	6.90	91.20	0.60	1.30	0.00		
246	BC	Castlegate A	STN-A063	DH MC-206	1.60	0.20	1.00	0.00	0.00	0.00	2.80	94.00	1.40	1.80	0.00		
381	BC	Castlegate A		Whitmore Unit #1-4th intv.	0.10	0.00	1.30	0.10	0.00	0.00	1.50	95.90	0.20	2.40	0.00	1.43	
590	BC	Castlegate A		outcrop smpl.-weath.	0.40	0.30	0.80	0.00	0.10	0.40	2.00	96.50	0.50	0.90	0.10	1.54	13.25
642	BC	Castlegate A		KBA-2-#1-12.3' thick-weath.	1.70	1.30	0.50	0.00	0.30	0.00	3.80	93.30	0.50	2.40	0.00	1.46	5.22
715	BC	Castlegate A	DDC-A056	Aberdeen mine; channel smpl.	1.30	0.30	0.30	0.20	0.20	0.00	2.30	93.10	0.80	3.30	0.50	1.33	
715.1	BC	Castlegate A	DDC-A192	Aberdeen mine; upper pt.	0.70	0.40	0.20	0.00	0.20	0.60	2.10	93.20	0.40	3.60	0.70	1.35	3.49
715.2	BC	Castlegate A	DDC-A193	Aberdeen mine; middle pt.	1.90	0.20	0.50	0.20	0.10	0.00	2.90	93.20	0.90	3.00	0.00	1.31	2.63
715.3	BC	Castlegate A	DDC-A194	Aberdeen mine; lower pt.	0.80	0.80	0.00	0.10	0.10	0.10	1.90	94.30	0.50	3.00	0.30	1.34	2.81
721	BC	Castlegate A		Shimmin Trust#2	0.70	0.20	0.60	0.00	0.00	0.60	2.10	95.70	0.30	1.90	0.00	1.32	0.40
724	BC	Castlegate A		Shimmin Trust#2	0.20	0.30	0.50	0.00	0.20	1.50	2.70	94.30	0.40	2.40	0.20		
731	BC	Castlegate A		Shimmin Trust#2	0.00	0.10	1.20	0.00	0.00	0.20	1.50	94.60	0.30	3.50	0.10		
Seam:Castlegate A				Mean	1.58	0.41	1.10	0.02	0.30	0.16	3.58	92.91	0.65	2.79	0.08	1.34	4.05
				Maximum	9.00	1.30	6.70	0.20	0.90	1.50	12.90	96.50	1.70	5.70	0.70	1.54	13.25
				Minimum	0.00	0.00	0.00	0.00	0.00	0.00	1.20	80.30	0.10	0.90	0.00	1.29	0.40
				Std. Deviation	2.10	0.30	1.36	0.06	0.29	0.32	2.59	3.31	0.42	1.03	0.17	0.06	2.99
70	BC	Castlegate B	HLP-A064	DH USBM-368 (MC-176)	2.60	0.40	1.70	0.00	0.90	0.00	5.60	88.10	1.50	4.80	0.00	1.33	3.63
77	BC	Castlegate B	STN-A068	DH MC-179	1.20	0.30	0.40	0.10	0.20	0.00	2.20	95.30	0.40	2.10	0.00	1.32	1.42
78	BC	Castlegate B	STN-A069	DH MC-182	3.60	0.70	1.80	0.00	0.40	0.00	6.50	86.90	1.80	4.80	0.00	1.37	3.89
85	BC	Castlegate B	STN-A070	DH MC-185	1.80	0.30	0.10	0.00	0.50	0.10	2.80	94.40	0.90	1.90	0.00	1.36	1.32
92	BC	Castlegate B	STN-A071	DH USBM-542 (MC-187)	1.40	0.10	0.00	0.10	0.10	0.00	1.70	95.40	0.50	2.40	0.00	1.37	0.64
93	BC	Castlegate B	STN-A072	DH USBM-543 (MC-187)	13.70	0.30	1.40	0.00	0.80	0.00	16.20	81.60	0.70	1.50	0.00	1.31	2.13
94	BC	Castlegate B	STN-A073	DH USBM-537 (MC-188)	3.30	0.70	0.90	0.00	0.30	0.00	5.20	91.80	1.00	2.00	0.00	1.31	0.64
Seam:Castlegate B				Mean	3.94	0.40	0.90	0.03	0.46	0.01	5.74	90.50	0.97	2.79	0.00	1.34	1.95
				Maximum	13.70	0.70	1.80	0.10	0.90	0.10	16.20	95.40	1.80	4.80	0.00	1.37	3.89
				Minimum	1.20	0.10	0.00	0.00	0.10	0.00	1.70	81.60	0.40	1.50	0.00	1.31	0.64
				Std. Deviation	4.07	0.21	0.70	0.05	0.28	0.03	4.59	4.81	0.48	1.30	0.00	0.03	1.24

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
21	BC	Castlegate C	HLP-A051	DH MC-79-76	0.90	0.60	0.90	0.00	0.50	0.00	2.90	94.90	0.80	1.40	0.00	1.34	
27	BC	Castlegate C	HLP-A056	DH MC-82-76;299.5-300.5'	2.20	0.10	0.30	0.00	0.10	0.00	2.70	96.10	0.10	1.10	0.00	1.33	
64	BC	Castlegate C	HLP-A058	DH USBM-362 (MC-173)	7.90	0.80	1.40	0.00	1.40	0.00	11.50	84.00	0.90	3.60	0.00	1.31	
65	BC	Castlegate C	HLP-A059	DH USBM-363 (MC-173)	6.60	1.50	1.80	0.10	1.10	0.00	11.10	83.50	0.70	4.70	0.00	1.34	4.05
69	BC	Castlegate C	HLP-A063	DH USBM-367 (MC-176)	2.20	0.50	0.90	0.00	0.50	0.20	4.30	93.10	0.50	2.10	0.00	1.31	5.95
75	BC	Castlegate C	STN-A067	DH USBM-371 (MC-179)	1.40	0.60	0.70	0.00	0.00	0.00	2.70	93.30	1.00	3.00	0.00	1.32	5.15
90	BC	Castlegate C	HLP-A066	DH USBM-513 (MC-189)	5.10	0.10	0.90	0.00	0.30	0.00	6.40	92.00	0.20	1.40	0.00	1.32	4.40
114	BC	Castlegate C	MTS-A003	DH USBM-747 (MC-167-B)	0.60	0.40	1.60	0.00	0.10	0.00	2.70	94.70	0.40	2.20	0.00	1.31	
254	BC	Castlegate C	STN-A064	DH MC-206;724.0-724.9'	8.20	0.30	1.20	0.00	0.70	0.00	10.40	85.00	2.20	2.40	0.00	1.32	5.95
Seam:Castlegate C			Mean		3.90	0.54	1.08	0.01	0.52	0.02	6.08	90.73	0.76	2.43	0.00	1.32	4.96
			Maximum		8.20	1.50	1.80	0.10	1.40	0.20	11.50	96.10	2.20	4.70	0.00	1.34	5.95
			Minimum		0.60	0.10	0.30	0.00	0.00	0.00	2.70	83.50	0.10	1.10	0.00	1.31	4.05
			Std. Deviation		2.89	0.40	0.44	0.03	0.45	0.06	3.67	4.79	0.59	1.10	0.00	0.01	0.78
22	BC	Castlegate D	HLP-A052	DH MC-82-76	0.90	0.20	0.60	0.00	0.20	0.10	2.00	96.30	0.30	1.40	0.00	1.32	
23	BC	Castlegate D	HLP-A053	DH MC-82-76	1.30	0.00	0.30	0.00	0.10	0.00	1.70	97.10	0.20	1.00	0.00	1.33	
24	BC	Castlegate D	HLP-A054	DH MC-82-76;169.3-170.0'	3.30	0.20	0.80	0.00	1.10	0.00	5.40	89.00	2.10	3.50	0.00	1.32	
74	BC	Castlegate D	STN-A066	DH USBM-370 (MC-179)	1.90	0.20	1.10	0.00	0.10	0.00	3.30	91.10	1.10	4.50	0.00	1.31	4.55
79	BC	Castlegate D	KYN-A011	DH USBM-697 (MC-181)	0.40	0.40	1.30	0.00	0.30	0.30	2.70	92.80	1.00	3.50	0.00	1.28	
86	BC	Castlegate D	KYN-A016	DH USBM-500 (MC-186)	5.20	0.30	1.30	0.00	0.30	0.00	7.10	87.60	1.30	4.00	0.00	1.32	0.16
101	BC	Castlegate D	STN-A058	DH USBM-538 (MC-190)	6.80	0.40	1.90	0.00	0.40	0.00	9.50	87.10	0.70	2.70	0.00	1.32	0.32
229	BC	Castlegate D	STN-A061	DH MC-206;656.5-657.4'	16.40	0.40	0.70	0.10	0.20	0.10	17.90	77.30	0.60	4.20	0.00	1.31	
237	BC	Castlegate D	STN-A062	DH MC-207;956.8-957.9'	0.60	0.00	1.00	0.00	0.20	0.00	1.80	94.70	0.50	3.00	0.00		
625.1	BC	Castlegate D		chan.smpl.-top of the seam	0.90	0.80	0.90	0.20	0.50	0.80	4.10	92.90	0.50	2.00	0.50	1.31	0.61
625.2	BC	Castlegate D		chan.smpl.-mid. of the seam	1.20	0.50	0.50	0.00	0.40	0.30	2.90	93.50	0.50	2.00	1.10	1.34	0.94
625.3	BC	Castlegate D		chan.smpl.-btm. the seam	1.00	0.80	0.20	0.20	0.50	0.40	3.10	93.20	0.70	2.60	0.40	1.31	2.18
733	BC	Castlegate D		Shimmin Trust #2	0.70	0.70	1.30	0.10	0.00	0.10	2.90	92.90	0.70	3.20	0.30		
Seam:Castlegate D			Mean		3.12	0.38	0.92	0.05	0.33	0.16	4.95	91.19	0.78	2.89	0.18	1.32	1.46
			Maximum		16.40	0.80	1.90	0.20	1.10	0.80	17.90	97.10	2.10	4.50	1.10	1.34	4.55
			Minimum		0.40	0.00	0.20	0.00	0.00	0.00	1.70	77.30	0.20	1.00	0.00	1.28	0.16
			Std. Deviation		4.27	0.26	0.45	0.07	0.27	0.23	4.32	4.95	0.48	1.03	0.32	0.01	1.53
719	BC	Centennial	DDC-A057	Pinnacle mine; channel;#28	0.30	0.30	0.20	0.10	0.20	0.30	1.40	94.70	1.10	2.80	0.00	1.36	
719.1	BC	Centennial		Pinnacle mine;top part	0..20	0.70	0.40	0.00	0.00	0.00	1.30	94.60	1.00	3.10	0.00	1.36	2.59
719.2	BC	Centennial		Pinnacle mine; middle part	0.80	0.20	0.20	0.30	0.00	0.10	1.60	94.60	1.40	1.90	0.50	1.33	1.40
719.3	BC	Centennial		Pinnacle mine; bottom part	0.20	0.20	0.70	0.60	0.20	0.20	2.10	92.70	0.40	4.50	0.30	1.33	1.58
Seam:Centennial			Mean		0.38	0.35	0.38	0.25	0.10	0.15	1.60	94.15	0.97	3.08	0.20	1.35	1.86
			Maximum		0.80	0.70	0.70	0.60	0.20	0.30	2.10	94.70	1.40	4.50	0.50	1.36	2.59
			Minimum		0.20	0.20	0.20	0.00	0.00	0.00	1.30	92.70	0.40	1.90	0.00	1.33	1.40
			Std. Deviation		0.25	0.21	0.20	0.23	0.10	0.11	0.31	0.84	0.36	0.93	0.21	0.01	0.52

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
11	BC	Gilson	PNC-A045	DH 10-1	2.60	0.40	1.60	0.00	0.40	0.00	5.00	91.20	1.40	2.40	0.00	1.30	
204	BC	Gilson	DDC-A025	DH CC9-1	0.90	0.00	0.60	0.00	0.10	0.00	1.60	97.10	0.10	1.20	0.00	1.32	3.52
260	BC	Gilson	PNC-A050	DH Whitmore Park #2	0.00	0.10	0.60	0.00	0.00	0.00	0.70	98.00	0.60	0.70	0.00	1.39	
262	BC	Gilson	PNC-A052	DH Whitmore Park #1	0.40	0.10	0.70	0.00	0.00	0.00	1.20	95.60	0.30	2.90	0.00	1.32	5.09
312	BC	Gilson	PNC-A229	DH 15-4B; SUNEDCO	0.50	0.00	0.30	0.00	0.00	0.00	0.80	96.20	0.10	2.90	0.00	1.32	
315	BC	Gilson	PNC-A232	DH 16-9; SUNEDCO	0.20	0.10	0.30	0.00	0.00	0.00	0.60	96.80	0.20	2.40	0.00	1.32	3.83
318	BC	Gilson	MBS-A010	DH 19-3c	0.20	0.80	1.60	0.00	0.00	0.00	2.60	93.40	0.20	3.80	0.00	1.31	4.97
371	BC	Gilson		PIN 1-1R	0.30	0.00	0.30	0.20	0.00	0.20	1.00	97.40	0.30	1.30	0.00	1.34	
372	BC	Gilson		PIN-1-2R	0.50	0.00	0.00	0.00	0.00	0.00	0.50	96.70	0.20	2.60	0.00		
373	BC	Gilson		PIN-1-3R	0.70	0.10	0.20	0.00	0.00	0.00	1.00	96.30	0.00	2.70	0.00		
374	BC	Gilson		PIN-1-4R	0.60	0.00	0.30	0.00	0.00	0.00	0.90	96.30	0.20	2.60	0.00		
375	BC	Gilson		PIN-1-5R	0.90	0.10	0.20	0.10	0.00	0.00	1.30	97.40	0.10	1.20	0.00		
376	BC	Gilson		PIN 1-6R	0.80	0.00	0.20	0.00	0.10	0.00	1.10	96.80	0.00	2.10	0.00		
376.1	BC	Gilson		PIN channel	0.40	0.10	0.10	0.00	0.20	0.00	0.80	95.70	0.30	3.20	0.00		
380	BC	Gilson		DH Whitmore Unit #1	0.00	0.00	0.60	0.10	0.00	0.00	0.70	96.70	0.70	1.90	0.00	1.43	
387	BC	Gilson		outcrop smpl.-weath.	0.00	0.10	0.40	0.10	0.10	0.00	0.70	97.30	0.20	1.60	0.20	1.38	3.27
591	BC	Gilson		outcrop smpl.-weath	0.20	0.50	0.60	0.30	0.00	0.20	1.80	96.30	0.20	1.60	0.10	1.48	8.88
592	BC	Gilson		outcrop smpl.-weath	0.40	0.30	0.50	0.00	0.00	0.20	1.40	94.60	1.70	2.30	0.00	1.52	6.79
659	BC	Gilson	DDC-A048	channel smpl.	0.10	0.40	0.50	0.40	0.00	0.00	1.40	95.00	0.90	2.10	0.60	1.32	2.94
659.1	BC	Gilson	DDC-A189	channel smpl.top 0.0'-1.0'	0.40	0.30	0.30	0.00	0.10	0.00	1.10	96.40	0.00	2.00	0.50	1.33	2.66
659.2	BC	Gilson	DDC-A190	channel;middle 2.0'-3.0'	0.30	0.20	1.80	0.10	0.00	0.00	2.40	94.70	0.30	2.40	0.20	1.34	3.43
659.3	BC	Gilson	DDC-A191	channel;bottom 4.5'-5.6'	0.40	0.50	0.30	0.40	0.00	0.00	1.60	95.50	1.10	1.60	0.20	1.32	2.49
Seam:Gilson			Mean		0.49	0.19	0.55	0.08	0.05	0.03	1.37	95.97	0.41	2.16	0.08	1.36	4.35
			Maximum		2.60	0.80	1.80	0.40	0.40	0.20	5.00	98.00	1.70	3.80	0.60	1.52	8.88
			Minimum		0.00	0.00	0.00	0.00	0.00	0.00	0.50	91.20	0.00	0.70	0.00	1.30	2.49
			Std. Deviation		0.53	0.21	0.48	0.13	0.09	0.07	0.95	1.48	0.46	0.72	0.16	0.06	1.88
25	BC	Kenilworth	HLP-A055	DH MC-82-76;245.0-246.0'	1.10	0.70	0.30	0.00	0.50	0.00	2.60	91.10	0.80	5.50	0.00	1.35	
31	BC	Kenilworth	HLP-A057	DH MC-100-76;	0.60	0.60	0.10	0.00	0.00	0.00	1.30	94.70	0.70	3.30	0.00	1.33	
108	BC	Kenilworth	HLP-A049	DH USBM-548 (MC-192)	0.00	0.40	1.40	0.00	0.30	0.20	2.30	93.10	1.20	3.40	0.00	1.33	2.12
109	BC	Kenilworth	HLP-A050	DH USBM-549 (MC-192)	2.20	0.10	0.90	0.00	0.30	0.00	3.50	91.80	0.80	3.90	0.00	1.32	2.73
113	BC	Kenilworth	MTS-A001	DH USBM-113 (MC-167-B)	0.50	0.20	0.50	0.00	0.10	0.30	1.60	95.00	1.20	2.30	0.00	1.34	
255	BC	Kenilworth	STN-A065	DH MC-206;785.1-786.0'	2.40	0.00	0.30	0.00	0.00	0.00	2.70	95.40	0.40	1.50	0.00	1.31	
586	BC	Kenilworth		outcrop smpl.-weath.	0.10	0.20	0.20	0.30	0.10	0.00	0.90	95.90	0.10	2.90	0.20	1.36	2.92
593	BC	Kenilworth		outcrop smpl.-weath.	0.80	0.40	0.30	0.20	0.10	0.40	2.20	95.40	0.30	2.10	0.00	1.47	8.71
723	BC	Kenilworth		Shimmin Trust #2	0.00	0.20	1.20	0.00	0.10	2.20	3.70	91.70	1.20	3.10	0.30		
734	BC	Kenilworth		Shimmin Trust #2	0.00	0.40	1.10	0.10	0.00	2.50	4.10	93.30	1.00	1.60	0.00		
735	BC	Kenilworth		Shimmin Trust #2	0.00	0.00	1.50	0.00	0.10	0.90	2.50	93.60	0.90	3.00	0.00		
Seam:Kenilworth			Mean		0.70	0.29	0.71	0.05	0.15	0.59	2.49	93.73	0.78	2.96	0.06	1.35	4.12
			Maximum		2.40	0.70	1.50	0.30	0.50	2.50	4.10	95.90	1.20	5.50	0.30	1.47	8.71
			Minimum		0.00	0.00	0.10	0.00	0.00	0.00	0.90	91.10	0.10	1.50	0.00	1.31	2.12
			Std. Deviation		0.84	0.22	0.50	0.10	0.15	0.87	0.95	1.60	0.36	1.08	0.10	0.05	2.67

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
12	BC	Lwr Sunnyside	SNS-A018	DH-1; Upper split	1.40	0.40	0.80	0.00	0.20	0.10	2.90	91.70	2.20	3.20	0.00	1.29	
13	BC	Lwr.Sunnyside	SNS-A019	DH-1; Upper split	0.70	1.10	1.00	0.00	0.20	0.00	3.00	93.60	1.00	2.40	0.00	1.29	
14	BC	Lwr.Sunnyside	SNS-A020	DH-1; Upper split	0.90	0.30	1.00	0.00	0.30	0.00	2.50	94.50	1.30	1.70	0.00	1.29	
15	BC	Lwr.Sunnyside	SNS-A021	DH-1; Upper split	1.30	0.40	0.60	0.00	0.20	0.10	2.60	93.30	1.40	2.70	0.00	1.28	
16	BC	Lwr.Sunnyside	SNS-A022	DH-1; Upper split	1.10	0.40	0.20	0.20	0.20	0.10	2.20	90.60	4.10	3.00	0.10	1.28	
17	BC	Lwr.Sunnyside	SNS-A023	DH-2	0.50	0.40	0.60	0.00	0.10	0.00	1.60	91.50	3.20	3.70	0.00	1.31	
261	BC	Lwr.Sunnyside	PNC-A051	DH Whitmore Park #2	0.60	0.00	0.30	0.00	0.30	0.00	1.20	92.30	1.50	5.00	0.00	1.35	4.11
317	BC	Lwr.Sunnyside	MBS-A008	DH 19-3c	0.20	0.20	0.40	0.00	0.10	0.30	1.20	94.30	1.20	3.30	0.00	1.34	6.13
660	BC	Lwr.Sunnyside	DDC-A052	channel smpl.	0.40	0.10	0.20	0.10	0.00	0.00	0.80	97.60	0.40	1.10	0.10	1.35	1.54
660.1	BC	Lwr.Sunnyside	DDC-A186	channel smpl;.top 0.0-1.0'	0.30	0.10	0.70	0.20	0.00	0.20	1.50	95.80	0.70	1.80	0.20	1.37	2.24
660.2	BC	Lwr.Sunnyside	DDC-A187	channel smpl;middle 1.5-2.5'	0.20	0.30	0.20	0.00	0.10	0.00	0.80	97.30	0.50	1.30	0.10	1.39	2.61
660.3	BC	Lwr.Sunnyside	DDC-A188	channel smpl.;btm 3.2-4.2'	0.80	0.40	0.30	0.40	0.20	0.00	2.10	95.70	0.40	1.80	0.00	1.33	2.88
661	BC	Lwr.Sunnyside	PTH-A050	channel smpl.	0.00	0.30	0.70	0.10	0.10	0.10	1.30	96.40	0.50	1.70	0.10	1.32	2.06
661.1	BC	Lwr.Sunnyside		channel smpl.;top 0.0-1.0'	0.00	0.10	0.40	0.10	0.10	0.10	0.80	97.70	0.40	1.10	0.00	1.30	2.10
661.2	BC	Lwr.Sunnyside		channel smpl.;mid. 2.5-3.5'	0.00	0.20	0.20	0.10	0.20	0.00	0.70	96.70	0.50	2.00	0.10	1.30	1.67
661.3	BC	Lwr.Sunnyside		channel smpl.btm. 5.0-6.0'	0.00	0.00	1.00	0.30	0.10	0.00	1.40	97.00	1.00	0.60	0.00	1.32	2.04
702	BC	Lwr.Sunnyside		UofU CH4 sample	0.10	0.70	0.60	0.30	0.40	0.10	2.20	92.30	1.90	3.30	0.30	1.36	
702.1	BC	Lwr.Sunnsyide	PTH-A051	UofU CH4 smpl.; uppr. pt.	0.00	0.20	0.90	0.40	0.10	0.20	1.80	93.80	1.10	2.70	0.60	1.37	3.87
702.2	BC	Lwr.Sunnyside	PTH-A052	UofU CH4 smpl.;mid. pt.	0.00	0.70	0.50	0.60	0.00	1.10	2.90	90.90	2.20	3.70	0.30	1.37	2.87
702.3	BC	Lwr.Sunnyside	PTH-A053	UofU CH4 smpl.;lower pt.	0.00	0.50	0.60	0.40	0.30	0.30	2.10	94.00	1.80	2.00	0.10	1.32	3.11
737	BC	Lwr.Sunnyside		KSC-S-32-81;952.7-956.4'	0.10	0.60	0.60	0.30	0.00	0.00	1.60	94.10	1.50	2.60	0.20		
738	BC	Lwr.Sunnyside		KSC-S-26-80;314.8-315.8'	0.30	0.70	0.00	0.20	0.00	0.10	1.30	94.70	1.20	2.50	0.30		
Seam:Lwr.Sunnyside				Mean	0.40	0.37	0.54	0.17	0.15	0.13	1.75	94.35	1.36	2.42	0.11	1.33	2.86
				Maximum	1.40	1.10	1.00	0.60	0.40	1.10	3.00	97.70	4.10	5.00	0.60	1.39	6.13
				Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.70	90.60	0.40	0.60	0.00	1.28	1.54
				Std. Deviation	0.44	0.26	0.29	0.17	0.11	0.23	0.71	2.16	0.92	1.02	0.15	0.03	1.20
9	BC	Rock Canyon	PNC-A048	DH 4-2	1.10	0.20	1.00	0.00	0.30	0.40	3.00	93.00	1.00	3.00	0.00	1.33	
10	BC	Rock Canyon	PNC-A044	DH 4-2	0.70	0.30	0.70	0.20	0.20	2.40	4.50	90.60	1.20	3.70	0.00	1.39	
213	BC	Rock Canyon	DDC-A026	DH CC9-1	2.10	0.00	0.20	0.00	0.00	0.00	2.30	96.80	0.00	0.90	0.00	1.42	1.96
258	BC	Rock Canyon	PNC-A049	DH Whitmore Park #2	0.00	0.00	1.20	0.00	0.10	0.00	1.30	97.30	0.20	1.20	0.00	1.27	3.45
311	BC	Rock Canyon	PNC-A228	DH 15-4B; SUNEDCO	0.30	0.00	0.70	0.00	0.00	0.00	1.00	95.80	0.20	3.00	0.00	1.34	3.20
313	BC	Rock Canyon	PNC-A230	DH 13-1; SUNEDCO	0.10	0.00	0.70	0.00	0.20	0.00	1.00	96.00	0.30	2.70	0.00	1.29	4.87
314	BC	Rock Canyon	PNC-A231	DH 16-9; SUNEDCO	0.20	0.00	0.30	0.00	0.10	0.00	0.60	96.10	0.30	3.00	0.00	1.38	3.15
352	BC	Rock Canyom		Comp.of smpls. 345-352	0.50	0.00	0.40	0.00	0.00	0.00	0.90	94.80	1.00	3.30	0.00	1.39	
369	BC	Rock Canyon		SC-01-83;smpls.352a-369	0.40	0.00	0.50	0.00	0.00	0.00	0.90	94.60	1.00	3.50	0.00	1.35	
379	BC	Rock Canyon		Whitmore Unit #1-2nd intv.	0.00	0.00	0.70	0.40	0.00	0.00	1.10	93.60	1.80	3.50	0.00	1.43	
385	BC	Rock Canyon		SC-03-83;smpls.382-385	0.40	0.20	0.50	0.20	0.10	0.00	1.40	96.20	0.40	2.00	0.00	1.35	
495	BC	Rock Canyon		Test #2;Soldier Cyn. Mine	0.30	0.70	0.40	0.10	0.10	0.00	1.60	96.50	0.30	1.60	0.00	1.42	3.68
589	BC	Rock Canyon		outcrop smpl.-weath.	0.10	0.10	0.40	0.30	0.20	0.00	1.10	96.30	0.80	1.70	0.10	1.45	1.91
594	BC	Rock Canyon	PNC-A233	DH 9-1-1	0.60	0.10	0.70	0.10	0.20	0.00	1.70	95.80	0.10	2.40	0.00	1.32	1.19

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
595	BC	Rock Canyon	PNC-A234	DH 9-2-2	0.40	0.00	0.20	0.60	0.10	0.00	1.30	96.30	1.00	1.40	0.00	1.30	1.56
596	BC	Rock Canyon	PNC-A235	DH 9-2-3	0.10	0.00	0.20	0.20	0.00	0.00	0.50	97.00	0.60	1.90	0.00	1.41	1.85
650	BC	Rock Canyon	PNC-A236	Channel smpl.	0.00	0.10	0.90	0.00	0.10	0.20	1.30	96.70	0.40	1.50	0.10	1.37	2.06
650.1	BC	Rock Canyon		Channel smpl.;top 0.0-1.0'	0.10	0.40	0.10	0.00	0.00	0.10	0.70	96.40	0.20	2.70	0.00	1.33	1.73
650.2	BC	Rock Canyon		Channel smpl.;mid. 3.5-4.5'	0.20	0.20	0.50	0.20	0.00	0.20	1.30	95.60	0.70	2.20	0.20	1.38	0.79
650.3	BC	Rock Canyon		Channel smpl.;btm.8.0-9.2'	0.20	0.10	0.30	0.10	0.10	0.00	0.80	96.50	0.20	2.50	0.00	1.40	1.40
Seam:Rock Canyon				Mean	0.39	0.12	0.53	0.12	0.09	0.17	1.42	96.59	0.59	2.38	0.02	1.37	2.34
				Maximum	2.10	0.70	1.20	0.60	0.30	2.40	4.50	97.30	1.80	3.70	0.20	1.45	4.87
				Minimum	0.00	0.00	0.10	0.00	0.00	0.00	0.50	90.60	0.00	0.90	0.00	1.27	0.79
				Std. Deviation	0.47	0.17	0.28	0.16	0.09	0.52	0.91	1.57	0.45	0.81	0.06	0.05	1.10
76	BC	Sub-seam 1	KYN-A010	DH USBM-372 (MC-172)	0.10	0.20	0.40	0.00	0.20	0.00	0.90	94.00	1.30	3.80	0.00	1.29	1.24
82	BC	Sub-seam 1	KYN-A014	DH MC-181	1.00	0.20	1.70	0.00	0.70	0.10	3.70	91.10	0.80	4.40	0.00	1.29	
89	BC	Sub-seam 1	KYN-A019	DH MC-186	0.30	0.10	0.40	0.00	0.10	0.20	1.10	93.60	0.90	4.40	0.00	1.39	
Seam:Sub-seam 1				Mean	0.47	0.17	0.83	0.00	0.33	0.10	1.90	92.90	1.00	4.20	0.00	1.32	1.24
				Maximum	1.00	0.20	1.70	0.00	0.70	0.20	3.70	94.00	1.30	4.40	0.00	1.39	
				Minimum	0.10	0.10	0.40	0.00	0.10	0.00	0.90	91.10	0.80	3.80	0.00	1.29	
				Std. Deviation	0.39	0.06	0.61	0.00	0.26	0.08	1.28	1.28	0.22	0.28	0.00	0.05	
83	BC	Sub-seam 2	KYN-A015	DH USBM-547 (MC-181)	0.90	0.10	1.10	0.00	0.20	0.00	2.30	93.90	0.50	3.30	0.00	1.29	0.55
90	BC	Sub-sema 2	KYN-A020	DH USBM-541 (MC-186)	0.90	0.30	2.10	0.00	0.00	0.10	3.40	93.10	0.70	2.80	0.00	1.30	1.66
97	BC	Sub-seam 2	STN-A076	DH USBM-512 (MC-188)	1.30	0.30	0.20	0.00	0.40	0.00	2.20	95.70	0.70	1.40	0.00	1.36	1.91
102	BC	Sub-seam 2	STN-A059	DH USBM-539 (MC-190)	0.50	0.50	0.50	0.00	0.00	0.00	1.50	96.90	0.10	1.50	0.00	1.31	2.70
639	BC	Sub-seam 2		KBA#1-1-3.10' thick weath.	1.20	0.80	0.60	0.00	0.00	0.00	2.60	95.20	0.30	1.90	0.00	1.42	5.34
Seam:Sub-seam 2				Mean	0.96	0.40	0.90	0.00	0.12	0.02	2.40	94.96	0.46	2.18	0.00	1.34	2.43
				Maximum	1.30	0.80	2.10	0.00	0.40	0.10	3.40	96.90	0.70	3.30	0.00	1.42	5.34
				Minimum	0.50	0.10	0.20	0.00	0.00	0.00	1.50	93.10	0.10	1.40	0.00	1.29	0.55
				Std. Deviation	0.28	0.24	0.67	0.00	0.16	0.04	0.62	1.34	0.23	0.75	0.00	0.05	1.61
103	BC	Sub-seam 3	STN-A060	DH USBM-540 (MC-190	0.90	0.30	0.20	0.00	0.00	0.00	1.40	96.60	0.50	1.50	0.00	1.31	3.49
626	BC	Sub-seam 3	STN-A103	Price River 3-Main Dip	1.10	0.90	0.50	0.10	0.30	0.10	3.00	93.60	0.50	2.90	0.00	1.36	1.84
627	BC	Sub-seam 3	STN-A104	Price River 3-8th East	0.30	0.10	1.00	0.10	0.40	0.40	2.30	93.80	0.70	2.90	0.30	1.34	1.57
640	BC	Sub-seam 3		KBA-#1-2.10' thick-weath.	0.30	0.40	0.70	0.00	0.00	0.20	1.60	96.10	0.40	1.90	0.00	1.45	3.66
643	BC	Sub-seam 3		KBA-1#2-4.9' thick-weath.	0.30	0.80	0.50	0.40	0.10	0.50	2.60	94.20	0.30	2.90	0.00	1.52	7.17
644	BC	Sub-seam 3		KBA-1#3-3.7' thick-weath.	0.10	0.60	0.70	0.10	0.30	0.40	2.20	93.50	1.50	2.80	0.00	1.49	3.17
648	BC	Sub-seam 3	STN-A105	channel smpl.	0.90	0.20	0.80	0.20	0.20	0.00	2.30	94.40	0.40	2.90	0.00	1.32	1.51
648.1	BC	Sub-seam 3	STN-A106	channel smpl.; top 0.6 ft.	2.80	1.30	1.30	0.50	0.90	0.40	7.20	90.00	0.60	2.20	0.00	1.34	2.30

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
648.2	BC	Sub-seam 3	STN-A107	channel smpl. mid. 2.7-3.3'	0.10	0.00	0.70	0.20	0.00	0.00	1.00	95.00	1.60	2.40	0.00	1.31	3.79
683.3	BC	Sub-seam 3	STN-A108	channel smpl.;lwr. 3.9-5.9'	0.90	0.10	0.30	0.20	0.00	0.00	1.50	94.50	0.80	3.10	0.10	1.29	1.37
694	BC	Sub-seam 3	HLP-A037	UofU smpl.; Castlegate #3	0.30	0.20	0.70	0.10	0.10	0.00	1.40	94.10	0.40	3.90	0.20	1.37	1.01
694.1	BC	Sub-seam 3		UofU smpl. ;top of the seam	1.20	0.60	0.80	0.10	0.30	0.00	3.00	93.70	0.80	2.50	0.00	1.32	1.65
694.2	BC	Sub-seam 3		UofU smpl., mid. of the seam	0.30	0.10	0.40	0.10	0.10	0.10	1.10	93.40	0.60	4.90	0.10	1.40	3.13
694.3	BC	Sub-seam 3		UofU smpl.; btm. of the seam	0.00	0.20	0.40	0.30	0.10	0.10	1.10	94.70	0.30	3.80	0.10	1.37	1.10
695	BC	Sub-seam 3	HLP-A377	UofU smpl.;Castlegate #3	1.10	0.40	0.90	0.30	0.30	0.40	3.40	93.10	0.50	2.90	0.10	1.38	1.62
695.1	BC	Sub-seam 3		UofU smpl.;top of the seam	0.80	0.20	0.60	0.30	0.10	0.00	2.00	93.10	0.40	4.30	0.20	1.36	2.60
695.2	BC	Sub-seam 3		UofU smpl.;mid. the of seam	0.50	0.30	1.10	0.00	0.10	0.80	2.80	91.50	0.50	5.20	0.00	1.38	2.24
695.3	BC	Sub-seam 3		UofU smpl.;btm. of the seam	0.40	0.60	0.60	0.30	0.00	2.00	3.90	90.10	0.80	5.10	0.10	1.42	1.13
Seam:Sub-seam 3				Mean	0.68	0.41	0.68	0.18	0.18	0.30	2.43	93.63	0.64	3.23	0.07	1.37	2.46
				Maximum	2.80	1.30	1.30	0.50	0.90	2.00	7.20	96.60	1.60	5.20	0.30	1.52	7.17
				Minimum	0.00	0.00	0.20	0.00	0.00	0.00	1.00	90.00	0.30	1.50	0.00	1.29	1.01
				Std. Deviation	0.63	0.33	0.27	0.14	0.21	0.47	1.42	1.68	0.36	1.05	0.09	0.06	1.45
8	BC	Sunnyside	PNC-A047	DH 4-1	1.50	0.50	0.30	0.20	0.20	0.00	2.70	94.60	1.60	1.10	0.00	1.32	
250	BC	Sunnyside	DDC-A027	DH CC9-1	0.60	0.00	0.30	0.00	0.00	0.00	0.90	97.90	0.00	1.20	0.00	1.35	3.01
584	BC	Sunnyside		weathered sample	0.10	0.00	0.40	0.00	0.00	0.00	0.50	98.10	0.10	1.30	0.00	1.50	9.76
585	BC	Sunnyside		outcrop smpl.-weath.	0.30	0.50	0.10	0.10	0.40	0.00	1.40	95.90	0.40	2.20	0.10	1.33	2.80
716	BC	Sunnyside	DDC-A304	Soldier Cyn. mine; channel	0.10	0.30	0.30	0.40	0.00	0.10	1.20	94.50	1.50	2.50	0.30	1.33	
716.1	BC	Sunnyside	DDC-A305	Soldier Cyn. mine; top pt.	0.60	0.50	0.40	0.60	0.10	0.00	2.20	95.30	0.70	1.50	0.30	1.31	3.22
716.2	BC	Sunnyside	DDC-A306	Soldier Cyn. mine; mid.pt.	0.60	0.50	0.60	0.30	0.00	0.00	2.00	95.00	1.30	1.60	0.10	1.30	3.27
716.3	BC	Sunnyside	DDC-A307	Soldier Cyn. mine; lwr.pt.	0.90	0.70	0.40	0.50	0.00	0.00	2.50	93.60	1.20	2.40	0.30	1.32	4.26
720	BC	Sunnyside	PNC-A240	Soldier Cyn. mine; channel	0.10	0.20	0.30	0.60	0.10	0.20	1.50	95.20	0.50	2.70	0.10	1.33	
720.1	BC	Sunnyside		Soldier Cyn. mine; top; #29	0.00	0.40	0.20	0.20	0.00	0.30	1.10	94.90	1.10	2.60	0.30	1.34	1.87
720.2	BC	Sunnyside		Soldier Cyn. mine; mid.pt.	0.00	0.20	0.30	0.20	0.00	0.10	0.80	95.70	1.10	2.10	0.30	1.34	0.99
720.3	BC	Sunnyside		Soldier Cyn. mine; btm.pt.	0.20	0.20	0.20	0.10	0.30	0.20	1.20	94.40	1.00	3.30	0.10	1.35	1.42
736	BC	Sunnyside		KSC-S-32-81;938.8-943.2'	0.00	0.90	0.30	0.10	0.00	0.00	1.30	95.60	0.90	2.20	0.00		
739	BC	Sunnyside		KSC-S-30-80;776.6-777.9'	0.50	0.60	0.40	0.20	0.00	0.00	1.70	95.50	0.80	2.00	0.00		
Seam:Sunnyside				Mean	0.39	0.39	0.32	0.25	0.08	0.06	1.50	95.44	0.87	2.05	0.14	1.34	3.40
				Maximum	1.50	0.90	0.60	0.60	0.40	0.30	2.70	98.10	1.60	3.30	0.30	1.50	9.76
				Minimum	0.00	0.00	0.10	0.00	0.00	0.00	0.50	93.60	0.00	1.10	0.00	1.30	0.99
				Std. Deviation	0.41	0.25	0.11	0.20	0.13	0.10	0.62	1.20	0.47	0.62	0.13	0.05	2.45
378	BC	Unknown	DDC-A027	DH Whitmore Unit #1	0.10	0.10	0.70	0.00	0.10	0.50	1.50	95.50	0.30	2.70	0.00	1.43	
588	BC	Unknown		outcrop smpl.-weath.	0.80	0.20	0.80	0.40	0.20	0.50	2.90	94.30	0.50	2.30	0.00	1.56	2.28
641	BC	Unknown		KBA-#1a-8.3' thick-weath.	0.60	0.40	1.20	0.00	0.00	0.00	2.20	95.80	0.40	1.40	0.20	1.42	5.44
722	BC	Unknown		Shim.Tr. #5 3899.9-3900.5'	0.00	0.40	1.20	0.00	0.00	0.50	2.10	92.20	1.70	3.40	0.60		
732	BC	Unknown		Cockrell Oil;DH 1207-2507	0.10	0.20	0.50	0.00	0.00	0.10	0.90	95.20	0.50	3.00	0.40		

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
Seam:Unknown			Mean		0.32	0.26	0.88	0.08	0.06	0.32	1.92	94.60	0.68	2.56	0.24	1.47	3.86
			Maximum		0.80	0.40	1.20	0.40	0.20	0.50	2.90	96.80	1.70	3.40	0.60	1.56	5.44
			Minimum		0.00	0.10	0.50	0.00	0.00	0.00	0.90	92.20	0.30	1.40	0.00	1.42	2.28
			Std. Deviation		0.32	0.12	0.28	0.16	0.08	0.22	0.68	1.30	0.52	0.68	0.23	0.06	1.58
317.1	BC	Upper Sunnyside	MBS-A009	DH 19-3c	0.40	0.10	0.40	0.00	0.00	0.30	1.20	95.90	0.70	2.20	0.00	1.36	5.75
658	BC	Upper Sunnyside	PTH-A049	channel smpl.	0.10	0.40	0.20	0.20	0.00	0.10	1.00	96.80	0.60	1.50	0.10	1.35	2.81
658.1	BC	Upper Sunnyside		channel smpl.,top 0.0-0.1'	0.00	0.30	0.40	0.00	0.00	0.00	0.70	96.80	0.30	2.20	0.00	1.37	3.20
658.2	BC	Upper Sunnyside		channel smpl.,mid. 2.5-3.5'	0.00	0.20	0.40	0.20	0.10	0.00	0.90	96.80	0.10	2.10	0.10	1.29	2.56
658.3	BC	Upper Sunnyside		channel smpl.,btm 5.7-6.7'	0.00	0.00	0.00	0.00	0.10	0.20	0.30	97.00	1.10	1.60	0.00	1.36	2.31
Seam:Upper Sunnyside			Mean		0.10	0.20	0.28	0.06	0.04	0.12	0.82	96.66	0.56	1.92	0.04	1.35	3.33
			Maximum		0.40	0.40	0.40	0.20	0.10	0.30	1.20	97.00	1.10	2.20	0.10	1.37	5.75
			Minimum		0.00	0.00	0.00	0.00	0.00	0.00	0.30	95.90	0.10	1.50	0.00	2.31	2.28
			Std. Deviation		0.15	0.14	0.16	0.10	0.05	0.12	0.30	0.39	0.34	0.31	0.05	0.03	1.25

Appendix E. Coal-characteristics Data for the Wasatch Plateau Coal Field

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard Shard kg/mm²	Vitrn %	Exint %	Inert %
630	WP	WTS	13-15S-07E	B-seam	76.30	9.70	2.80	0.10	3.00	1.70	0.80	4.90	0.50	0.20	0.58	hvBb		86.00	5.90	8.10
630.1	WP	WTS	13-15S-07E	B-seam	74.80	12.10	1.60	0.40	1.40	1.10	1.90	6.50	0.20	0.00	0.63	hvBb		86.90	3.40	9.70
630.2	WP	WTS	13-15S-07E	B-seam	56.20	32.20	1.10	0.00	2.10	1.40	1.10	5.70	0.20	0.00	0.62	hvBb		88.40	3.20	8.40
630.3	WP	WTS	13-15S-07E	B-seam	73.50	4.30	4.00	0.70	5.30	5.50	1.00	5.40	0.30	0.00	0.51	hvCb		77.80	10.00	12.20
Seam: B-seam				Mean	70.20	14.57	2.38	0.30	2.95	2.42	1.20	5.63	0.30	0.05	0.58			84.77	5.63	9.60
				Maximum	76.30	32.20	4.00	0.70	5.30	5.50	1.90	6.50	0.50	0.20	0.63			88.40	10.00	12.20
				Minimum	56.20	4.30	1.10	0.00	1.40	1.10	0.80	4.90	0.20	0.00	0.51			77.80	3.20	8.10
				Std. Deviation	8.14	10.56	1.12	0.27	1.47	1.79	0.42	0.58	0.12	0.09	0.05			4.12	2.74	1.62
5	WP	TCP	03-19S-06E	Bear Canyon	65.90	9.70	5.50	2.10	5.30	1.10	1.10	9.10	0.20	0.00	0.54	hvCb		75.60	12.90	11.50
293	WP	TCP	30-18S-07E	Bear Canyon	47.80	13.90	1.10	0.30	28.30	1.70	1.70	5.20	0.00	0.00	0.53	hvCb		61.70	29.70	8.60
Seam: Bear Canyon				Mean	56.85	11.80	3.30	1.20	16.80	1.40	1.40	7.15	0.10	0.00	0.54			68.65	21.30	10.05
				Maximum	65.90	13.90	5.50	2.10	28.30	1.70	1.70	9.10	0.20	0.00	0.54			75.60	29.70	11.50
				Minimum	47.80	9.70	1.10	0.30	5.30	1.10	1.10	5.20	0.00	0.00	0.54			61.70	12.90	8.60
				Std. Deviation	9.05	2.10	2.20	0.90	11.50	0.30	0.30	1.95	0.10	0.00	0.01			6.95	8.40	1.45
294	WP	TCP	30-18S-07E	U.Bear Canyon	50.70	28.80	1.80	0.50	2.70	0.90	5.50	9.10	0.00	0.00	0.54	hvCb		79.50	5.00	15.50
Seam: U.Bear Canyon				Mean	50.70	28.80	1.80	0.50	2.70	0.90	5.50	9.10	0.00	0.00	0.54			79.50	5.00	15.50
				Maximum	50.70	28.80	1.80	0.50	2.70	0.90	5.50	9.10	0.00	0.00	0.54			79.50	5.00	15.50
				Minimum	50.70	28.80	1.80	0.50	2.70	0.90	5.50	9.10	0.00	0.00	0.54			79.50	5.00	15.50
				Std. Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00
20	WP	RDP	26-17S-07E	Blind Canyon	60.60	15.60	2.40	1.30	6.40	3.40	2.30	7.60	0.30	0.10	0.65	hvBb		76.20	10.10	13.70
231	WP	TCP	32-18S-07E	Blind Canyon	71.10	11.10	3.10	0.60	4.40	1.70	1.10	6.90	0.00	0.00	0.61	hvBb		82.20	8.10	9.70
253	WP	MHP	03-17S-07E	Blind Canyon	61.40	14.70	1.90	0.50	3.30	5.50	3.80	8.90	0.00	0.00	0.57	hvCb		76.10	5.70	18.20
296	WP	TCP	05-19S-07E	Blind Canyon	52.70	29.70	2.00	0.50	10.20	1.40	1.40	2.10	0.00	0.00	0.54	hvCb		82.40	12.70	4.90
297	WP	TCP	05-19S-07E	Blind Canyon	58.60	27.20	1.30	0.10	1.40	1.30	4.20	5.70	0.00	0.20	0.55	hvCb		85.80	2.80	11.40
298	WP	TCP	06-19S-07E	Blind Canyon	33.10	51.10	2.40	2.10	8.20	0.60	1.90	0.60	0.00	0.00	0.53	hvCb		84.20	12.70	3.10
301	WP	TCP	32-18S-07E	Blind Canyon	51.70	18.40	3.60	0.10	14.50	4.50	3.10	3.90	0.00	0.20	0.55	hvCb		70.10	18.20	11.70
303	WP	TCP	31-18S-07E	Blind Canyon	59.60	9.80	4.40	0.30	11.80	2.80	3.60	0.50	0.10	0.10	0.48	hvCb		69.40	16.50	14.10
387	WP	RDP	11-17S-07E	Blind Canyon	35.50	55.00	3.10	0.50	0.90	4.50	0.30	0.10	0.10	0.00	0.66	hvBb		90.50	4.50	5.00

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
637	WP	WTS	12-15S-07E	Blind Canyon	74.50	8.90	3.60	1.30	3.20	1.00	1.60	5.60	0.20	0.10	0.54	hvCb			83.40	8.10	8.50
637.1	WP	WTS	12-15S-07E	Blind Canyon	74.30	10.10	1.70	1.00	3.90	1.70	1.60	5.10	0.00	0.60	0.53	hvCb			84.40	6.60	9.00
637.2	WP	WTS	12-15S-07E	Blind Canyon	70.00	2.30	2.30	0.70	2.40	2.00	4.90	15.20	0.10	0.10	0.55	hvCb			72.30	5.40	22.30
637.3	WP	WTS	12-15S-07E	Blind Canyon	80.50	11.10	2.40	0.60	1.50	1.30	0.80	1.80	0.00	0.00	0.56	hvCb			91.60	4.50	3.90
655	WP	MHP	17-17S-07E	Blind Canyon	74.30	3.20	2.60	0.20	4.40	2.30	2.60	10.10	0.20	0.10	0.54	hvBb			77.50	7.20	15.30
655.1	WP	MHP	17-17S-07E	Blind Canyon	68.10	6.80	2.30	0.60	3.30	1.90	3.00	13.30	0.70	0.00	0.60	hv Bb			74.90	6.20	18.90
655.2	WP	MHP	17-17S-07E	Blind Canyon	75.10	3.70	2.50	0.20	2.30	1.50	3.20	11.20	0.30	0.00	0.56	hvCb			78.80	5.00	16.20
655.3	WP	MHP	17-17S-07E	Blind Canyon	70.50	3.40	3.20	0.20	6.30	2.60	2.80	10.60	0.30	0.10	0.54	hvCb			73.90	9.70	16.40
677.1	WP	MHP	28-17S-07E	Blind Canyon	70.10	8 90	3.00	0.80	6.80	2.40	1.10	6.40	0.40	0.10	0.55	hvCb			79.00	10.60	10.40
677.2	WP	MHP	28-17S-07E	Blind Canyon	69.40	6.50	3.40	0.10	4.30	1.90	5.40	8.50	0.50	0.00	0.55	hvCb			75.90	7.80	16.30
677.3	WP	MHP	28-17S-07E	Blind Canyon	65.30	6.10	1.80	0.10	2.10	2.90	6.60	14.50	0.50	0.10	0.57	hvBb			71.40	4.00	24.60
677.4	WP	MHP	28-17S-07E	Blind Canyon	72.80	6.90	1.80	0.20	2.90	3.60	2.80	8.60	0.30	0.10	0.57	hvBb			79.70	4.90	15.40
677.5	WP	MHP	28-17S-07E	Blind Canyon	71.60	9.40	3.10	0.90	3.20	2.00	1.90	7.40	0.40	0.10	0.57	hvBb			81.00	7.20	11.80
677.6	WP	MHP	28-17S-07E	Blind Canyon	73.90	2.90	3.00	0.30	7.70	2.10	2.10	7.60	0.40	0.00	0.56	hvCb			76.80	11.00	12.20
677.7	WP	MHP	28-17S-07E	Blind Canyon	76.90	7.20	2.20	0.30	5.60	4.00	0.80	2.70	0.10	0.20	0.56	hvCb			84.10	8.10	7.80
689	WP	WTS	17-15S-08E	Blind Canyon	63.40	6.40	6.20	0.30	5.70	4.20	2.90	10.50	0.40	0.00	0.53	hvCb			69.80	12.20	18.00
689.1	WP	WTS	17-15S-08E	Blind Canyon	68.00	14.10	4.10	0.60	4.90	3.10	0.50	4.00	0.40	0.30	0.55	hvCb			82.10	9.60	8.30
689.2	WP	WTS	17-15S-08E	Blind Canyon	61.60	1.40	2.60	0.80	5.30	4.10	5.30	18.30	0.20	0.40	0.54	hvCb			63.00	8.70	28.30
689.3	WP	WTS	17-15S-08E	Blind Canyon	61.30	5.50	3.10	0.40	7.60	2.80	4.80	13.30	0.80	0.40	0.54	hvCb			66.80	11.10	22.10
689.4	WP	WTS	17-15S-08E	Blind Canyon	70.60	12.20	3.90	0.80	3.20	2.40	1.30	5.00	0.20	0.40	0.53	hvCb			82.80	7.90	9.30
689.5	WP	WTS	17-15S-08E	Blind Canyon	68.50	12.50	4.20	0.60	5.80	2.00	1.50	4.60	0.20	0.10	0.52	hvCb			81.00	10.60	8.40
696	WP	WTS	17-15S-07E	Blind Canyon	67.00	4.40	3.80	0.80	4.70	4.20	3.70	10.80	0.50	0.10	0.54	hvCb			71.40	9.30	19.30
696.1	WP	WTS	17-15S-07E	Blind Canyon	73.30	6.50	4.00	1.00	8.70	2.20	1.30	2.80	0.20	0.00	0.55	hvCb			79.80	13.70	16.50
696.2	WP	WTS	17-15S-07E	Blind Canyon	68.50	8.00	3.90	0.40	6.70	1.80	3.10	7.00	0.40	0.20	0.54	hvCb			76.50	11.00	12.50
696.3	WP	WTS	17-15S-07E	Blind Canyon	56.50	2.80	2.20	0.40	2.60	6.70	8.30	19.40	0.90	0.20	0.57	hvBb			59.30	5.20	35.50
696.4	WP	WTS	17-15S-07E	Blind Canyon	71.80	4.80	4.00	0.30	3.20	4.20	2.90	7.80	0.80	0.20	0.58	hvBb			76.60	7.50	15.90
696.5	WP	WTS	17-15S-07E	Blind Canyon	78.50	3.80	2.40	0.80	3.20	1.70	2.60	6.40	0.50	0.10	0.55	hvCb			82.30	6.40	11.30
696.6	WP	WTS	17-15S-07E	Blind Canyon	57.90	3.20	3.40	0.40	2.20	3.20	9.90	19.20	0.50	0.10	0.58	hvBb			61.10	6.00	32.90
696.7	WP	WTS	17-15S-07E	Blind Canyon	80.60	9.10	2.40	1.20	1.40	2.00	0.40	2.80	0.00	0.10	0.56	hvCb			89.70	5.00	5.30
696.8	WP	WTS	17-15S-07E	Blind Canyon	73.20	9.70	3.10	0.60	5.20	2.20	2.00	3.80	0.20	0.00	0.54	hvCb			82.90	8.90	8.20
Seam: Blind Canyon				Mean	66.60	11.39	2.99	0.58	4.90	2.67	2.84	7.61	0.29	0.12	0.56				77.99	8.47	13.53
				Maximum	80.60	55.00	6.20	2.10	14.50	0.70	9.90	19.40	0.90	0.60	0.66				91.60	18.20	35.50
				Minimum	33.10	2.30	1.30	0.10	0.90	0.60	0.30	0.10	0.00	0.00	0.48				59.30	2.80	3.10
				Std. Deviation	10.41	11.49	0.95	0.41	2.96	1.29	2.05	4.61	0.25	0.13	0.03				7.18	3.42	0.45
663	WP	JPC	13-13S-07E	Castlegate A	75.50	4.80	4.40	0.30	7.40	0.90	1.20	5.00	0.40	0.10	0.51	hvCb			80.30	12.10	7.60
663.1	WP	JPC	13-13S-07E	Castlegate A	73.80	7.90	0.70	0.30	7.50	0.70	2.50	6.20	0.40	0.00	0.55	hvCb			81.70	8.50	9.80
663.2	WP	JPC	13-13S-07E	Castlegate A	81.50	5.20	2.20	0.10	5.00	0.60	1.00	4.10	0.20	0.10	0.50	hvCb			86.70	7.30	6.00
663.3	WP	JPC	13-13S-07E	Castlegate A	76.80	7.00	2.20	0.30	5.70	1.60	0.70	5.00	0.50	0.20	0.51	hvCb			83.80	8.20	8.00
688	WP	JPC	13-13S-07E	Castlegate A	74.50	7.10	2.60	1.30	6.20	2.00	1.60	4.20	0.30	0.20	0.50	hvCb			81.60	10.10	8.30
688.1	WP	JPC	13-13S-07E	Castlegate A	73.20	13.40	0.90	1.00	3.50	1.60	1.70	4.50	0.20	0.00	0.52	hvCb			86.60	5.40	8.00
688.2	WP	JPC	13-13S-07E	Castlegate A	78.90	5.90	3.00	0.00	4.20	1.90	1.10	4.60	0.40	0.00	0.51	hvCb			84.80	7.20	8.00
688.3	WP	JPC	13-13S-07E	Castlegate A	78.60	4.80	2.70	0.70	6.50	1.00	1.00	4.50	0.10	0.10	0.49	hvCb			83.40	9.90	6.70
688.4	WP	JPC	13-13S-07E	Castlegate A	76.70	5.10	3.60	0.70	6.60	1.80	0.70	4.80	0.00	0.00	0.48	hvCb			81.80	10.90	7.30
688.5	WP	JPC	13-13S-07E	Castlegate A	78.10	2.90	4.30	0.20	7.10	0.90	1.00	5.10	0.40	0.00	0.47	hvCb			81.00	11.60	7.40

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Rrefl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
688.6	WP	JPC	13-13S-07E	Castlegate A	73.30	5.30	4.20	0.30	8.20	2.00	1.10	5.00	0.40	0.20	0.46	subb			78.60	12.70	8.70
688.7	WP	JPC	13-13S-07E	Castlegate A	73.90	4.80	2.70	0.40	6.80	1.70	1.60	7.60	0.40	0.10	0.46	subb			78.70	9.90	11.40
688.8	WP	JPC	13-13S-07E	Castlegate A	82.50	6.40	2.70	0.50	2.80	0.80	0.40	3.70	0.10	0.10	0.47	hvCb			88.90	6.00	5.10
688.9	WP	JPC	13-13S-07E	Castlegate A	80.40	6.80	4.00	0.30	2.70	0.40	0.90	4.10	0.10	0.30	0.47	hvCb			87.20	7.00	5.80
705	WP	JPC	18-13S-08E	Castlegate A	76.60	8.30	2.40	0.70	6.10	0.80	0.90	4.00	0.00	0.20	0.53	hvCb			84.90	9.20	5.90
705.1	WP	JPC	18-13S-08E	Castlegate A	75.30	8.70	2.90	0.60	6.80	0.70	1.50	3.30	0.20	0.00	0.54	hvCb			84.00	10.30	5.70
705.2	WP	JPC	18-13S-08E	Castlegate A	79.40	5.60	3.90	0.20	4.90	0.50	1.80	3.00	0.60	0.10	0.52	hvCb			85.00	9.00	6.00
705.3	WP	JPC	18-13S-08E	Castlegate A	74.30	3.60	4.90	0.70	6.00	2.20	0.70	7.00	0.40	0.20	0.42	subb			77.90	11.60	10.50
718	WP	JPC	18-13S-08E	Castlegate A	74.90	5.10	4.60	0.90	6.80	0.50	1.40	5.50	0.20	0.10	0.48	hvCb			80.00	12.30	7.70
718.1	WP	JPC	18-13S-08E	Castlegate A	83.40	5.00	3.20	1.30	1.70	0.90	1.30	3.00	0.20	0.00	0.49	hvCb			88.40	6.20	5.40
718.2	WP	JPC	18-13S-08E	Castlegate A	74.20	3.50	4.10	1.00	10.30	0.60	1.60	4.30	0.20	0.20	0.46	subb			77.70	15.40	6.90
718.3	WP	JPC	18-13S-08E	Castlegate A	76.50	3.60	7.00	1.30	4.40	0.60	1.20	5.20	0.20	0.00	0.45	subb			80.10	12.70	7.20
Seam: Castlegate A				Mean	77.10	5.98	3.29	0.61	5.67	1.08	1.23	4.70	0.26	0.10	0.49				83.07	9.56	7.37
				Maximum	83.40	13.40	7.00	1.30	10.30	2.20	2.50	7.60	0.60	0.30	0.55				88.90	15.40	11.40
				Minimum	73.20	2.90	0.70	0.00	1.70	0.40	0.40	3.00	0.00	0.00	0.42				77.70	5.40	5.10
				Std. Deviation	2.94	2.28	1.37	0.39	1.93	0.56	0.47	1.15	0.16	0.09	0.03				3.29	2.50	1.62
33	WP	SCF	14-13S-06E	Flat Canyon	71.60	15.00	5.80	0.80	1.50	3.40	0.60	1.20	0.00	0.10	0.59	hvBb			86.60	8.10	5.30
307	WP	SCF	14-13S-06E	Flat Canyon	63.70	22.70	6.60	0.10	0.70	2.60	0.70	2.70	0.00	0.20	0.55	hvCb			86.40	7.40	6.20
Seam: Flat Canyon				Mean	67.65	18.85	6.20	0.45	1.10	3.00	0.65	1.95	0.00	0.15	0.57				86.50	7.75	5.75
				Maximum	71.60	22.70	6.60	0.80	1.50	3.40	0.70	2.70	0.00	0.20	0.59				86.60	8.10	6.20
				Minimum	63.70	15.00	5.80	0.10	0.70	2.60	0.60	1.20	0.00	0.10	0.55				86.40	7.40	5.30
				Std. Deviation	3.95	3.86	0.40	0.35	0.40	0.40	0.06	0.75	0.00	0.05	0.02				0.10	0.35	0.45
1	WP	RDC	22-16S-06E	Hiawatha	62.10	15.70	8.40	2.20	5.40	1.00	1.00	3.30	0.60	0.30	0.58	hvBb			77.80	16.00	6.20
2	WP	MHP	03-17S-06E	Hiawatha	67.80	6.60	3.90	1.30	5.20	2.30	2.30	10.40	0.10	0.10	0.46	subb			74.40	10.40	15.20
18	WP	RDP	26-17S-07E	Hiawatha	67.50	14.70	4.70	1.50	3.70	3.00	1.00	3.70	0.00	0.20	0.59	hvBb			82.20	9.90	7.90
19	WP	RDP	26-17S-07E	Hiawatha	65.30	15.80	7.30	1.50	3.30	2.80	0.90	2.80	0.10	0.20	0.55	hvCb			81.10	12.10	6.80
228	WP	ACL	02-22S-04E	Hiawatha	77.90	10.70	2.90	0.30	1.50	1.90	3.40	1.40	0.00	0.00	0.53	hvCb	27.00	63.50	88.60	4.70	6.70
232	WP	TCP	32-18S-07E	Hiawatha	68.70	18.40	1.70	0.60	2.50	0.90	0.70	6.40	0.10	0.00	0.59	hvBb	29.50	64.80	87.10	4.80	8.10
233	WP	ACL	24-21S-04E	Hiawatha	61.30	22.90	1.40	0.30	0.60	2.40	1.80	9.20	0.10	0.00	0.55	hvCb	28.50	65.10	84.20	2.30	13.50
269	WP	TCP	22-19S-06E	Hiawatha	67.40	7.80	2.10	0.50	1.50	5.70	6.00	9.00	0.00	0.00	0.55	hvCb	25.10	59.00	75.20	4.10	20.70
270	WP	TCP	11-19S-06E	Hiawatha	63.50	5.30	3.80	1.40	2.40	1.60	5.40	16.40	0.20	0.00	0.54	hvCb	24.70	58.90	68.80	7.60	23.60
277	WP	TCP	02-19S-06E	Hiawatha	39.70	40.10	1.90	2.00	1.10	8.30	2.60	4.30	0.00	0.00	0.63	hvBb			79.80	5.00	15.20
278	WP	TCP	02-19S-06E	Hiawatha	66.00	14.80	2.90	0.60	2.00	1.60	3.40	8.70	0.00	0.00	0.62	hvBb	28.80	68.70	80.80	5.50	13.70
279	WP	TCP	21-19S-06E	Hiawatha	41.60	33.30	2.80	0.90	7.40	3.50	4.60	5.90	0.00	0.00	0.59	hvBb	27.60	58.20	74.90	11.10	14.00
289	WP	RDC	27-16S-06E	Hiawatha	71.00	18.50	4.90	0.30	2.30	0.80	0.30	1.90	0.00	0.00	0.60	hvBb			89.50	7.50	3.00
290	WP	RDC	35-16S-06E	Hiawatha	48.90	11.40	7.10	1.20	5.20	3.40	2.40	20.20	0.20	0.00	0.60	hvBb			60.30	13.50	26.20
291	WP	YGC	26-23S-03E	Hiawatha	42.30	41.90	2.10	0.70	1.90	1.20	3.30	6.60	0.00	0.00	0.49	hvCb			84.20	4.70	11.10
292	WP	YGC	27-23S-03E	Hiawatha	66.70	7.80	3.90	0.70	1.60	3.90	3.60	11.80	0.00	0.00	0.50	hvCb			74.50	6.20	19.30
299	WP	TCP	06-19S-07E	Hiawatha	52.50	24.20	3.20	0.40	2.10	5.80	4.30	7.40	0.00	0.10	0.59	hvBb			76.70	5.70	17.60
300	WP	MHP	01-18S-06E	Hiawatha	65.20	19.60	4.80	1.80	2.30	1.80	2.10	2.40	0.00	0.00	0.54	hvCb			84.80	8.90	6.30
316	WP	FRC	14-19S-05E	Hiawatha	58.00	23.40	2.80	0.70	5.30	1.00	5.70	3.10	0.00	0.00	0.52	hvCb			81.40	8.80	9.80
325	WP	JVR	04-18S-06E	Hiawatha	58.80	26.50	3.70	0.80	2.60	2.80	2.00	2.50	0.00	0.30	0.55	hvCb			85.30	7.10	7.60

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Rrefl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
330	WP	TCP	15-19S-06E	Hiawatha	44.70	25.60	2.90	0.40	3.20	5.20	8.00	9.50	0.50	0.00	0.56	hvCb			70.30	6.50	23.20
339	WP	TCP	35-19S-06E	Hiawatha	55.40	18.30	3.40	0.90	2.60	8.50	4.20	6.70	0.00	0.00	0.50	hvCb			73.70	6.90	19.40
386	WP	RDP	11-17S-07E	Hiawatha	59.90	11.70	4.30	1.60	1.20	4.80	5.60	10.50	0.40	0.00	0.56	hvCb	28.20	62.00	71.60	7.10	21.30
620	WP	MHP	36-17S-06E	Hiawatha	69.10	10.70	2.40	0.90	2.10	1.40	3.10	9.70	0.60	0.00	0.53	hvCb	25.60	54.30	79.80	5.40	14.80
620.1	WP	MHP	36-17S-06E	Hiawatha	74.10	10.10	3.20	0.80	4.80	1.80	0.80	3.70	0.60	0.10	0.53	hvCb	21.40	64.30	84.20	8.80	7.00
620.2	WP	MHP	36-17S-06E	Hiawatha	56.20	13.90	2.40	0.90	2.10	3.00	5.50	15.20	0.80	0.00	0.56	hvCb	20.10	62.40	70.10	5.40	24.50
620.3	WP	MHP	36-17S-06E	Hiawatha	73.80	14.50	1.60	0.70	2.20	2.60	0.80	3.40	0.40	0.00	0.56	hvCb	23.40	72.90	88.30	4.50	7.20
629	WP	HWT	32-15S-08E	Hiawatha	67.80	11.80	3.40	0.50	2.90	1.40	3.20	8.80	0.10	0.10	0.57	hvCb	28.70		79.60	6.80	13.60
629.1	WP	HWT	32-15S-08E	Hiawatha	75.90	9.50	3.30	0.60	2.10	1.40	2.10	4.80	0.00	0.30	0.55	hvCb	24.00	63.50	85.40	6.00	8.60
629.2	WP	HWT	32-15S-08E	Hiawatha	57.50	3.50	3.50	0.60	3.30	2.80	5.30	23.00	0.50	0.00	0.55	hvCb	22.40	66.60	61.00	7.40	31.60
629.3	WP	HWT	32-15S-08E	Hiawatha	69.50	6.10	2.60	0.40	2.60	1.80	3.60	12.90	0.40	0.10	0.54	hvCb	23.70	65.60	75.60	5.60	18.80
636	WP	EMW	28-21S-05E	Hiawatha	82.00	8.10	1.90	1.30	1.40	1.70	0.70	2.80	0.10	0.00	0.49	hvCb			90.10	4.60	5.30
638	WP	WTS	08-15S-08E	Hiawatha	76.40	6.30	2.30	0.80	2.70	2.50	1.80	6.70	0.30	0.20	0.55	hvCb	27.00	69.20	82.70	5.80	11.50
638.1	WP	WTS	08-15S-08E	Hiawatha	74.20	3.40	3.40	0.40	2.40	3.20	3.30	8.90	0.50	0.30	0.54	hvCb	28.30	61.80	77.60	6.20	16.20
638.2	WP	WTS	08-15S-08E	Hiawatha	74.40	9.50	3.40	1.90	3.50	1.90	1.50	3.60	0.10	0.20	0.54	hvCb	25.80	59.50	83.90	8.80	7.30
638.3	WP	WTS	08-15S-08E	Hiawatha	74.90	4.80	3.60	0.50	2.60	2.70	2.70	7.80	0.40	0.00	0.54	hvCb	28.20	68.30	79.70	6.70	13.60
651	WP	RDC	05-16S-07E	Hiawatha	77.70	4.30	1.80	0.70	2.80	2.10	1.60	8.30	0.60	0.10	0.56	hvCb			82.00	5.30	12.70
651.1	WP	RDC	05-16S-07E	Hiawatha	75.70	8.30	2.60	0.40	1.70	0.70	2.00	8.30	0.30	0.00	0.60	hvBb			84.00	4.70	11.30
651.2	WP	RDC	05-16S-07E	Hiawatha	74.60	7.50	2.30	1.00	2.30	0.90	2.20	8.70	0.50	0.00	0.55	hvCb			82.10	5.60	12.30
651.3	WP	RDC	05-16S-07E	Hiawatha	83.10	9.20	1.90	0.50	1.10	1.20	0.40	2.30	0.20	0.10	0.56	hvCb			92.30	3.50	4.20
653	WP	HWT	24-16S-07E	Hiawatha	80.90	4.70	3.10	0.80	2.30	2.30	1.00	4.60	0.20	0.10	0.54	hvCb			85.60	6.20	8.20
653.1	WP	HWT	24-16S-07E	Hiawatha	87.90	3.90	3.00	0.30	1.40	0.90	0.30	2.00	0.20	0.10	0.56	hvCb			91.80	4.70	3.50
653.2	WP	HWT	24-16S-07E	Hiawatha	82.70	1.70	3.90	0.70	1.90	1.90	0.80	5.70	0.60	0.10	0.54	hvCb			84.40	6.50	9.10
653.3	WP	HWT	24-16S-07E	Hiawatha	82.00	2.70	4.00	1.00	1.90	3.00	0.80	3.70	0.80	0.10	0.53	hvCb			84.70	6.90	8.40
654	WP	MHP	29-17S-07E	Hiawatha	78.00	2.10	1.50	1.10	1.80	1.70	3.00	10.60	0.10	0.10	0.55	hvCb			80.10	4.40	15.50
654.1	WP	MHP	29-17S-07E	Hiawatha	76.50	3.00	2.20	1.10	2.00	0.20	2.30	12.70	0.00	0.00	0.56	hvCb			79.50	5.30	15.20
654.2	WP	MHP	29-17S-07E	Hiawatha	75.50	1.80	3.10	0.80	2.60	1.00	2.50	12.50	0.20	0.00	0.56	hvCb			77.30	6.50	16.20
654.3	WP	MHP	29-17S-07E	Hiawatha	82.10	2.70	2.00	0.80	1.00	1.80	2.50	6.70	0.30	0.10	0.57	hvCb			84.80	3.80	11.40
665	WP	EMW	24-21S-05E	Hiawatha	78.40	2.90	4.00	0.60	1.90	0.70	2.10	8.60	0.70	0.10	0.48	hvCb			81.30	6.50	12.20
667	WP	EMW	14-21S-05E	Hiawatha	79.80	7.60	2.70	0.50	2.80	1.60	1.60	3.00	0.40	0.00	0.48	hvCb			87.40	6.00	6.60
668	WP	EMW	14-21S-05E	Hiawatha	76.30	6.30	3.50	0.40	0.60	1.30	4.00	7.20	0.30	0.10	0.46	subb			82.60	4.50	12.90
674	WP	FGP	10-21S-05E	Hiawatha	83.60	5.40	2.50	0.80	1.30	0.60	1.40	3.70	0.50	0.20	0.43	subb			89.00	4.60	6.40
675	WP	FGP	10-21S-05E	Hiawatha	81.00	5.50	2.60	1.30	1.10	2.00	1.70	4.50	0.20	0.10	0.47	hvCb			86.50	5.00	8.50
691	WP	EMW	23-21S-05E	Hiawatha	76.30	3.50	3.70	0.30	3.00	1.80	2.10	9.10	0.20	0.00	0.48	hvCb			79.80	7.00	13.20
717	WP	MHP	25-17S-07E	Hiawatha	77.30	4.30	3.50	0.70	3.30	1.10	2.10	7.10	0.40	0.20	0.48	hvCb			81.60	7.50	10.90
717.1	WP	MHP	25-17S-07E	Hiawatha	73.20	3.30	4.90	0.60	3.90	0.90	3.10	9.50	0.40	0.20	0.50	hvCb			76.50	9.40	14.10
717.2	WP	MHP	25-17S-07E	Hiawatha	73.40	2.20	4.00	0.20	3.50	1.50	3.50	11.20	0.40	0.10	0.50	hvCb			75.60	7.70	16.70
717.3	WP	MHP	25-17S-07E	Hiawatha	81.60	3.70	3.50	0.40	2.10	1.80	1.80	4.60	0.40	0.10	0.50	hvCb			85.30	6.00	8.70
Seam: Hiawatha				Mean	69.58	11.10	3.28	0.83	2.55	2.30	2.62	7.41	0.26	0.08	0.54		25.90	63.61	80.68	6.66	12.67
				Maximum	87.90	41.90	8.40	2.20	7.40	8.50	8.00	23.00	0.80	0.30	0.63		29.50	72.90	92.30	16.00	31.60
				Minimum	39.70	1.70	1.40	0.20	0.60	0.20	0.30	1.40	0.00	0.00	0.43		20.10	54.30	60.30	2.30	3.00
				Std. Deviation	11.40	9.19	1.34	0.46	1.29	1.67	1.64	4.42	0.23	0.09	0.04		2.65	4.39	6.59	2.43	6.01

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Rrefl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
271	WP	TCP	15-19S-06E	Lwr. Hiawatha	70.40	13.70	3.80	0.80	4.40	0.90	2.30	3.60	0.00	0.10	0.58	hvBb	26.50	64.50	84.10	9.00	6.90
272	WP	FRN	33-20S-05E	Lwr. Hiawatha	30.50	63.00	1.10	1.70	1.70	1.30	0.20	0.50	0.00	0.00	0.58	hvBb	29.20		93.50	4.50	2.00
281	WP	HLT	20-20S-05E	Lwr. Hiawatha	73.90	9.30	2.40	1.70	2.50	0.60	3.40	6.20	0.00	0.00	0.56	hvCb	27.90	60.30	83.20	6.60	10.20
282	WP	ACL	13-21S-04E	Lwr. Hiawatha	70.30	16.00	3.10	0.40	1.10	2.30	2.60	4.20	0.00	0.00	0.61	hvBb	27.70	62.10	86.30	4.60	9.10
333	WP	TCP	29-19S-06E	Lwr. Hiawatha	52.60	24.60	4.70	0.60	2.10	4.00	3.70	7.30	0.40	0.00	0.54	hvCb			77.20	7.40	15.40
Seam: Lwr. Hiawatha				Mean	59.54	25.32	3.02	1.04	2.36	1.82	2.44	4.36	0.08	0.02	0.57		27.82	64.30	84.86	6.42	8.72
				Maximum	73.90	63.00	4.70	1.70	4.40	4.00	3.70	7.30	0.40	0.10	0.61		29.20	64.50	93.50	9.00	15.40
				Minimum	30.50	9.30	1.10	0.40	1.10	0.60	0.20	0.50	0.00	0.00	0.54		26.50	60.30	26.50	4.50	2.00
				Std. Deviation	16.32	19.49	1.23	0.55	1.12	1.23	1.23	2.35	0.16	0.04	0.02		0.96	1.72	5.27	1.71	4.37
200	WP	ACL	02-22S-04E	Uppr.Hiawatha	59.80	11.40	1.80	0.00	0.80	6.70	3.10	16.30	0.00	0.10	0.63	hvBb	25.10	57.20	71.20	2.60	26.20
202	WP	ACL	05-22S-05E	Uppr.Hiawatha	73.20	14.70	3.40	1.90	1.20	3.80	0.50	1.20	0.00	0.10	0.52	hvCb	26.60		87.90	6.50	5.60
203	WP	ACL	08-22S-05E	Uppr.Hiawatha	75.70	2.60	1.70	0.90	0.80	6.50	4.10	7.70	0.00	0.00	0.52	hvCb	26.10		78.30	3.40	18.30
211	WP	ACL	05-22S-05E	Uppr.Hiawatha	67.90	6.80	1.60	0.60	1.20	5.20	3.90	12.80	0.00	0.00	0.53	hvCb	24.40		74.70	3.40	21.90
212	WP	EMW	21-21S-05E	Uppr.Hiawatha	42.60	2.10	4.20	0.30	1.40	4.30	7.00	37.90	0.10	0.10	0.56	hvCb	24.70	65.40	44.70	5.90	49.40
215	WP	EMW	21-21S-05E	Uppr.Hiawatha	63.70	8.00	1.30	0.50	1.80	0.90	5.10	18.60	0.10	0.00	0.60	hvBb	28.10	62.80	71.70	3.60	24.70
216	WP	ACL	05-22S-05E	Uppr.Hiawatha	67.60	2.20	3.10	1.50	2.60	9.30	3.30	10.20	0.00	0.20	0.52	hvCb	24.40		69.80	7.20	23.00
218	WP	ACL	07-22S-05E	Uppr Hiawatha	71.90	9.70	2.20	0.90	2.40	4.50	4.40	3.90	0.00	0.10	0.48	hvCb	23.60		81.60	5.50	12.90
219	WP	ACL	24-21S-04E	Uppr.Hiawatha	64.70	3.70	1.80	0.40	1.00	4.20	5.20	18.80	0.20	0.00	0.57	hvBb	26.50	59.60	68.40	3.20	28.40
276	WP	TCP	26-19S-06E	Uppr.Hiawatha	49.00	30.50	4.60	2.10	3.00	1.90	2.70	6.20	0.00	0.00	0.58	hvBb	28.70		79.50	9.70	10.80
280	WP	HLT	20-20S-05E	Uppr.Hiawatha	38.30	45.10	1.40	0.90	2.60	1.40	7.20	3.10	0.00	0.00	0.62	hvBb	28.20	45.70	83.40	4.90	11.70
302	WP	TCP	32-18S-07E	Uppr.Hiawatha	36.90	51.30	2.40	1.20	2.80	2.90	0.90	1.50	0.10	0.00	0.54	hvCb	26.00	51.30	88.20	6.40	5.40
304	WP	TCP	31-18S-07E	Uppr.Hiawatha	50.80	8.10	3.60	0.10	25.70	1.80	2.40	7.40	0.10	0.00	0.51	hvCb	28.50	58.90	58.90	29.40	11.70
308	WP	ACL	25-21S-04E	Uppr.Hiawatha	58.90	11.80	5.50	0.40	5.40	2.60	5.30	10.00	0.00	0.10	0.51	hvCb	25.90	58.50	70.70	11.30	18.00
309	WP	ACL	30-21S-05E	Uppr.Hiawatha	59.00	9.20	2.90	0.40	2.50	3.70	6.60	15.50	0.20	0.00	0.53	hvCb	26.10	60.50	68.20	5.80	26.00
310	WP	ACL	25-21S-04E	Uppr.Hiawatha	56.20	15.10	2.10	0.10	3.00	3.20	10.10	10.00	0.00	0.20	0.55	hvCb	27.50	49.70	71.30	5.20	23.50
329	WP	TCP	15-19S-06E	Uppr.Hiawatha	50.20	29.60	2.60	0.80	6.10	3.70	2.50	4.40	0.10	0.00	0.50	hvCb			79.80	9.50	10.70
332	WP	TCP	26-19S-06E	Uppr.Hiawatha	65.70	14.80	6.00	0.70	2.30	5.50	1.90	2.90	0.20	0.00	0.51	hvCb			80.50	9.00	10.50
622.1	WP	ACL	12-22S-04E	Uppr.Hiawatha	49.00	4.00	4.70	0.90	2.40	2.20	10.00	26.10	0.70	0.00	0.50	hvCb	23.00	57.40	53.00	8.00	39.00
622.2	WP	ACL	12-22S-04E	Uppr.Hiawatha	66.20	12.90	2.10	0.50	1.70	1.30	3.60	11.20	0.50	0.00	0.51	hvCb	25.27	58.30	79.10	4.30	16.60
622.3	WP	ACL	12-22S-04E	Uppr.Hiawatha	64.50	12.30	2.40	1.20	3.20	2.80	4.20	9.00	0.30	0.10	0.48	hvCb	22.10	61.30	76.80	6.80	16.40
628	WP	ACL	29-21S-04E	Uppr.Hiawatha	62.90	0.90	2.10	0.00	2.10	1.30	5.80	24.80	0.00	0.10	0.49	hvCb			63.80	4.20	32.00
628.1	WP	ACL	29-21S-04E	Uppr.Hiawatha	81.40	2.40	2.00	0.40	3.00	2.40	2.00	6.20	0.20	0.00	0.47	hvCb	26.60	71.90	83.80	5.40	10.80
628.2	WP	ACL	29-21S-04E	Uppr.Hiawatha	57.70	3.90	2.60	0.20	2.20	3.10	6.00	23.90	0.40	0.00	0.48	hvCb	21.60	63.90	61.60	5.00	33.40
628.3	WP	ACL	29-21S-04E	Uppr.Hiawatha	51.60	4.70	2.40	1.00	1.10	3.60	8.30	26.60	0.70	0.00	0.48	hvCb	21.80	61.50	56.30	4.50	39.20
652	WP	HWT	23-16S-07E	Uppr.Hiawatha	78.20	2.50	3.00	0.40	2.40	1.20	0.50	10.40	1.20	0.20	0.51	hvCb			80.70	5.80	13.50
652.1	WP	HWT	23-16S-07E	Uppr.Hiawatha	70.60	3.70	3.40	1.20	6.90	2.00	2.20	9.70	0.30	0.00	0.53	hvCb			74.30	11.50	14.20
652.2	WP	HWT	23-16S-07E	Uppr.Hiawatha	65.30	0.80	5.70	0.40	6.20	1.20	4.30	16.00	0.00	0.10	0.51	hvCb			66.10	12.30	21.60
652.3	WP	HWT	23-16S-07E	Uppr.Hiawatha	72.90	3.60	3.50	0.60	5.20	2.20	2.30	9.20	0.30	0.20	0.54	hvCb			76.50	9.30	14.20
666	WP	EMW	24-21S-05E	Uppr.Hiawatha	73.00	5.90	3.90	0.90	1.70	2.60	3.50	8.00	0.50	0.00	0.49	hvCb			78.90	6.50	14.60
669	WP	EMW	14-21S-05E	Uppr.Hiawatha	79.80	8.30	3.70	0.50	1.30	0.80	1.10	4.20	0.20	0.10	0.47	hvCb			88.10	5.50	6.40
673	WP	FGP	10-21S-05E	Uppr.Hiawatha	83.20	2.30	3.60	0.50	2.60	0.80	1.60	5.30	0.10	0.00	0.47	subb			85.50	6.70	7.80
686	WP	ACL	16-21S-05E	Uppr.Hiawatha	85.70	5.80	2.70	0.80	1.40	0.20	1.10	2.20	0.10	0.00	0.47	hvCb			91.50	4.90	3.60

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Rrefl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
Seam: Uppr. Hiawatha			Mean		63.46	10.63	3.03	0.70	3.33	3.02	4.02	11.55	0.20	0.05	0.52		25.49	58.99	74.08	7.07	18.86
			Maximum		85.70	51.30	6.00	2.10	25.70	9.30	10.10	37.90	1.20	0.20	0.63		28.70	71.90	91.50	29.40	49.40
			Minimum		36.90	0.80	1.80	0.00	0.80	0.20	0.50	1.20	0.00	0.00	0.47		21.60	45.70	44.70	2.60	3.60
			Std. Deviation		12.43	11.83	1.23	0.49	4.26	1.96	2.52	8.51	0.26	0.07	0.04		2.08	6.07	10.71	4.65	10.73
284	WP	OWP	27-22S-04E	Ivie	56.30	12.90	4.50	1.60	5.80	3.90	4.00	10.50	0.20	0.30	0.50	hvCb			69.20	11.90	18.90
328	WP	ACL	28-21S-04E	Ivie	56.60	22.70	3.00	0.20	7.00	4.00	2.10	4.30	0.10	0.00	0.52	hvCb			79.30	10.20	10.50
Seam: Ivie			Mean		56.45	17.80	3.75	0.90	6.40	3.95	3.05	7.40	0.15	0.15	0.51				74.25	11.05	14.70
			Maximum		56.60	22.70	4.50	1.60	7.00	4.00	4.00	10.50	0.20	0.30	0.52				79.30	11.90	18.90
			Minimum		56.30	12.90	3.00	0.20	5.80	3.90	2.10	4.30	0.10	0.00	0.50				69.20	10.20	10.50
			Std. Deviation		0.15	4.90	0.75	0.70	0.60	0.05	0.95	3.10	0.05	0.15	0.01				5.05	0.85	4.20
226	WP	SCF	14-13S-06E	Lwr.O'Connor	61.30	32.90	1.30	0.30	1.10	2.00	0.20	0.90	0.00	0.00	0.55	hvCb	24.80	63.00	94.20	2.70	3.10
227	WP	SCF	35-13S-06E	Lwr.O'Connor	70.10	12.50	1.30	0.20	3.60	1.30	1.80	9.20	0.00	0.00	0.57	hvBb	28.50	67.40	82.60	5.10	12.30
240	WP	SCF	26-13S-06E	Lwr O'Connor	70.20	20.90	2.40	0.40	1.50	2.00	0.60	2.00	0.00	0.00	0.59	hvBb	27.30	66.10	91.10	4.30	4.60
242	WP	SCF	22-13S-06E	Lwr.O'Connor	60.60	32.90	0.80	0.40	1.80	1.50	0.50	1.50	0.00	0.00	0.63	hvBb	30.30		93.50	3.00	3.50
285	WP	SCF	01-13S-06E	Lwr.O'Connor	68.40	21.00	3.00	1.50	1.40	1.00	1.30	2.20	0.00	0.20	0.59	hvBb	25.60	52.80	89.40	5.90	4.70
286	WP	SCF	01-13S-06E	Lwr.O'Connor	64.70	21.00	2.60	0.20	2.80	1.20	2.10	5.40	0.00	0.00	0.56	hvCb	26.80	63.30	85.70	5.60	8.70
287	WP	SCF	01-13S-06E	Lwr.O'Connor	81.30	11.10	4.70	0.30	0.20	0.80	0.40	1.10	0.00	0.10	0.54	hvCb	26.60	61.30	92.40	5.20	2.40
288	WP	SCF	02-13S-06E	Lwr.O'Connor	65.60	30.40	1.70	0.00	0.30	0.60	0.20	1.00	0.00	0.20	0.58	hvBb			96.00	2.00	2.00
613	WP	SCF	13-13S-06E	Lwr.O'Connor	71.80	9.60	1.60	0.20	0.20	1.20	4.60	10.20	0.20	0.40	0.64	hvBb	29.00	67.60	81.40	2.00	16.60
614	WP	SCF	13-13S-06E	Lwr.O'Connor	72.90	5.20	1.70	0.20	0.40	0.60	4.80	13.80	0.20	0.20	0.57	hvBb	28.60	68.60	78.10	2.30	19.60
621	WP	SCF	14-13S-06E	Lwr.O'Connor	82.20	10.10	2.10	0.80	0.80	0.50	0.90	2.50	0.00	0.10	0.55	hvCb			92.30	3.70	4.00
649	WP	SCF	25-13S-07E	Lwr.O'Connor	83.30	4.20	1.20	0.30	1.40	1.70	1.60	5.90	0.30	0.10	0.50	hvCb	23.30	62.40	87.50	2.90	9.60
649.1	WP	SCF	25-13S-07E	Lwr.O'Connor	77.20	5.00	2.00	0.80	1.30	4.30	2.20	6.70	0.40	0.10	0.48	hvCb	27.12	62.30	82.20	4.10	13.70
649.2	WP	SCF	25-13S-07E	Lwr.O'Connor	82.70	4.00	1.10	1.00	1.70	2.00	1.20	5.80	0.50	0.00	0.48	hvCb	26.30	62.80	86.70	3.80	9.50
649.3	WP	SCF	25-13S-07E	Lwr.O'Connor	72.70	2.40	1.70	0.20	0.50	1.10	3.70	17.30	0.40	0.00	0.49	hvCb	24.80	61.70	75.10	2.40	22.50
Seam: Lwr.O'Connor			Mean		72.33	14.88	1.95	0.45	1.27	1.45	1.74	5.70	0.13	0.09	0.55		26.85	63.27	87.21	3.67	9.12
			Maximum		83.30	32.90	4.70	1.50	3.60	4.30	4.80	17.30	0.50	0.40	0.64		30.30	68.60	96.00	5.90	22.50
			Minimum		60.60	2.40	0.80	0.00	0.20	0.50	0.20	0.90	0.00	0.00	0.48		23.30	52.80	75.10	2.00	2.00
			Std. Deviation		7.38	10.49	0.93	0.39	0.94	0.91	1.47	4.86	0.18	0.11	0.05		1.87	3.98	6.06	1.28	6.36
247	WP	SCF	10-13S-06E	Lwr.O'Connor "A"	67.60	24.20	1.70	0.20	2.30	0.50	0.80	2.70	0.00	0.00	0.56	hvCb	27.00		91.80	4.20	4.00
251	WP	SCF	22-13S-06E	Lwr.O'Connor "A"	65.80	20.70	2.50	1.40	4.50	0.40	1.20	3.40	0.00	0.10	0.56	hvCb	29.60	67.90	86.50	8.40	5.10
252	WP	SCF	22-13S-06E	Lwr.O'Connor "A"	67.90	11.80	6.10	0.60	2.60	3.20	1.80	5.80	0.00	0.20	0.54	hvCb	29.90		79.70	9.30	11.00

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Rrefl (R_0)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
Seam: Lwr.O'Connor "A"			Mean		67.10	18.90	3.43	0.73	3.13	1.37	1.27	3.97	0.00	0.10	0.55		28.83	67.90	86.00	7.30	6.70
			Maximum		67.90	24.20	6.10	1.40	4.50	3.20	1.80	5.80	0.00	0.20	0.56		29.90	67.90	91.80	9.30	11.00
			Minimum		65.80	11.80	1.70	0.20	2.30	0.40	0.80	2.70	0.00	0.00	0.54		27.00	67.90	79.70	4.20	4.00
			Std. Deviation		0.93	5.22	1.91	0.50	0.97	1.30	0.41	1.33	0.00	0.08	0.01		1.30	0.00	4.95	2.22	3.07
239	WP	SCF	35-13S-06E	Lwr.O'Connor "B"	71.30	15.40	1.50	1.00	3.30	2.40	0.70	4.30	0.10	0.00	0.59	hvBb	29.60	64.30	86.70	5.80	7.50
243	WP	SCF	22-13S-06E	Lwr.O'Connor "B"	64.10	22.90	1.50	0.20	5.80	0.60	0.90	4.00	0.00	0.00	0.61	hvBb	27.60	68.10	87.00	7.50	5.50
Seam: Lwr.O'Connor "B"			Mean		67.70	19.15	1.50	0.60	4.55	1.50	0.80	4.15	0.05	0.00	0.60		28.60	66.20	86.85	6.65	6.50
			Maximum		71.30	22.90	1.50	1.00	5.80	2.40	0.90	4.30	0.10	0.00	0.61		29.60	68.10	87.70	7.50	7.50
			Minimum		64.10	15.40	1.50	0.20	3.30	0.60	0.70	4.00	0.00	0.00	0.59		27.60	64.30	86.70	5.80	5.50
			Std.Deviation		3.60	3.75	0.00	0.40	1.25	0.90	0.10	0.15	0.05	0.00	0.01		1.00	1.90	0.15	0.85	1.00
224	WP	SCF	14-13S-06E	Uppr.O'Connor	73.40	17.10	2.50	0.10	1.60	1.70	2.40	1.20	0.00	0.00	0.57	hvCb	27.60		90.50	4.20	5.30
238	WP	SCF	35-13S-06E	Uppr.O'Connor	70.10	24.80	1.50	1.40	0.90	0.50	0.10	0.70	0.00	0.00	0.58	hvBb	28.20	57.90	94.90	3.80	1.30
244	WP	SCF	22-13S-06E	Uppr.O'Connor	62.90	32.80	1.50	0.50	0.90	0.70	0.00	0.70	0.00	0.00	0.58	hvBb	26.00	62.20	95.70	2.90	1.40
259	WP	SCF	26-13S-06E	Uppr.O'Connor	83.70	5.30	2.10	1.50	0.70	3.70	1.60	1.40	0.00	0.00	0.51	hvCb	25.30		89.00	4.30	6.70
263	WP	SCF	22-13S-06E	Uppr.O'Connor	75.60	13.20	3.20	1.30	0.90	3.90	0.60	1.30	0.00	0.00	0.53	hvCb	24.50		88.80	5.40	5.80
305	WP	SCF	14-13S-06E	Uppr.O'Connor	45.60	3.20	4.30	0.60	4.00	5.90	9.20	27.20	0.00	0.00	0.58	hvBb			48.80	8.90	42.30
306	WP	SCF	14-13S-06E	Uppr.O'Connor	30.80	61.00	1.50	0.40	1.80	2.40	1.90	0.20	0.00	0.00	0.56	hvCb			91.80	3.70	4.50
370	WP	SCF	13-13S-06E	Uppr.O'Connor	60.20	31.00	1.70	1.70	0.90	3.30	0.50	0.50	0.20	0.00	0.54	hvCb			91.20	4.30	4.50
619	WP	SCF	25-13S-06E	Uppr.O'Connor	85.40	5.40	2.50	1.10	1.20	0.40	0.90	2.90	0.10	0.10	0.48	hvCb	26.40	61.90	90.80	4.80	4.40
619.1	WP	SCF	25-13S-06E	Uppr.O'Connor	84.20	8.00	1.30	1.90	1.60	0.40	0.80	1.70	0.10	0.00	0.49	hvCb	17.80	56.70	92.20	4.80	3.00
619.2	WP	SCF	25-13S-06E	Uppr.O'Connor	87.50	3.40	2.80	0.60	0.90	0.70	0.90	2.70	0.40	0.10	0.46	subb	28.60	58.20	90.90	4.30	4.80
619.3	WP	SCF	25-13S-06E	Uppr.O'Connor	86.20	5.40	2.50	0.70	1.50	0.60	0.50	2.40	0.10	0.10	0.48	hvCb	27.90	61.50	91.60	4.70	3.70
657	WP	SCF	23-13S-06E	Uppr.O'Connor	93.30	0.70	2.30	0.40	0.70	0.40	0.40	1.80	0.00	0.00	0.51	hvCb			94.00	3.40	2.60
657.1	WP	SCF	23-13S-06E	Uppr.O'Connor	92.20	0.60	2.70	0.30	0.70	0.60	0.40	2.20	0.20	0.10	0.51	hvCb			92.80	3.70	3.50
657.2	WP	SCF	23-13S-06E	Uppr.O'Connor	93.40	0.40	2.50	0.10	0.60	0.90	0.40	1.50	0.20	0.00	0.50	hvCb			93.80	3.20	3.00
657.3	WP	SCF	23-13S-06E	Uppr.O'Connor	93.90	0.10	2.10	0.60	1.00	0.70	0.30	0.80	0.30	0.20	0.51	hvCb			94.00	3.70	2.30
Seam: Uppr.O'Connor			Mean		76.15	13.28	2.31	0.82	1.24	1.67	1.31	3.08	0.10	0.04	0.52		25.81	59.73	89.42	4.38	6.19
			Maximum		93.90	61.00	4.30	1.90	4.00	5.90	9.20	27.20	0.40	0.20	0.58		28.60	62.20	96.70	8.90	42.30
			Minimum		30.80	0.10	1.30	0.10	0.60	0.40	0.00	0.20	0.00	0.00	0.46		17.80	56.70	48.80	2.90	1.30
			Std. Deviation		17.79	16.19	0.74	0.56	0.80	1.62	2.14	6.28	0.12	0.06	0.04		3.12	2.19	10.66	1.33	9.44
225	WP	SCF	35-13S-06E	Mc Kinnon	57.60	30.00	1.00	0.00	6.20	1.20	0.70	3.30	0.00	0.00	0.57	hvCb			87.60	7.20	5.20
241	WP	SCF	26-13S-06E	Mc Kinnon	62.70	32.00	0.20	0.10	2.30	0.40	0.50	1.80	0.00	0.00	0.62	hvBb			94.70	2.60	2.70
Seam: Mc Kinnon			Mean		60.15	31.00	0.60	0.05	4.25	0.30	0.65	2.55	0.00	0.00	0.60				91.15	4.90	3.95
			Maximum		62.70	32.00	1.00	0.10	6.20	1.20	0.70	3.30	0.00	0.00	0.62				94.70	7.20	5.20
			Minimum		57.60	30.00	0.20	0.00	2.30	0.40	0.50	1.80	0.00	0.00	0.57				87.60	2.60	2.70
			Std. Deviation		2.55	1.00	0.40	0.05	1.95	0.40	0.10	0.75	0.00	0.00	0.03				3.55	2.30	1.25

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Rrefl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
609	WP	SCF	13-13S-06E	metamorp.coal											6.09	----			0.00	0.00	0.00
610	WP	SCF	13-13S-06E	metamorp.coal											3.11	----			0.00	0.00	0.00
611	WP	SCF	13-13S-06E	metamorp.coal											2.12	----			0.00	0.00	0.00
612	WP	SCF	13-13S-06E	metamorp.coal	90.80	4.80	1.10	0.10	0.00	0.10	0.50	2.10	0.10	0.40	1.11	mvb			95.60	1.20	3.20
Seam: metamorp.coal				Mean	90.80	4.80	1.10	0.10	0.00	0.10	0.50	2.10	0.10	0.40	3.11				23.90	0.30	0.80
				Maximum	90.80	4.80	1.10	0.10	0.00	0.10	0.50	2.10	0.10	0.40	6.09				96.60	1.20	3.20
				Minimum	90.80	4.80	1.10	0.10	0.00	0.10	0.50	2.10	0.10	0.40	1.11				0.00	0.00	0.00
				Std. Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.86				41.40	0.52	1.39
283	WP	HLT	20-20S-05E	Muddy #1	73.00	14.60	1.50	0.60	2.70	0.70	1.30	5.60	0.00	0.00	0.52	hvCb			87.60	4.80	7.60
671	WP	EMW	21-21S-05E	Muddy #1	82.90	1.30	3.70	0.60	4.50	0.80	0.60	5.20	0.20	0.20	0.51	hvCb			84.20	8.80	7.00
Seam:Muddy #1				Mean	77.95	7.95	2.60	0.60	3.60	0.75	0.95	5.40	0.10	0.10	0.52				85.90	6.80	7.30
				Maximum	82.90	14.60	3.70	0.60	4.50	0.80	1.30	5.60	0.20	0.20	0.52				87.60	8.80	7.60
				Minimum	73.00	1.30	1.50	0.60	2.70	0.70	0.60	5.20	0.00	0.00	0.51				84.20	4.80	7.00
				Std. Deviation	4.95	6.65	1.10	0.00	0.90	0.05	0.35	0.20	0.10	0.10	0.01				1.70	2.00	0.30
295	WP	TCP	30-18S-07E	Unknown	74.40	12.50	1.80	0.20	2.30	1.50	2.40	4.80	0.10	0.00	0.55	hvCb			86.90	4.30	8.80
326	WP	CDM	19-14S-07E	Unknown	55.10	24.00	1.30	0.30	11.70	2.60	2.40	2.50	0.10	0.00	0.52	hvCb			79.10	13.30	7.60
327	WP	CDM	19-14S-07E	Unknown	57.00	25.00	1.80	0.60	11.50	1.60	1.00	1.20	0.00	0.30	0.50	hvCb			82.00	13.90	4.10
532	WP	MHP	27-17S-06E	Unknown	70.20	22.80	2.20	0.60	2.40	0.90	0.10	0.80	0.00	0.00	0.59	hvBb			93.00	5.20	1.80
533	WP	MHP	27-17S-06E	Unknown	61.50	31.20	2.20	0.20	2.90	0.60	0.40	1.00	0.00	0.00	0.59	hvBb			92.70	5.30	2.00
534	WP	MHP	27-17S-06E	Unknown	58.40	16.40	4.90	1.10	5.20	0.80	2.40	10.70	0.10	0.00	0.58	hvBb			74.80	11.20	14.00
535	WP	MHP	27-17S-06E	Unknown	69.70	17.50	3.30	1.00	3.80	0.60	0.90	3.10	0.00	0.10	0.58	hvBb			87.20	8.10	4.70
536	WP	MHP	27-17S-06E	Unknown	63.10	28.60	1.30	0.50	1.40	2.40	0.60	1.90	0.10	0.10	0.57	hvBb			91.70	3.20	5.10
537	WP	MHP	27-17S-06E	Unknown	63.70	16.10	7.80	1.00	4.90	2.60	0.40	3.10	0.10	0.30	0.55	hvCb			79.80	13.70	6.50
538	WP	MHP	27-17S-06E	Unknown	56.70	32.50	4.10	1.60	2.00	1.80	0.10	1.10	0.00	0.10	0.57	hvCb			89.20	7.70	3.10
539	WP	MHP	27-17S-06E	Unknown	53.90	8.10	4.70	0.50	13.00	2.30	3.60	13.30	0.40	0.20	0.52	hvCb			62.00	18.20	19.80
540	WP	MHP	27-17S-06E	Unknown	75.00	14.70	1.00	0.20	3.60	1.30	0.90	3.10	0.10	0.10	0.58	hvBb			89.70	4.80	5.50
541	WP	MHP	27-17S-06E	Unknown	60.90	28.00	5.80	0.50	1.50	1.60	0.40	0.90	0.40	0.00	0.64	hvBb			88.90	7.80	3.30
542	WP	MHP	27-17S-06E	Unknown	74.20	9.70	4.40	0.50	3.90	1.20	1.70	4.20	0.10	0.10	0.56	hvCb			83.90	8.80	7.30
543	WP	MHP	27-17S-06E	Unknown	76.00	12.20	4.50	1.60	2.50	1.00	0.40	1.60	0.10	0.10	0.57	hvBb			88.20	8.60	3.20
615	WP	FVW	07-13S-05E	Unknown	29.40	0.20	1.60	0.40	0.80	0.80	15.50	50.60	0.70	0.00	0.50	hvCb			29.60	2.80	67.60
616	WP	FVW	07-13S-05E	Unknown	29.00	0.20	1.00	0.30	0.10	0.20	10.90	57.90	0.40	0.00	0.57	hvCb			29.20	1.40	69.40
617	WP	FVW	07-13S-05E	Unknown	29.00	0.20	1.00	0.30	0.10	0.20	10.90	57.90	0.40	0.00	0.60	hvBb			29.20	1.40	69.40
618	WP	FVW	07-13S-05E	Unknown	37.00	1.60	1.80	1.70	0.90	0.90	12.20	43.90	0.00	0.00	0.59	hvBb			38.60	4.40	57.00
632	WP	EMW	28-21S-05E	Unknown	70.90	5.90	4.30	1.40	5.30	3.00	1.00	7.60	0.20	0.40	0.46	subb			76.80	11.00	12.20
633	WP	EMW	28-21S-05E	Unknown	69.50	6.00	5.20	0.80	7.70	1.80	2.30	6.20	0.40	0.10	0.47	hvCb			75.50	13.70	10.80
634	WP	EMW	28-21S-05E	Unknown	83.60	6.70	2.40	0.50	0.90	2.40	0.90	2.40	0.10	0.10	0.48	hvCb			90.30	3.80	5.90
635	WP	EMW	28-21S-05E	Unknown	75.80	3.80	3.90	1.50	1.50	2.50	2.20	8.50	0.30	0.00	0.43	subb			79.60	6.90	13.50
670	WP	EMW	14-21S-05E	Unknown	81.10	4.50	3.50	0.80	4.90	1.40	0.50	3.10	0.10	0.10	0.49	hvCb			85.60	9.20	5.20
672	WP	FGP	10-21S-05E	Unknown	78.20	3.50	3.10	0.90	3.10	0.80	2.10	7.80	0.40	0.10	0.48	hvCb			81.70	7.10	11.20
684	WP	ACL	16-21S-05E	Unknown	79.20	5.20	3.50	0.80	2.50	1.40	2.10	4.70	0.50	0.10	0.49	mvb			84.40	6.80	8.80

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Rrefl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
685	WP	ACL	16-21S-05E	Unknown	76.40	10.10	4.00	1.20	1.70	1.70	1.60	3.00	0.20	0.10	0.52	hvCb			86.50	6.90	6.60
687	WP	ACL	16-21S-05E	Unknown	78.00	6.10	3.40	0.90	2.10	1.20	2.00	5.50	0.80	0.00	0.00	subb			84.10	6.40	9.50
690	WP	EMW	23-21S-05E	Unknown	70.10	5.60	3.40	1.40	3.20	2.20	3.60	9.80	0.60	0.10	0.47	hvCb			75.70	8.00	16.30
692	WP	FGP	02-21S-05E	Unknown	68.20	7.30	4.50	0.80	2.80	3.20	3.80	9.00	0.40	0.00	0.53	hvCb			75.50	8.10	16.40
693	WP	FGP	02-21S-05E	Unknown	63.90	6.80	3.00	0.30	3.70	3.70	4.50	13.30	0.60	0.20	0.51	hvCb			70.70	7.00	22.30
697	WP	ACL	17-21S-05E	Unknown	68.00	8.00	3.10	1.50	2.20	1.50	3.10	12.00	0.50	0.10	0.53	hvCb			76.00	6.80	17.20
698	WP	ACL	17-21S-05E	Unknown	68.70	5.60	3.30	1.00	3.30	4.20	2.60	11.00	0.20	0.10	0.47	hvCb			74.30	7.60	18.10
706	WP	EMW	22-21S-05E	Unknown	72.50	4.70	5.40	1.30	5.90	1.40	0.80	7.90	0.10	0.00	0.46	subb			77.20	12.60	10.20
707	WP	EMW	22-21S-05E	Unknown	81.50	5.70	3.50	2.10	1.70	1.20	1.20	2.80	0.20	0.10	0.45	subb			87.20	7.30	5.50
708	WP	EMW	22-21S-05E	Unknown	86.20	4.00	3.70	1.10	1.80	0.90	0.50	1.30	0.40	0.10	0.42	subb			90.20	6.60	3.20
709	WP	EMW	22-21S-05E	Unknown	74.60	5.10	3.30	0.50	3.20	1.50	3.00	8.30	0.50	0.00	0.46	subb			79.70	7.00	13.30
Seam:Unknown				Mean	65.62	11.18	3.33	0.86	3.58	1.67	2.86	10.56	0.26	0.08	0.51				76.81	7.77	15.42
				Maximum	86.20	32.50	7.80	2.10	13.00	4.20	15.50	57.90	0.80	0.40	0.64				93.00	18.20	69.40
				Minimum	29.00	0.20	1.00	0.20	0.10	0.20	0.10	0.80	0.00	0.00	0.00				29.20	1.40	1.80
				Std. Deviation	14.64	9.14	1.52	0.50	3.04	0.92	3.61	15.42	0.22	0.10	0.10				17.40	3.70	18.66
631	WP	WTS	11-15S-07E	Wattis	71.30	2.40	4.20	0.30	4.40	5.00	2.20	9.50	0.50	0.20	0.51	hvCb			73.70	8.90	17.40
664	WP	WTS	11-15S-07E	Wattis	78.30	1.00	4.10	0.70	7.30	1.30	1.60	5.30	0.40	0.00	0.51	hvCb			79.30	12.10	8.60
676	WP	WTS	17-15S-08E	Wattis	81.10	7.40	1.70	0.40	1.60	1.30	1.70	4.80	0.00	0.00	0.57	hvBb			88.50	3.70	7.80
676.1	WP	WTS	17-15S-08E	Wattis	78.80	4.60	5.20	0.30	2.70	1.10	1.90	5.00	0.20	0.20	0.54	hvCb			83.40	8.20	8.40
676.2	WP	WTS	17-15S-08E	Wattis	67.00	1.90	1.70	0.60	5.40	2.00	3.80	16.90	0.50	0.20	0.55	hvCb			68.90	7.70	23.40
676.3	WP	WTS	17-15S-08E	Wattis	80.70	5.90	2.20	0.60	2.60	1.50	1.40	5.00	0.10	0.00	0.55	hvCb			86.60	5.40	8.00
676.4	WP	WTS	17-15S-08E	Wattis	85.30	3.10	2.50	0.40	2.00	1.70	0.60	4.10	0.30	0.00	0.55	hvCb			88.40	4.90	6.70
676.5	WP	WTS	17-15S-08E	Wattis	81.10	8.80	1.10	0.10	1.30	1.20	1.80	4.00	0.30	0.30	0.56	hvCb			89.90	2.50	7.60
676.6	WP	WTS	17-15S-08E	Wattis	73.10	15.70	1.00	0.90	1.30	2.20	1.80	4.00	0.00	0.00	0.56	hvCb			88.80	3.20	8.00
676.7	WP	WTS	17-15S-08E	Wattis	69.50	19.00	2.20	0.50	1.50	3.30	0.70	3.00	0.30	0.00	0.57	hvBb			88.50	4.20	7.30
676.8	WP	WTS	17-15S-08E	Wattis	65.10	7.00	3.30	1.30	8.30	1.50	5.00	7.70	0.70	0.10	0.57	hvBb			72.10	12.90	15.00
676.9	WP	WTS	17-15S-08E	Wattis	84.50	4.40	2.40	0.50	4.90	0.80	0.20	2.30	0.00	0.00	0.53	hvCb			88.90	7.80	3.30
725	WP	WTS	16-15S-08E	Wattis	78.30	2.60	3.70	0.50	5.90	0.10	0.80	4.70	0.30	0.30	0.00				80.90	10.10	6.20
726	WP	WTS	16-15S-08E	Wattis	70.20	1.40	1.40	0.50	13.60	0.70	1.00	3.70	0.40	0.00	0.00				71.60	15.50	5.80
726.1	WP	WTS	16-15S-08E	Wattis	76.40	3.30	3.60	0.20	6.00	1.20	2.80	5.00	0.30	0.10	0.00				79.70	9.80	9.40
727	WP	WTS	16-15S-08E	Wattis	59.00	2.10	1.70	0.50	8.40	0.70	0.80	4.40	0.20	0.00	0.00				61.10	10.60	6.10
727.1	WP	WTS	16-15S-08E	Wattis	72.30	2.30	1.50	0.60	3.80	0.70	7.20	8.30	0.30	0.00	0.00				74.60	5.90	16.50
Seam:Wattis				Mean	74.82	5.46	2.56	0.52	4.76	1.55	2.08	5.75	0.28	0.08	0.55				80.29	7.85	9.74
				Maximum	85.30	19.00	5.20	1.30	13.60	5.00	7.20	16.90	0.70	0.30	0.57				89.90	15.50	23.40
				Minimum	59.00	1.00	1.00	0.10	1.30	0.10	0.20	2.30	0.00	0.00	0.00				61.10	2.50	3.30
				Std. Deviation	7.02	4.88	1.20	0.27	3.22	1.11	1.74	3.32	0.19	0.11	0.25				8.43	3.59	5.05

Appendix E. Coal-characteristics Data for the Wasatch Plateau Coal Field (continued)

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
681.1	WP	A-seam (Hiawatha A)		Core smpl.-King No.6 Mine							0.00					1.29	4.96
681.2	WP	A-seam (Hiawatha A)		Cora smpl.-King No.6 Mine							0.00					1.32	1.81
681.3	WP	A-seam (Hiawatha A)		Core smpl.-King No.6 Mine							0.00					1.32	1.60
681.4	WP	A-seam (Hiawatha A)		Core smpl.-King No.6 Mine							0.00					1.29	1.05
681.5	WP	A-seam (Hiawatha A)		Core smpl.-King No.6 Mine							0.00					1.30	1.80
Seam: A-seam (Hiawatha A)			Mean								0.00					1.30	2.24
			Maximum								0.00					1.32	4.96
			Minimum								0.00					1.29	1.05
			Std.Deviation								0.00					0.01	1.39
680.1	WP	B-seam (Hiawatha B)		Core smpl.-King No.6 Mine							0.00					1.31	5.32
680.2	WP	B-seam (Hiawatha B)		Core smpl.-King No.6 Mine							0.00					1.28	4.34
680.3	WP	B-seam (Hiawatha B)		Core smpl.-King No.6 Mine							0.00					1.29	2.51
680.4	WP	B-seam (Hiawatha B)		Core smpl.-King No.6 Mine							0.00					1.37	2.52
680.5	WP	B-seam (Hiawatha B)		Core smpl.-King No.6 Mine							0.00					1.38	2.96
630	WP	B-seam (Hiawatha B)	WTS-A035	King #4 Mine-channel smpl.	1.90	0.10	0.30	0.00	0.00	0.70	3.00	94.10	0.10	2.80	0.00	1.31	2.01
630.1	WP	B-seam (Hiawatha B)	WTS-A036	channel smpl.-top 1.5-2.3'	0.70	0.20	0.10	0.00	0.00	0.20	1.20	96.60	0.40	1.60	0.20	1.30	2.33
630.2	WP	B-seam (Hiawatha B)	WTS-A037	channel smpl.- mid. 3.0-4.0'	1.40	0.20	0.10	0.20	0.10	0.00	2.00	96.80	0.00	1.10	0.10	1.31	1.89
630.3	WP	B-seam (Hiawatha B)	WTS-A038	channel smpl.-lwr. 6.5-7.5'	3.60	0.70	0.50	0.00	0.10	0.00	4.90	90.00	0.70	4.00	0.40	1.27	1.91
Seam: B-seam (Hiawatha B)			Mean		1.90	0.30	0.25	0.05	0.05	0.22	2.77	94.38	0.30	2.38	0.18	1.31	2.87
			Maximum		3.60	0.70	0.50	0.20	0.10	0.70	4.90	96.80	0.70	4.00	0.40	1.38	5.32
			Minimum		0.70	0.10	0.10	0.00	0.00	0.00	1.20	90.00	0.00	1.10	0.00	1.27	1.89
			Std.Deviation		1.07	0.23	0.17	0.09	0.05	0.29	1.38	2.74	0.27	1.12	0.15	0.04	1.12
5	WP	Bear Canyon	TCP-A008	UGMS-DH-6	2.50	0.40	2.20	0.00	0.20	0.20	5.50	86.90	2.10	5.50	0.00	1.39	
293	WP	Bear Canyon	TCP-A020	DH 30-2-2	27.60	0.20	0.30	0.00	0.20	0.00	28.30	70.30	0.30	1.10	0.00	1.30	5.01
Seam: Bear Canyon			Mean		15.05	0.30	1.25	0.00	0.20	0.00	16.90	78.60	1.20	3.30	0.00	1.35	5.01
			Maximum		27.60	0.40	2.20	0.00	0.20	0.20	28.30	86.90	2.10	5.50	0.00	1.39	5.01
			Minimum		2.50	0.20	0.30	0.00	0.20	0.00	5.50	70.30	0.30	1.10	0.00	1.30	5.01
			Std.Deviation		12.55	0.01	0.90	0.00	0.10	0.10	11.40	8.30	0.90	2.20	0.00	0.05	0.00
294	WP	U.Bear Canyon	TCP-A021	DH 30-2-1	2.50	0.10	0.00	0.00	0.10	0.00	2.70	95.00	0.50	1.80	0.00	1.32	
Seam: U.Bear Canyon			Mean		2.50	0.10	0.00	0.00	0.10	0.00	2.70	95.00	0.50	1.80	0.00	1.32	
			Maximum		2.50	0.10	0.00	0.00	0.10	0.00	2.70	95.00	0.50	1.80	0.00	1.32	
			Minimum		2.50	0.10	0.00	0.00	0.10	0.00	2.70	95.00	0.50	1.80	0.00	1.32	
			Std.Deviation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
20	WP	Blind Canyon	RDP-A010	Beehive mine-core smpl.	4.90	0.30	1.00	0.00	0.20	0.00	6.40	89.90	1.30	2.40	0.00	1.29	
231	WP	Blind Canyon	TCP-A006	MC-56A-TC;1020.6-1021.1'	3.50	0.20	0.40	0.00	0.20	0.10	4.40	91.90	0.60	3.10	0.00	1.36	
253	WP	Blind Canyon	MHP-A015	MC-48-MP;179.5-181.3'	2.80	0.00	0.50	0.00	0.00	0.00	3.30	94.30	0.50	1.90	0.00	1.29	
296	WP	Blind Canyon	TCP-A023	DH U	9.70	0.10	0.40	0.00	0.00	0.00	10.20	87.30	0.50	2.00	0.00	1.27	2.10
297	WP	Blind Canyon	TCP-A025	DH U	0.90	0.00	0.20	0.30	0.00	0.00	1.40	97.20	0.30	1.10	0.00	1.29	3.90
298	WP	Blind Canyon	TCP-A026	DH NH-30-2	7.30	0.00	0.40	0.00	0.50	0.00	8.20	87.30	2.10	2.40	0.00	1.30	3.13
301	WP	Blind Canyon	TCP-A027	DH-NH-32-1	13.80	0.00	0.60	0.00	0.10	0.00	14.50	81.80	0.10	3.60	0.00	1.30	3.94
303	WP	Blind Canyon	TCP-A029	DH-NH-31-2	9.90	0.30	0.60	0.00	1.00	0.00	11.80	83.50	0.30	4.40	0.00	1.31	3.19
387	WP	Blind Canyon		DH 570-1;Deer Creek Mine	0.50	0.10	0.00	0.30	0.00	0.00	0.90	95.50	0.50	3.10	0.00	1.40	
637	WP	Blind Canyon	WTS-A028	grab smpl.	2.10	0.30	0.50	0.10	0.00	0.10	3.10	91.90	1.30	3.60	0.10	1.32	3.47
637.1	WP	Blind Canyon	WTS-A029	top of the seam	2.20	0.50	0.20	0.50	0.10	0.40	3.90	93.40	1.00	1.70	0.00	1.36	2.68
637.2	WP	Blind Canyon	WTS-A030	middle of the seam	1.30	0.30	0.30	0.10	0.00	0.30	2.30	94.60	0.70	2.30	0.10	1.32	1.79
637.3	WP	Blind Canyon	WTS-A031	bottom of the seam	1.10	0.30	0.10	0.00	0.00	0.00	1.50	95.50	0.60	2.40	0.00	1.40	2.43
655	WP	Blind Canyon	MHP-A050	channel smpl.	2.70	0.50	0.20	0.50	0.10	0.30	4.30	92.80	0.20	2.60	0.10	1.32	2.57
655.1	WP	Blind Canyon		channel smpl.-top 0.0'-1.0'	1.90	0.70	0.20	0.20	0.20	0.00	3.20	93.80	0.60	2.30	0.10	1.32	2.00
655.2	WP	Blind Canyon		channel smpl.-mid.2.0-3.0'	1.70	0.10	0.40	0.00	0.00	0.10	2.30	95.00	0.20	2.50	0.00	1.36	2.55
655.3	WP	Blind Canyon		channel smpl.-btm 4.5-5.5'	2.90	0.90	1.10	0.20	0.20	0.90	6.20	90.30	0.20	3.20	0.10	1.31	1.56
677.1	WP	Blind Canyon	MHP-A058	0-1 ft interval-DH-B-199	4.70	1.00	0.20	0.10	0.10	0.10	6.20	89.40	0.80	3.00	0.60	1.30	2.44
677.2	WP	Blind Canyon	MHP-A059	1-2 ft interval-DH-B-199	2.70	0.20	0.80	0.20	0.00	0.00	3.90	92.20	0.10	3.40	0.40	1.35	2.81
677.3	WP	Blind Canyon	MHP-A060	2-3 ft interval-DH-B-199	1.10	0.00	0.70	0.20	0.10	0.00	2.10	96.00	0.10	1.80	0.00	1.33	3.83
677.4	WP	Blind Canyon	MHP-A061	3-4 ft interval-DH-B-199	1.10	0.30	0.60	0.30	0.00	0.10	2.40	95.10	0.20	1.80	0.50	1.30	3.00
677.5	WP	Blind Canyon	MHP-A062	4-5 ft interval-DH-B-199	1.90	0.40	0.50	0.30	0.00	0.10	3.20	92.80	0.90	3.10	0.00	1.42	2.74
677.6	WP	Blind Canyon	MHP-A063	5-6 ft interval-DH-B-199	5.40	0.80	0.40	0.20	0.60	0.30	7.30	89.00	0.30	3.00	0.00	1.26	2.62
677.7	WP	Blind Canyon	MHP-A064	6-7 ft interval-DH-B-199	5.10	0.20	0.20	0.00	0.00	0.00	5.50	91.90	0.30	2.20	0.10	1.28	4.53
689	WP	Blind Canyon		channel smpl.	1.90	0.80	0.70	0.50	1.10	0.30	5.30	87.80	0.30	6.20	0.40	1.31	
689.1	WP	Blind Canyon		DH 89-176:interval 0.0-1.0'	2.10	0.50	0.20	0.40	1.00	0.50	4.70	90.40	0.60	4.10	0.20	1.35	2.41
689.2	WP	Blind Canyon		DH 89-176:interval 1.0-2.0'	2.70	0.40	0.40	0.50	0.60	0.20	4.80	91.30	0.80	2.60	0.50	1.32	3.73
689.3	WP	Blind Canyon		DH 89-176:interval 2.0-3.0'	4.90	1.10	0.80	0.10	0.30	0.40	7.60	88.90	0.40	3.10	0.00	1.29	1.40
689.4	WP	Blind Canyon		DH 89-176:interval 3.0-4.0'	2.00	0.40	0.40	0.20	0.20	0.00	3.20	92.10	0.80	3.90	0.00	1.28	1.82
689.5	WP	Blind Canyon		DH 89-176:interval 4.0-5.0'	3.10	0.80	0.70	0.40	0.60	0.20	5.80	89.40	0.60	4.20	0.00	1.33	0.80
696	WP	Blind Canyon		DH 89-186; in-mine hole	2.50	0.60	0.30	0.30	0.10	0.80	4.60	90.70	0.80	3.80	0.10		
696.1	WP	Blind Canyon		DH 89-186; 0.0'-1.0' intv.	8.10	0.20	0.20	0.10	0.00	0.00	8.60	86.30	1.00	4.00	0.10		
696.2	WP	Blind Canyon		DH 89-196; 1.0'-2.0' intv.	4.50	0.90	0.30	0.10	0.30	0.50	6.60	89.00	0.40	3.90	0.10		
696.3	WP	Blind Canyon		DH 89-196; 2'.0-3.0' intv.	0.60	0.60	0.20	0.20	0.00	0.00	1.60	94.80	0.40	2.20	1.00		
696.4	WP	Blind Canyon		DH 89-196; 3.0'-4.0' intv.	2.00	0.50	0.00	0.20	0.10	0.30	3.10	92.50	0.30	4.00	0.10		
696.5	WP	Blind Canyon		DH 89-196; 4.0'-5.0' intv.	1.90	0.20	0.50	0.10	0.50	0.00	3.20	93.60	0.80	2.40	0.00		
696.6	WP	Blind Canyon		DH 89-196; 5.0'-6.0' intv.	0.40	0.70	0.30	0.00	0.00	0.00	1.40	94.00	0.40	3.40	0.80		
697.7	WP	Blind Canyon		DH 89-196; 6.0'-7.0' intv.	0.50	0.30	0.40	0.20	0.00	0.00	1.40	95.00	1.20	2.40	0.00		
697.8	WP	Blind Canyon		DH 89-196; 7.0'-8.0' intv.	3.20	0.90	0.50	0.10	0.40	0.00	5.10	91.10	0.60	3.10	0.10		
Seam: Blind Canyon				Mean	3.39	0.42	0.42	0.17	0.21	0.15	4.76	91.53	0.59	2.99	0.13	1.32	2.65
				Maximum	13.80	1.10	1.10	0.50	1.10	0.90	14.50	97.20	2.10	6.20	1.00	1.42	4.53
				Minimum	0.40	0.00	0.00	0.00	0.00	0.00	0.90	81.80	0.10	1.10	0.00	1.26	0.80
				Std.Deviation	2.92	0.31	0.25	0.15	0.30	0.23	2.99	3.42	0.41	0.96	0.23	0.04	0.87

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
663	WP	Castlegate A		channel smpl.	4.70	1.20	0.30	0.40	0.60	0.20	7.40	87.90	0.30	4.40	0.00	1.30	1.52
663.1	WP	Castlegate A		channel smpl.; top 0.0'-1.0'	5.40	0.60	0.60	0.00	0.80	0.10	7.50	91.50	0.30	0.70	0.00	1.49	2.43
663.2	WP	Castlegate A		channel smpl.; mid.2.8'-4.1'	3.90	0.80	0.00	0.00	0.20	0.10	5.00	92.70	0.10	2.20	0.00	1.27	1.78
663.3	WP	Castlegate A		channel smpl; btm.7.0'-8.0'	3.40	1.40	0.30	0.20	0.40	0.00	5.70	91.80	0.30	2.20	0.00	1.28	0.99
688	WP	Castlegate A		channel smpl.	4.60	0.90	0.40	0.10	0.20	0.00	6.20	89.90	1.30	2.60	0.00	1.31	
688.1	WP	Castlegate A		channel smpl. intv. 0.0-1.0'	2.50	0.40	0.50	0.10	0.00	0.00	3.50	94.60	1.00	0.90	0.00	1.36	3.04
688.2	WP	Castlegate A		channel smpl. intv. 1.0-2.0'	3.70	0.30	0.00	0.10	0.10	0.00	4.20	92.80	0.00	3.00	0.00	1.30	1.50
688.3	WP	Castlegate A		channel smpl. intv. 2.0-3.0'	4.60	0.90	0.50	0.00	0.40	0.00	6.40	90.10	0.70	2.70	0.10	1.28	1.53
688.4	WP	Castlegate A		channel smpl. intv. 3.0-4.0'	3.90	1.00	0.20	0.20	1.00	0.20	6.50	89.10	0.70	3.60	0.10	1.30	2.54
688.5	WP	Castlegate A		channel smpl. intv. 4.0-5.0'	4.50	1.30	0.40	0.00	0.80	0.10	7.10	88.40	0.20	4.30	0.00	1.28	0.97
688.6	WP	Castlegate A		channel smpl. intv. 5.0-6.0'	5.70	0.80	0.70	0.10	0.70	0.00	8.00	87.30	0.30	4.20	0.20	1.28	1.50
688.7	WP	Castlegate A		channel smpl. intv. 6.0-7.0'	4.40	1.30	0.10	0.50	0.40	0.00	6.70	90.10	0.40	2.70	0.10	1.30	1.80
688.8	WP	Castlegate A		channel smpl. intv. 7.0-8.0'	1.60	0.50	0.00	0.20	0.50	0.00	2.80	94.00	0.50	2.70	0.00	1.30	1.34
688.9	WP	Castlegate A		channel smpl. intv. 8.0-9.0'	1.30	0.30	0.40	0.30	0.00	0.30	2.60	93.00	0.30	4.00	0.10	1.30	2.41
706	WP	Castlegate A	JPC-A010	Beaver Ck.#8 mine	4.00	0.30	0.40	0.40	0.20	0.30	5.60	90.80	0.70	2.40	0.50	1.34	2.09
706.1	WP	Castlegate A	JPC-A011	Beaver Ck #8 mine; top	3.80	1.30	0.40	0.40	0.10	0.70	6.70	89.70	0.60	2.90	0.10	1.37	7.33
706.2	WP	Castlegate A	JPC-A012	Beaver Ck.#8 mine; mid.	3.50	0.50	0.10	0.40	0.00	0.30	4.80	91.00	0.20	3.90	0.10	1.29	2.20
706.3	WP	Castlegate A	JPC-A013	Beaver Ck.#8 mine; btm.	4.20	0.10	0.40	0.60	0.40	0.30	6.00	88.40	0.70	4.90	0.00	1.44	3.29
718	WP	Castlegate A	JPC-A014	Beaver Ck.#8 mine; channel	3.40	0.10	1.00	0.30	0.60	1.10	6.50	87.70	0.90	4.60	0.30	1.32	
718.1	WP	Castlegate A		Beaver Ck.#8 mine; top pt.	0.60	0.20	0.20	0.20	0.40	0.00	1.60	93.80	1.30	3.20	0.10	1.37	2.75
718.2	WP	Castlegate A		Beaver Ck.#8 mine; mid.pt.	7.70	0.60	0.40	0.50	0.10	0.70	10.00	84.60	1.00	4.10	0.30	1.33	3.83
718.3	WP	Castlegate A		Beaver Ck.#8 mine; btm pt.	2.10	0.30	0.70	0.30	0.20	0.60	4.20	87.30	1.30	7.00	0.20	1.33	
Seam: Castlegate A				Mean	3.70	0.68	0.35	0.25	0.35	0.24	5.67	90.44	0.61	3.29	0.10	1.33	2.41
				Maximum	7.70	1.40	1.00	0.60	1.00	1.10	10.00	94.60	1.30	7.00	0.50	1.49	7.33
				Minimum	0.60	0.10	0.00	0.00	0.00	0.00	1.60	84.60	0.00	0.70	0.00	1.27	0.97
				Std.Deviation	1.50	0.42	0.24	0.18	0.28	0.30	1.90	2.50	0.39	1.37	0.13	0.06	1.42
33	WP	Flat Canyon	SCF-A015	DH 76-14-1	0.80	0.10	0.50	0.00	0.00	0.10	1.50	91.90	0.80	5.80	0.00	1.35	
307	WP	Flat Canyon		DH-UM-81-14-1	0.60	0.00	0.10	0.00	0.00	0.00	0.70	92.60	0.10	6.60	0.00	1.31	2.17
Seam: Flat Canyon				Mean	0.70	0.05	0.30	0.00	0.00	0.05	1.10	92.25	0.45	6.20	0.00	1.33	2.17
				Maximum	0.80	0.10	0.50	0.00	0.00	0.10	1.50	92.60	0.80	6.60	0.00	1.35	2.17
				Minimum	0.60	0.00	0.10	0.00	0.00	0.00	0.70	91.90	0.10	5.80	0.00	1.31	2.17
				Std.Deviation	0.10	0.05	0.20	0.00	0.00	0.05	0.40	0.35	0.35	0.40	0.00	0.02	0.00
1	WP	Hiawatha	RDC-A006	UGMS DH-2;871.8-872.8'	2.90	0.40	1.50	0.00	0.10	0.50	5.40	84.00	2.20	8.40	0.00	1.51	
2	WP	Hiawatha	MHP-A006	UGMS DH-3;616.0-617.0'	3.40	0.40	0.90	0.00	0.20	0.30	5.20	89.60	1.30	3.90	0.00	1.43	
18	WP	Hiawatha	RDP-A008	Beehive Mine-core smpl.	1.80	0.20	1.70	0.00	0.00	0.00	3.70	90.10	1.50	4.70	0.00	1.29	
19	WP	Hiawatha	RDP-A009	Beehive Mine-core smpl.	1.90	0.20	1.00	0.00	0.00	0.20	3.30	87.90	1.50	7.30	0.00	1.30	
228	WP	Hiawatha	ACL-A001	DH-BCR-4	0.50	0.00	0.60	0.00	0.10	0.30	1.50	95.30	0.30	2.90	0.00	1.32	3.57
232	WP	Hiawatha	TCP-A007	MC-56A-TC;1088.8-1089.3'	2.30	0.10	0.10	0.00	0.00	0.00	2.50	95.20	0.60	1.70	0.00	1.30	2.13
233	WP	Hiawatha		MC-18-AL	0.40	0.00	0.20	0.00	0.00	0.00	0.60	97.70	0.30	1.40	0.00	1.31	4.35
269	WP	Hiawatha	TCP-A011	DH SHM-5	1.40	0.10	0.00	0.00	0.00	0.00	1.50	95.90	0.50	2.10	0.00	1.33	2.37
270	WP	Hiawatha	TCP-A012	DH SHM-2;1086.0-1089.7'	1.70	0.30	0.30	0.00	0.10	0.00	2.40	92.40	1.40	3.80	0.00	1.32	0.84

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
277	WP	Hiawatha	TCP-A017	DH MC-36c;1431.9-1435.4'	0.40	0.00	0.40	0.20	0.10	0.00	1.10	95.00	2.00	1.90	0.00	1.35	1.36
278	WP	Hiawatha	TCP-A018	DH MC-36c;1435.4-1438.6'	1.50	0.10	0.20	0.00	0.20	0.00	2.00	94.50	0.60	2.90	0.00	1.32	3.30
279	WP	Hiawatha	TCP-A019	DH SHM-15	6.10	0.10	0.30	0.00	0.90	0.00	7.40	88.90	0.90	2.80	0.00	1.36	4.97
289	WP	Hiawatha	RDC-A010	DH SLB-5;1151.0-1155.0'	1.10	0.30	0.80	0.00	0.10	0.00	2.30	92.50	0.30	4.90	0.00	1.33	3.25
290	WP	Hiawatha	RDC-A011	DH SLB-7;710.2-719.0'	3.60	0.00	1.20	0.00	0.10	0.30	5.20	86.50	1.20	7.10	0.00	1.43	2.41
291	WP	Hiawatha	YGC-A001	DH 80-2	1.10	0.20	0.50	0.00	0.10	0.00	1.90	95.30	0.70	2.10	0.00	1.37	8.96
292	WP	Hiawatha	YGC-A002	DH 80-7	1.10	0.10	0.20	0.00	0.20	0.00	1.60	93.80	0.70	3.90	0.00	1.44	3.80
299	WP	Hiawatha		DH NH-6-2	1.40	0.10	0.50	0.00	0.10	0.00	2.10	94.30	0.40	3.20	0.00	1.35	3.97
300	WP	Hiawatha		DH NH-6-1	1.80	0.20	0.30	0.00	0.00	0.00	2.30	91.10	1.80	4.80	0.00	1.33	4.20
316	WP	Hiawatha	FRC-A001	DH FC-14-26	3.90	0.00	0.60	0.00	0.80	0.00	5.30	91.20	0.70	2.80	0.00	1.43	1.56
325	WP	Hiawatha		DH TM-13/6	1.80	0.10	0.60	0.00	0.00	0.10	2.60	92.90	0.80	3.70	0.00	1.35	4.00
330	WP	Hiawatha		SHM-2/16;1095.5-1097.0'	2.40	0.60	0.00	0.00	0.20	0.00	3.20	93.50	0.40	2.90	0.00	1.42	
339	WP	Hiawatha	TCP-A034	DH SHM-14/18	2.30	0.00	0.30	0.00	0.00	0.00	2.60	93.10	0.90	3.40	0.00	1.43	
386	WP	Hiawatha	RDP-A022	DH 570; Deer Creek Mine	0.50	0.00	0.60	0.10	0.00	0.00	1.20	92.90	1.60	4.30	0.00	1.34	
620	WP	Hiawatha	MHP-A020	channel smpl.	1.20	0.00	0.30	0.10	0.00	0.50	2.10	94.60	0.90	2.40	0.00	1.33	1.51
620.1	WP	Hiawatha	MHP-A030	channel smpl.top 2.0'-3.0'	3.80	0.10	0.40	0.30	0.00	0.00	4.60	91.20	0.80	3.20	0.20	1.30	1.60
620.2	WP	Hiawatha	MHP-A031	channel smpl.mid.4.2'-5.2'	1.20	0.00	0.30	0.10	0.00	0.50	2.10	94.60	0.90	2.40	0.00	1.33	1.07
620.3	WP	Hiawatha	MHP-A045	channel smpl.btm.7.5'-8.6'	0.60	0.00	0.80	0.10	0.00	0.70	2.20	95.50	0.70	1.60	0.00	1.30	1.02
629	WP	Hiawatha	HWT-A091	channel smpl.	1.50	0.20	0.40	0.10	0.00	0.70	2.90	93.20	0.50	3.40	0.00	1.35	3.44
629.1	WP	Hiawatha	HWT-A090	channel smpl.top of the seam	1.00	0.10	0.20	0.40	0.00	0.30	2.00	94.00	0.60	3.30	0.10	1.35	4.71
629.2	WP	Hiawatha	HWT-A092	channel smpl.mid.of the seam	1.30	0.50	0.40	0.30	0.00	0.20	2.70	92.60	0.60	3.50	0.60	1.40	2.87
629.3	WP	Hiawatha	HWT-A093	channel smpl.btm.of the seam	1.40	0.30	0.20	0.20	0.00	0.30	2.40	94.40	0.40	2.60	0.20	1.31	2.22
636	WP	Hiawatha		CH-83-4;1057.2'-1060.4'	0.30	0.00	0.70	0.40	0.00	0.00	1.40	95.40	1.30	1.90	0.00	1.34	1.21
638	WP	Hiawatha		channel smpl.	1.60	0.30	0.20	0.50	0.00	0.10	2.70	94.20	0.80	2.30	0.00	1.32	
638.1	WP	Hiawatha	WTS-A032	channel smpl.top of the seam	1.00	0.40	0.30	0.20	0.00	0.50	2.40	93.80	0.40	3.40	0.00	1.29	
638.2	WP	Hiawatha	WTS-A033	channel smpl.mid.of the seam	1.50	0.50	0.40	0.30	0.20	0.60	3.50	91.20	1.90	3.40	0.00	1.43	
638.3	WP	Hiawatha	WTS-A034	channel smpl.btm.of the seam	0.80	0.10	1.00	0.00	0.30	0.40	2.60	93.30	0.50	3.60	0.00	1.32	
651	WP	Hiawatha	RDC-A015	channel smpl.	1.40	0.40	0.30	0.10	0.00	0.30	2.50	94.70	0.70	1.80	0.30	1.30	1.63
651.1	WP	Hiawatha		channel smpl.top 0.0'-0.6'	1.00	0.30	0.10	0.10	0.00	0.10	1.60	95.30	0.40	2.60	0.10	1.28	1.49
651.2	WP	Hiawatha		channel smpl.mid. 2.0'-3.0'	1.30	0.50	0.20	0.10	0.10	0.00	2.20	94.40	1.00	2.30	0.10	1.30	4.85
651.3	WP	Hiawatha		channel smpl.btm. 4.8'-6.0'	0.80	0.00	0.10	0.10	0.00	0.00	1.00	96.50	0.50	1.90	0.10	1.29	2.53
653	WP	Hiawatha	HWT-A098	channel smpl.	1.10	0.30	0.30	0.10	0.00	0.30	2.10	93.80	0.80	3.10	0.20	1.33	1.67
653.1	WP	Hiawatha		channel smpl.top 0.0'-1.2'	0.40	0.20	0.00	0.10	0.00	0.70	1.40	95.30	0.30	3.00	0.00	1.35	1.44
653.2	WP	Hiawatha		channel smpl.mid. 2.8'-4.0'	1.10	0.00	0.20	0.20	0.00	0.00	1.50	93.50	0.70	3.90	0.40	1.31	2.44
653.3	WP	Hiawatha		channel smpl.btm. 6.0'-7.3'	1.00	0.10	0.30	0.00	0.10	0.00	1.50	93.10	1.00	4.00	0.40	1.28	2.01
654	WP	Hiawatha	MHP-A046	channel smpl.	0.60	0.10	0.80	0.10	0.00	0.00	1.60	95.60	1.10	1.50	0.20	1.35	1.26
654.1	WP	Hiawatha		channel smpl. 0.0'-1.1'	1.20	0.20	0.30	0.20	0.00	0.10	2.00	94.70	1.10	2.20	0.00	1.35	1.43
654.2	WP	Hiawatha		channel smpl.top 0.0'-4.1'	1.40	0.00	0.50	0.30	0.00	0.10	2.30	93.50	0.80	3.10	0.30	1.36	3.18
654.3	WP	Hiawatha		channel smpl.mid.7.0-8.3'	0.20	0.20	0.00	0.10	0.10	0.20	0.80	96.20	0.80	2.00	0.20	1.36	1.44
665	WP	Hiawatha		CH-83-3 951.8-955.6'	0.20	0.20	0.40	0.10	0.40	0.40	1.70	93.50	0.60	4.00	0.20	1.35	1.06
667	WP	Hiawatha		CH-83-1 934.1-935.7'	0.90	0.40	0.40	0.50	0.20	0.30	2.70	94.00	0.50	2.70	0.10	1.34	1.05
668	WP	Hiawatha		CH-83-1 923.0-927.0'	0.10	0.20	0.10	0.20	0.00	0.00	0.60	95.50	0.40	3.50	0.00	1.32	1.31
674	WP	Hiawatha		CH-83-5 911.9-912.7'	0.20	0.50	0.10	0.30	0.20	0.00	1.30	95.40	0.00	0.80	2.50	1.37	1.92
675	WP	Hiawatha		CH-83-5 916.3-917.8'	0.20	0.40	0.10	0.30	0.10	0.00	1.10	95.00	1.30	2.60	0.00	1.34	0.24
691	WP	Hiawatha		CH-83-7 992.5'-996.3'	0.40	0.00	0.40	0.60	0.30	1.00	2.70	93.00	0.30	3.70	0.30	1.40	1.01
717	WP	Hiawatha	MHP-A035	Beaver Ck.#9 mine; channel	1.90	0.50	0.20	0.30	0.00	0.10	3.00	92.50	0.70	3.50	0.30	1.31	
717.1	WP	Hiawatha		Beaver Ck.#9 mine; top	1.10	0.40	0.60	0.20	0.40	0.90	3.60	90.60	0.60	4.90	0.30	1.35	0.73

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
717.2	WP	Hiawatha		Beaver Ck.#9 mine; middle	1.50	0.30	0.70	0.40	0.10	0.40	3.40	92.30	0.20	4.00	0.10	1.31	0.53
717.3	WP	Hiawatha		Beaver Ck.#9 mine; bottom	1.00	0.00	0.50	0.40	0.00	0.00	1.90	94.00	0.40	3.50	0.20	1.29	1.37
Seam: Hiawatha			Mean		1.41	0.19	0.43	0.14	0.10	0.20	2.47	93.34	0.81	3.25	0.13	1.34	2.38
			Maximum		6.10	0.60	1.70	0.60	0.90	1.00	7.40	97.70	2.20	8.40	2.50	1.51	8.96
			Minimum		0.10	0.00	0.00	0.00	0.00	0.00	0.60	84.00	0.00	0.80	0.00	1.28	0.24
			Std.Deviation		1.07	0.17	0.35	0.16	0.18	0.26	1.29	2.43	0.47	1.37	0.34	0.06	1.59
271	WP	Lwr. Hiawatha	TCP-A013	SHM-1A;1310.3-1316.2'	3.50	0.10	0.60	0.00	0.20	0.00	4.40	91.00	0.80	3.80	0.00	1.29	0.76
272	WP	Lwr.Hiawatha	FRN-A001	DH MC-8-FP	1.20	0.00	0.50	0.00	0.00	0.00	1.70	95.50	1.70	1.10	0.00	1.32	0.41
281	WP	Lwr.Hiawatha	HLT-A003	DH MC-74-HM	2.20	0.10	0.10	0.00	0.10	0.00	2.50	93.40	1.70	2.40	0.00	1.35	3.62
282	WP	Lwr.Hiawatha	ACL-A023	DH MC-71-AL	0.60	0.10	0.40	0.00	0.00	0.00	1.10	95.40	0.40	3.10	0.00	1.32	3.79
333	WP	Lwr.Hiawatha		SHM-13/19;1114.0-1114.9'	1.30	0.10	0.70	0.00	0.00	0.00	2.10	92.60	0.60	4.70	0.00	1.36	
Seam: Lwr.Hiawatha			Mean		1.76	0.08	0.46	0.00	0.06	0.00	2.36	93.58	1.04	3.02	0.00	1.33	2.15
			Maximum		3.50	0.10	0.70	0.00	0.20	0.00	4.40	95.50	1.70	4.70	0.00	1.36	3.79
			Minimum		0.60	0.00	0.10	0.00	0.00	0.00	1.10	91.00	0.40	1.10	0.00	1.29	0.41
			Std.Deviation		1.01	0.04	0.21	0.00	0.08	0.00	1.12	1.71	0.55	1.23	0.00	0.02	1.57
200	WP	Uppr. Hiawatha	ACL-A012	DH-BCR-4	0.70	0.00	0.10	0.00	0.00	0.00	0.80	97.40	0.00	1.80	0.00	1.34	
202	WP	Uppr. Hiawatha	ACL-A014	DH-US-79-14	0.70	0.00	0.20	0.10	0.20	0.00	1.20	93.50	1.90	3.40	0.00		
203	WP	Uppr. Hiawatha	ACL-A015	DH US-79-6;840.0-841.0'	0.30	0.00	0.50	0.00	0.00	0.00	0.80	96.60	0.90	1.70	0.00		
211	WP	Uppr. Hiawatha	ACL-A016	DH-US-79-15	0.90	0.00	0.30	0.00	0.00	0.00	1.20	96.60	0.60	1.60	0.00		
212	WP	Uppr. Hiawatha	EMW-A003	DH-BCR-3	1.20	0.00	0.20	0.00	0.00	0.00	1.40	94.10	0.30	4.20	0.00	1.38	2.95
215	WP	Uppr. Hiawatha	EMW-A004	DH-BCR-3	1.00	0.10	0.60	0.00	0.10	0.00	1.80	96.40	0.50	1.30	0.00	1.35	
216	WP	Uppr. Hiawatha	ACL-A017	DH-US-79-12	1.50	0.10	0.50	0.00	0.50	0.00	2.60	92.80	1.50	3.10	0.00		
218	WP	Uppr. Hiawatha	ACL-A027	DH-US-79-2	1.10	0.00	0.80	0.20	0.20	0.10	2.40	94.50	0.90	2.20	0.00		
219	WP	Uppr. Hiawatha	ACL-A005	DH-MC-18-AL	1.00	0.00	0.00	0.00	0.00	0.00	1.00	96.80	0.40	1.80	0.00	1.34	
276	WP	Uppr. Hiawatha	TCP-A016	DH SHM-13	2.70	0.00	0.10	0.00	0.20	0.00	3.00	90.30	2.10	4.60	0.00	1.34	0.58
280	WP	Uppr. Hiawatha	HLT-A002	DH MC-74-HM	2.20	0.00	0.00	0.10	0.30	0.00	2.60	95.10	0.90	1.40	0.00	1.34	5.14
302	WP	Uppr. Hiawatha	TCP-A028	DH-81-2	2.70	0.00	0.00	0.00	0.10	0.00	2.80	93.60	1.20	2.40	0.00	1.38	3.52
304	WP	Uppr. Hiawatha	TCP-A030	DH-NH-31-2	23.20	0.10	1.60	0.00	0.80	0.00	25.70	70.60	0.10	3.60	0.00	1.35	2.81
308	WP	Uppr. Hiawatha	ACL-A026	DH-US-81-4	4.80	0.10	0.40	0.00	0.00	0.10	5.40	88.70	0.40	5.50	0.00	1.33	2.98
309	WP	Uppr. Hawatha	ACL-A029	DH-US-81-1	1.70	0.00	0.70	0.00	0.10	0.00	2.50	94.20	0.40	2.90	0.00	1.35	2.81
310	WP	Uppr. Hawatha	ACL-A028	DH 81-1	0.80	0.00	0.20	0.00	2.00	0.00	3.00	94.80	0.10	2.10	0.00	1.41	4.26
329	WP	Uppr. Hiawatha	TCP-A033	DH SHM-1A/15	4.50	0.30	0.40	0.00	0.10	0.80	6.10	90.50	0.80	2.60	0.00		2.59
332	WP	Uppr. Hiawatha		SHM-13/18;1103.2-1104.5'	1.10	0.40	0.50	0.10	0.10	0.10	2.30	91.00	0.70	6.00	0.00	1.68	
622.1	WP	Uppr. Hiawatha	ACL-A046	channel smpl.; top seam	0.30	0.30	1.00	0.10	0.20	0.50	2.40	92.00	0.90	4.70	0.00	1.40	3.38
622.2	WP	Uppr. Hiawatha	ACL-A047	channel smpl.,mid. seam	0.60	0.30	0.20	0.10	0.00	0.10	1.30	95.70	0.50	2.10	0.40	1.35	1.97
622.3	WP	Uppr Hiawatha	ACL-A048	channel smpl.btm. seam	0.80	0.50	0.50	0.80	0.20	0.30	3.10	93.20	1.20	2.40	0.10	1.34	1.93
628	WP	Uppr. Hiawatha		channel smpl.	0.70	0.10	1.20	0.00	0.10	0.00	2.10	95.80	0.00	2.10	0.00	1.39	
628.1	WP	Uppr. Hiawatha	ACL-A031	channel smpl.,top 1.5'-2.5'	0.70	0.10	1.20	0.00	0.10	0.00	2.10	95.80	0.00	2.10	0.00	1.33	3.07
628.2	WP	Uppr. Hiawatha	ACL-A032	channel smpl.,mid.4.0'-5.0'	0.30	0.20	1.30	0.00	0.00	0.00	1.80	95.00	0.20	2.60	0.40	1.36	2.15
628.3	WP	Uppr. Hiawatha	ACL-A033	channel smpl.btm.8.1'-9.1'	0.50	0.00	0.50	0.10	0.00	0.00	1.10	95.50	1.00	2.40	0.00	1.41	3.80

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
652	WP	Uppr. Hiawatha	HWT-A094	channel smpl.	1.70	0.30	0.00	0.00	0.10	0.20	2.30	94.20	0.40	3.00	0.10	1.30	2.12
652.1	WP	Uppr. Hiawatha		channel smpl.,top 0.0'-1.0'	5.10	0.60	0.30	0.30	0.00	0.60	6.90	88.50	1.20	3.40	0.00	1.28	2.81
652.2	WP	Uppr. Hiawatha		channel smpl.,mid. 3.0'-4.0'	3.60	1.40	0.40	0.10	0.00	0.60	6.10	87.70	0.40	5.70	0.10	1.31	3.48
652.3	WP	Uppr. Hiawatha		channel smpl.,btm.4.0'-8.7'	3.50	0.30	0.50	0.20	0.10	0.40	5.00	90.70	0.60	3.50	0.20	1.30	5.03
666	WP	Uppr. Hiawatha		CH-83-3 934.1-936.2'	0.70	0.20	0.20	0.20	0.30	0.00	1.60	93.50	0.90	3.90	0.10	1.32	1.23
669	WP	Uppr. Hiawatha		CH-83-1 907.4-909.0'	0.60	0.20	0.10	0.10	0.00	0.30	1.30	94.50	0.50	3.70	0.00	1.36	1.16
673	WP	Uppr. Hiawatha		CH-83-5 870.0-871.3'	1.10	0.40	0.60	0.20	0.10	0.20	2.60	93.30	0.50	3.60	0.00	1.35	2.15
686	WP	Uppr. Hiawatha		CH-83-6; 1002.5-1003.7'	0.80	0.20	0.20	0.10	0.10	0.00	1.40	95.10	0.80	2.70	0.00	1.33	3.30
Seam: Uppr. Hiawatha			Mean		2.22	0.19	0.46	0.08	0.18	0.13	3.26	92.97	0.69	3.03	0.04	1.36	2.84
			Maximum		23.20	1.40	1.60	0.80	2.00	0.80	25.70	97.40	2.10	6.00	0.40	1.68	5.14
			Minimum		0.30	0.00	0.00	0.00	0.00	0.00	0.80	70.60	0.00	1.30	0.00	1.28	0.58
			Std.Deviation		3.94	0.27	0.40	0.15	0.36	0.21	4.27	4.67	0.50	1.22	0.10	0.07	1.11
284	WP	Ivie	OWP-A002	DH-80-1;592.0-599.0'	4.40	0.20	0.50	0.10	0.60	0.00	5.80	88.00	1.60	4.60	0.00	1.39	5.03
328	WP	Ivie		DH MC-109c/22	5.90	0.40	0.00	0.20	0.10	0.40	7.00	89.80	0.20	3.00	0.00	1.39	1.09
Seam: Ivie			Mean		5.15	0.30	0.25	0.15	0.35	0.20	6.40	88.90	0.90	3.80	0.00	1.39	3.06
			Maximum		5.90	0.40	0.50	0.20	0.60	0.40	7.00	89.80	1.60	4.60	0.00	1.39	5.03
			Minimum		4.40	0.20	0.00	0.10	0.10	0.00	5.80	88.00	0.20	3.00	0.00	1.39	1.09
			Std.Deviation		0.75	0.10	0.25	0.05	0.25	0.20	0.60	0.90	0.70	0.80	0.00	0.00	1.97
226	WP	Lwr.O'Connor	SCF-A018	UM-78-14-2;690.2-690.8'	0.40	0.00	0.20	0.00	0.10	0.40	1.10	97.30	0.30	1.30	0.00	1.30	3.37
227	WP	Lwr.O'Connor	SCF-A019	UM-78-35-2;1212.4-1213.0'	3.50	0.00	0.10	0.00	0.00	0.00	3.60	94.90	0.20	1.30	0.00	1.29	
240	WP	Lwr.O'Connor	SCF-A022	UM-79-26-1;660.0-660.3'	0.80	0.20	0.30	0.00	0.20	0.00	1.50	95.70	0.40	2.40	0.00	1.29	
242	WP	Lwr.O'Connor	SCF-A024	UM-79-22-1;996.2-996.5'	1.30	0.20	0.10	0.00	0.00	0.20	1.80	97.00	0.40	0.80	0.00	1.34	
285	WP	Lwr.O'Connor	SCF-A032	DH-WQ-01A;510.6-519.6'	0.60	0.10	0.50	0.00	0.20	0.00	1.40	94.10	1.50	3.00	0.00	1.33	6.10
286	WP	Lwr.O'Connor	SCF-A033	DH WQ-05;372.0-383.0'	2.60	0.00	0.10	0.00	0.10	0.00	2.80	94.40	0.20	2.60	0.00	1.30	4.00
287	WP	Lwr.O'Connor	SCF-A034	DH WQ-06;321.4-331.4'	0.10	0.00	0.00	0.00	0.10	0.00	0.20	94.80	0.30	4.70	0.00	1.30	4.00
288	WP	Lwr.O'Connor	SCF-A035	DH WQ-03;491.3-499.8'	0.20	0.00	0.10	0.00	0.00	0.00	0.30	98.00	0.00	1.70	0.00	1.31	5.39
613	WP	Lwr.O'Connor			0.00	0.00	0.00	0.10	0.10	0.00	0.20	98.00	0.20	1.60	0.00	1.33	5.08
614	WP	Lwr.O'Connor			0.10	0.00	0.00	0.00	0.10	0.00	0.20	97.70	0.20	1.70	0.20	1.25	2.62
621	WP	Lwr.O'Connor	SCF-A061	Skyline #3 mine-grab smpl.	0.20	0.00	0.30	0.20	0.10	0.00	0.80	96.30	0.80	2.10	0.00	1.31	3.12
649	WP	Lwr.O'Connor	SCF-A065	channel smpl.	0.20	0.70	0.50	0.00	0.00	0.00	1.40	97.10	0.30	1.20	0.00	1.34	2.51
649.1	WP	Lwr.O'Connor	SCF-A066	channel smpl.top 3.3'-3.7'	0.20	0.30	0.20	0.10	0.20	0.30	1.30	95.90	0.80	2.00	0.00	1.29	1.02
649.2	WP	Lwr.O'Connor	SCF-A067	channel smpl.mid. 6.4'-7.0'	0.50	0.30	0.20	0.40	0.10	0.00	1.50	96.20	1.00	1.10	0.20	1.24	2.44
649.3	WP	Lwr.O'Connor	SCF-A068	channel smpl.btm.12.0'-12.3'	0.20	0.20	0.10	0.00	0.00	0.00	0.50	97.60	0.20	1.70	0.00	1.34	2.50
Seam: Lwr.O'Connor			Mean		0.73	0.13	0.18	0.05	0.09	0.06	1.24	96.33	0.45	1.95	0.03	1.30	3.51
			Maximum		3.50	0.70	0.50	0.40	0.20	0.40	3.60	98.00	1.50	4.70	0.20	1.34	6.10
			Minimum		0.00	0.00	0.00	0.00	0.00	0.00	0.20	94.10	0.00	0.80	0.00	1.24	1.02
			Std.Deviation		0.98	0.19	0.16	0.11	0.07	0.13	0.95	1.28	0.39	0.93	0.07	0.03	1.40

247	WP	Lwr.O'Connor "A"	SCF-A027	UM-79-10-1;1992.6-1997.7'	1.90	0.00	0.40	0.00	0.00	0.00	2.30	95.80	0.20	1.70	0.00		
251	WP	Lwr.O'Connor "A"		UM-79-22-2;1176.0-1181.5'	4.30	0.00	0.10	0.10	0.00	0.00	4.50	91.60	1.40	2.50	0.00	1.30	6.37
252	WP	Lwr.O'Connor "A"	SCF-A029	UM-79-22-2;1173.2-1173.6'	2.00	0.00	0.50	0.00	0.10	0.00	2.60	90.70	0.60	6.10	0.00	1.34	
Seam: Lwr.O'Connor "A"			Mean		2.73	0.00	0.33	0.03	0.03	0.00	3.13	92.70	0.73	3.43	0.00	1.32	6.37
			Maximum		4.30	0.00	0.50	0.10	0.10	0.00	4.50	95.80	1.40	6.10	0.00	1.34	6.37
			Minimum		1.90	0.00	0.10	0.00	0.00	0.00	2.30	90.70	0.20	1.70	0.00	1.30	6.37
			Std.Deviation		1.11	0.00	0.17	0.05	0.05	0.00	0.97	2.22	0.50	1.91	0.00	0.02	0.00
239	WP	Lwr.O'Connor "B"	SCF-A021	UM-78-35-1;610.4-611.2'	2.00	0.20	0.70	0.00	0.30	0.10	3.30	94.20	1.00	1.50	0.00	1.31	3.38
243	WP	Lwr.O'Connor "B"	SCF-A025	UM-79-22-2;1063.6-1069.9'	5.20	0.50	0.10	0.00	0.00	0.00	5.80	92.50	0.20	1.50	0.00	1.29	2.19
Seam: Lwr.O'Connor "B"			Mean		3.60	0.35	0.40	0.00	0.15	0.05	4.55	93.35	0.60	1.50	0.00	1.30	2.79
			Maximum		5.20	0.50	0.70	0.00	0.30	0.10	5.80	94.20	1.00	1.50	0.00	1.31	3.38
			Minimum		2.00	0.20	0.10	0.00	0.00	0.00	3.30	92.50	0.20	1.50	0.00	1.29	2.19
			Std.Deviation		1.60	0.15	0.30	0.00	0.15	0.05	1.25	0.85	0.40	0.00	0.00	0.01	0.59
224	WP	Uppr. O'Connor	SCF-A016	UM-78-14-2;513.6-514.6'	0.70	0.00	0.30	0.00	0.40	0.20	1.60	95.80	0.10	2.50	0.00	1.32	
238	WP	Uppr. O'Connor	SCF-A020	UM-78-35-1;576.7-577.3'	0.60	0.00	1.00	0.00	0.20	0.00	1.80	94.70	0.50	3.00	0.00	1.60	
244	WP	Uppr. O'Connor	SCF-A026	UM-79-22-2;992.2-992.5'	0.70	0.00	0.10	0.00	0.00	0.00	0.80	97.20	0.50	1.50	0.00	1.30	2.82
259	WP	Uppr. O'Connor	SCF-A030	UM-79-26-1;605.1-605.3'	0.20	0.00	0.40	0.00	0.00	0.10	0.70	95.70	1.50	2.10	0.00		
263	WP	Uppr. O'Connor	SCF-A031	UM-79-22-1;939.5-944.5'	0.10	0.00	0.30	0.00	0.40	0.10	0.90	94.60	1.30	3.20	0.00		
305	WP	Uppr. O'Connor		DH-UM-81-14-1	2.90	0.00	1.00	0.00	0.10	0.00	4.00	91.10	0.60	4.30	0.00	1.30	5.38
306	WP	Uppr. O'Connor		DH-UM-81-14-1	1.20	0.10	0.20	0.10	0.20	0.00	1.80	96.30	0.40	1.50	0.00	1.30	3.14
370	WP	Uppr. O'Connor		Skyline No.1	0.40	0.10	0.20	0.10	0.10	0.00	0.90	95.70	1.70	1.70	0.00	1.31	
619	WP	Uppr. O'Connor	SCF-A062	channel smpl.	0.50	0.00	0.40	0.10	0.00	0.00	1.00	95.20	1.10	2.50	0.20	1.31	1.37
619.1	WP	Uppr. O'Connor	SCF-A063	channel smpl.top 3.6'-5.0'	1.30	0.00	0.00	0.10	0.00	0.00	1.40	95.20	1.90	1.30	0.20	1.32	3.12
619.2	WP	Uppr. O'Connor	SCF-A064	channel smpl.mid. 8.6'-9.6'	0.60	0.00	0.20	0.00	0.00	0.00	0.80	95.70	0.60	2.80	0.10	1.31	1.95
619.3	WP	Uppr. O'Connor	SCF-A071	channel smpl.,btm. 11.6'-12.6'	0.90	0.00	0.30	0.00	0.00	0.20	1.40	95.30	0.70	2.50	0.10	1.30	2.21
657	WP	Uppr. O'Connor	SCF-A072	channel smpl.	0.40	0.00	0.00	0.20	0.00	0.00	0.60	96.60	0.40	2.30	0.10	1.32	2.59
657.1	WP	Uppr. O'Connor		channel smpl.,top 0.0-0.1'	0.30	0.00	0.00	0.00	0.30	0.00	0.60	96.30	0.30	2.70	0.10	1.31	1.64
657.2	WP	Uppr. O'Connor		channel smpl.,mid. 2.5-3.5'	0.20	0.00	0.10	0.30	0.00	0.00	0.60	96.80	0.10	2.50	0.00	1.30	2.03
657.3	WP	Upper O'Connor		channel smpl.,btm. 5.3-6.3'	0.60	0.10	0.20	0.10	0.00	0.00	1.00	96.30	0.60	2.10	0.00	1.31	2.04
Seam: Uppr. O'Connor			Mean		0.72	0.02	0.29	0.06	0.11	0.04	1.24	95.53	0.77	2.41	0.05	1.33	2.57
			Maximum		2.90	0.10	1.00	0.30	0.40	0.20	4.00	97.20	1.90	4.30	0.20	1.60	5.38
			Minimum		0.10	0.00	0.00	0.00	0.00	0.00	0.60	91.10	0.10	1.30	0.00	1.30	1.37
			Std.Deviation		0.65	0.04	0.29	0.09	0.14	0.07	0.82	1.34	0.54	0.72	0.07	0.08	

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
225	WP	Mc Kinnon	SCF-A017	UM-78-35-2;750.0-750.6'	6.10	0.00	0.10	0.00	0.00	0.00	6.20	92.80	0.00	1.00	0.00	1.31	7.03
241	WP	Mc Kinnon	SCF-A023	UM-79-26-1;200.0-200.2'	2.10	0.10	0.00	0.00	0.00	0.10	2.30	97.40	0.10	0.20	0.00	1.30	
Seam: Mc Kinnon			Mean		4.10	0.05	0.05	0.00	0.00	0.00	4.25	95.10	0.05	0.60	0.00	1.21	7.03
			Maximum		6.10	0.10	0.10	0.00	0.00	0.10	6.20	97.40	0.10	1.00	0.00	1.31	7.03
			Minimum		2.10	0.00	0.00	0.00	0.00	0.00	2.30	92.80	0.00	0.20	0.00	1.31	7.03
			Std.Deviation		2.00	0.05	0.05	0.00	0.00	0.00	1.95	2.30	0.05	0.40	0.00	0.01	0.00
609	WP	metamorp.coal		natural coke							0.00						12.79
610	WP	metamorp.coal		natural coke							0.00					1.55	8.56
611	WP	metamorp.coal		semi coke							0.00					1.44	9.27
612	WP	metamorp.coal			0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.10	0.10	0.80	0.00	1.39	8.78
Seam: metamorp.coal			Mean		0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.10	0.10	0.80	0.00	1.46	9.85
			Maximum		0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.10	0.10	0.80	0.00	1.55	12.79
			Minimum		0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.10	0.10	0.80	0.00	1.39	9.85
			Std.Deviation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	1.72
283	WP	Muddy #1	ACL-A030	DH MC-74-HM	1.70	0.40	0.50	0.00	0.10	0.00	2.70	95.20	0.60	1.50	0.00	1.31	2.47
671	WP	Muddy #1		CH-83-2 901.0-902.2'	3.40	0.20	0.40	0.00	0.30	0.20	4.50	91.20	0.60	3.70	0.00	1.32	2.84
Seam: Muddy #1			Mean		2.55	0.30	0.45	0.00	0.20	0.10	3.60	93.20	0.60	2.60	0.00	1.31	2.66
			Maximum		3.40	0.40	0.50	0.00	0.30	0.20	4.50	96.20	0.60	3.70	0.00	1.32	2.84
			Minimum		1.70	0.20	0.40	0.00	0.10	0.00	2.70	91.20	0.60	1.50	0.00	1.31	2.47
			Std.Deviation		0.85	0.10	0.05	0.00	0.10	0.10	0.90	2.00	0.00	1.10	0.00	0.01	0.18
679.1	WP	Third		Cottonwood mine							0.00					1.29	1.56
679.2	WP	Third		Cottonwood mine							0.00					1.29	3.04
679.3	WP	Third		Cottonwood mine							0.00					1.34	1.92
679.4	WP	Third		Cottonwood mine							0.00					1.33	3.59
679.5	WP	Third		Cottonwood mine							0.00					1.32	2.15
679.6	WP	Third		Cottonwood mine							0.00					1.29	1.83
679.7	WP	Third		Cottonwood mine							0.00					1.30	2.78
679.8	WP	Third		Cottonwood mine							0.00					1.27	10.12
679.9	WP	Third		Cottonwood mine							0.00					1.33	0.94
Seam: Third			Mean								0.00					1.31	3.10
			Maximum								0.00					1.34	10.12
			Minimum								0.00					1.27	0.94
			Std.Deviation								0.00					0.02	2.59

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
295	WP	Unknown	TCP-A022	DH-30-1	2.00	0.00	0.20	0.00	0.10	0.00	2.30	95.70	0.20	1.80	0.00	1.33	
326	WP	Unknown		DH NTS-10/7	10.40	0.50	0.50	0.10	0.20	0.00	11.70	86.70	0.30	1.30	0.00	1.30	3.62
327	WP	Unknown		DH NTS-10/8	10.80	0.20	0.20	0.00	0.30	0.00	11.50	86.10	0.60	1.80	0.00	1.29	6.59
532	WP	Unknown		TM-7;core:1827.0-1828.0'	0.60	0.20	0.10	0.60	0.00	0.90	2.40	94.80	0.60	2.20	0.00	1.82	1.85
533	WP	Unknown		TM-7;core:1834.0-1834.5'	1.60	0.10	0.70	0.30	0.00	0.20	2.90	94.70	0.20	2.20	0.00	1.82	1.11
534	WP	Unknown		TM-7;core:1837.1-1837.8'	4.00	0.00	0.20	0.20	0.00	0.70	5.10	88.80	1.10	4.90	0.10	1.77	0.75
535	WP	Unknown		TM-7;core:1838.3-1839.1'	1.80	0.20	0.50	1.20	0.00	0.10	3.80	91.90	1.00	3.30	0.00	1.42	0.79
536	WP	Unknown		TM-7;core:1953.5-1954.0'	0.80	0.00	0.00	0.40	0.10	0.00	1.30	96.80	0.50	1.30	0.10	1.31	2.18
537	WP	Unknown		TM-7;core:1983.6-1984.2'	1.40	0.80	0.30	0.20	0.10	2.10	4.90	86.30	1.00	7.80	0.00	1.51	1.77
538	WP	Unknown		TM-7;core:2015.0-2015.5'	0.60	0.10	0.10	0.50	0.00	0.50	1.80	92.30	1.60	4.10	0.20	1.48	1.20
540	WP	Unknown		TM-7;core:2195.0-2195.6'	10.40	0.50	0.10	0.00	0.30	1.40	12.70	81.80	0.50	4.70	0.30	1.41	0.36
541	WP	Unknown		TM-7;core:2271.7-2273.1'	3.30	0.00	0.00	0.10	0.20	0.00	3.60	95.20	0.20	1.00	0.00	1.30	2.72
542	WP	Unknown		TM-7;core:2387.8-2388.3'	0.80	0.00	0.00	0.20	0.00	0.30	1.30	92.20	0.50	5.80	0.20	1.65	2.03
543	WP	Unknown		TM-7;core:2400.0-2401.8'	2.70	0.20	0.20	0.40	0.20	0.00	3.10	91.20	0.50	4.40	0.20	1.29	1.43
544	WP	Unknown		TM-7;core:2438.0-2439.4'	1.20	0.00	0.60	0.50	0.20	0.00	2.50	91.40	1.60	4.50	0.00	1.33	2.19
615	WP	Unknown		weathered-top 0.4'	0.00	0.00	0.40	0.00	0.20	0.00	0.60	97.20	0.40	1.60	0.20	1.66	17.04
616	WP	Unknown		weathered-top 1.6'	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.60	0.30	1.00	0.10	1.60	6.97
617	WP	Unknown		weathered-top 1.2'	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.40	0.00	0.60	0.00	1.72	5.21
618	WP	Unknown		weathered-top 0.7'	0.00	0.00	0.30	0.20	0.00	0.40	0.90	95.60	1.70	1.80	0.00	1.75	10.71
632	WP	Unknown		DH-CH-83-4-968.0'-969.1'	2.80	0.80	0.70	0.00	0.30	0.70	5.30	89.00	1.40	4.30	0.00	1.32	1.46
633	WP	Unknown		DH-CH-83-4-980.5'-981.3'	3.80	0.50	1.00	0.20	0.20	1.70	7.40	86.30	0.80	5.20	0.30	1.31	1.93
634	WP	Unknown		CH-83-4-1032.5'-1033.3'	0.20	0.00	0.20	0.30	0.00	0.00	0.70	96.20	0.50	2.40	0.20	1.35	0.23
635	WP	Unknown		CH-83-4-1044.8'-1045.3'	0.40	0.00	0.50	0.30	0.10	0.10	1.40	93.10	1.50	3.90	0.10	1.36	0.55
670	WP	Unknown		DH-CH-83-1 850.0-850.8'	1.40	0.30	1.00	0.30	0.40	1.50	4.90	90.80	0.80	3.50	0.00	1.33	1.16
672	WP	Unknown		CH-83-5:intv. 848.4-850.2'	1.20	0.20	0.80	0.00	0.10	0.00	2.30	92.90	0.90	3.10	0.80	1.42	1.69
684	WP	Unknown		DH-CH-83-6	1.60	0.10	0.10	0.30	0.00	0.20	2.30	93.20	0.80	3.50	0.20	1.31	1.43
685	WP	Unknown		DH-CH-83-6; 976.0-977.0'	0.90	0.30	0.40	0.10	0.00	0.00	1.70	93.10	1.20	4.00	0.00	1.38	3.85
687	WP	Unknown		DH-CH-83-6;1014.3-1017.2'	0.50	0.80	0.30	0.40	0.00	0.10	2.10	93.60	0.90	3.40	0.00	1.46	2.66
690	WP	Unknown		DH-CH-83-7 952.3'-954'	1.60	0.20	0.70	0.60	0.10	0.00	3.20	92.00	1.40	3.40	0.00	1.46	1.14
692	WP	Unknown		DH-CH-83-8 960'-963.3'	1.20	0.00	0.40	0.40	0.50	0.10	2.60	91.90	0.80	4.50	0.20	1.34	1.16
693	WP	Unknown		DH-CH-83-8 978.9'-979.9'	2.20	0.40	0.30	0.40	0.30	0.00	3.60	93.00	0.30	3.00	0.10	1.38	1.27
698	WP	Unknown		CH-84-9; 1038.6'-1039.9'	0.90	0.20	0.50	0.50	0.00	0.10	2.20	93.20	1.50	3.10	0.00	1.42	1.17
698	WP	Unknown		CH-84-9; 1100.0'-1102.2'	0.50	0.10	1.40	0.50	0.10	0.60	3.20	92.40	1.00	3.30	0.10	1.41	1.01
706	WP	Unknown		CH-84-17;879.6-880.5'	2.90	0.40	0.60	0.50	0.20	1.00	5.60	87.40	1.30	5.40	0.30	1.39	2.26
707	WP	Unknown		CH-84-17;930.9-931.7'	0.20	0.30	0.20	0.70	0.00	0.00	1.40	92.70	2.10	3.50	0.30	1.38	1.23
708	WP	Unknown		CH-84-17;941.7-942.6'	0.60	0.60	0.00	0.60	0.00	0.00	1.80	93.40	1.10	3.70	0.00	1.36	1.50
709	WP	Unknown		CH-84-17;945.6-948.9'	0.90	0.40	0.70	0.70	0.00	0.40	3.10	93.00	0.50	3.30	0.10	1.35	0.82
Seam: Unknown				Mean	2.08	0.23	0.37	0.32	0.11	0.36	3.47	92.25	0.85	3.32	0.09	1.45	2.67
				Maximum	10.80	0.80	1.40	1.20	0.50	2.10	12.70	99.40	2.10	7.80	0.30	1.82	17.04
				Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	81.80	0.00	0.60	0.00	1.29	0.23
				Std.Deviation	2.76	0.25	0.32	0.26	0.13	0.54	3.03	3.74	0.51	1.53	0.11	0.15	3.25

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
631	WP	Wattis		Star Point Mine No.2	2.30	0.20	0.70	0.50	0.50	0.00	4.20	91.10	0.30	4.20	0.20	1.34	2.36
664	WP	Wattis	WTS-A022	grap smpl.	5.60	0.20	0.90	0.10	0.40	0.00	7.20	87.90	0.70	4.10	0.10	1.28	2.65
676	WP	Wattis	WTS-A077	core smpl.: 0-1 feet intv.	0.90	0.10	0.10	0.30	0.00	0.00	1.40	96.30	0.40	1.70	0.20		
676.1	WP	Wattis	WTS-A078	core smpl.: 1-2 feet intv.	1.20	0.10	0.60	0.20	0.30	0.10	2.50	91.80	0.30	5.20	0.20		
676.2	WP	Wattis	WTS-A079	core smpl.: 2-3 feet intv.	3.00	0.50	0.70	0.30	0.70	0.00	5.20	92.30	0.60	1.70	0.20		
676.3	WP	Wattis	WTS-A080	core smpl.: 3-4 feet intv.	0.90	0.10	0.90	0.20	0.00	0.00	2.10	94.60	0.60	2.20	0.50		
676.4	WP	Wattis	WTS-A081	core smpl.: 4-5 feet intv.	0.60	0.10	0.10	0.60	0.20	0.20	1.80	95.10	0.40	2.50	0.20		
676.5	WP	Wattis	WTS-A082	core smpl.: 5-6 feet intv.	0.40	0.10	0.10	0.30	0.00	0.00	0.90	97.50	0.10	1.10	0.40		
676.6	WP	Wattis	WTS-A083	core smpl.: 6-7 feet intv.	0.80	0.00	0.10	0.30	0.00	0.00	1.20	96.80	0.90	1.00	0.10		
676.7	WP	Wattis	WTS-A084	core smpl.: 7-8 feet intv.	0.60	0.00	0.40	0.40	0.10	0.00	1.50	95.80	0.50	2.20	0.00		
676.8	WP	Wattis	WTS-A085	core smpl.: 8-9 feet intv.	6.00	0.30	0.90	0.30	0.00	0.40	7.90	87.10	1.30	3.30	0.40		
676.9	WP	Wattis	WTS-A086	core smpl.: 9-10 feet intv.	2.70	0.20	0.90	0.30	0.30	0.50	4.90	92.20	0.50	2.40	0.00		
725	WP	Wattis		washed coal fines	3.70	0.40	0.90	0.40	0.30	0.00	5.70	89.90	0.50	3.70	0.20		
726	WP	Wattis		stockpile fines	12.80	0.30	0.10	0.00	0.20	0.10	13.50	84.50	0.50	1.40	0.10		
726.1	WP	Wattis		stockpile crushed coal	4.80	0.50	0.20	0.00	0.20	0.00	5.70	90.20	0.20	3.60	0.30		
727	WP	Wattis		refuse pile fines	7.30	0.40	0.30	0.00	0.30	0.00	8.30	89.40	0.50	1.70	0.10		
727.1	WP	Wattis		refuse pile crushed coal	3.30	0.20	0.10	0.10	0.00	0.00	3.70	94.10	0.60	1.50	0.10		
Seam: Wattis			Mean		3.35	0.22	0.47	0.25	0.21	0.08	4.57	92.15	0.52	2.56	0.19	1.31	2.50
			Maximum		12.80	0.50	0.90	0.60	0.70	0.50	13.50	97.50	1.30	5.20	0.50	1.34	2.65
			Minimum		0.40	0.00	0.10	0.00	0.00	0.00	0.90	84.50	0.10	1.00	0.00	1.28	2.36
			Std.Deviation		3.14	0.15	0.34	0.17	0.20	0.15	3.24	3.59	0.27	1.20	0.13	0.03	0.14

Appendix F. Coal-characteristics Data for the Emery Coal Field.

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
170	EM	WKF	06-23S-06E	A seam	61.80	8.90	1.90	1.50	1.90	3.70	2.90	17.40	0.00	0.00	0.68	hvBb			70.70	5.30	24.00
201	EM	EME	14-22S-06E	A seam	60.10	8.90	4.80	2.00	1.10	2.40	7.00	13.70	0.00	0.00	0.58	hvBb			69.00	7.90	23.10
208	EM	WKF	08-23S-06E	A seam	48.90	12.40	1.20	0.90	2.60	1.40	2.80	29.70	0.10	0.00	0.71	hvBb			61.30	4.70	34.00
217	EM	WKF	01-23S-05E	A seam	57.70	27.00	1.60	0.10	2.00	3.30	6.60	1.70	0.00	0.00	0.71	hvAb			84.70	3.70	11.60
230	EM	WKF	07-23S-06E	A seam	54.80	26.50	1.70	1.50	3.70	2.10	1.10	8.60	0.00	0.00	0.65	hvBb			81.30	6.90	11.80
249	EM	WKF	12-23S-06E	A seam	52.10	22.50	1.30	0.20	4.60	3.60	5.70	9.90	0.10	0.00	0.68	hvBb			74.60	6.10	19.30
730	EM	EME	14-22S-06E	A seam	65.00	1.50	3.20	0.70	2.10	2.10	3.30	14.20	0.70	0.10	0.58	hvBb			66.50	6.00	20.40
Seam: A seam				Mean	57.20	15.39	2.24	0.99	2.57	2.66	4.20	13.60	0.13	0.01	0.65				72.59	5.80	20.60
				Maximum	65.00	27.00	4.80	2.00	4.60	3.70	7.00	29.70	0.70	0.10	0.71				84.70	7.90	34.00
				Minimum	48.90	1.50	1.20	0.10	1.10	1.40	1.10	1.70	0.00	0.00	0.58				61.30	3.70	11.60
				Std. Deviation	5.23	9.22	1.21	0.66	1.11	0.82	2.07	8.06	0.24	0.03	0.05				7.63	1.29	7.15
223	EM	WKF	07-23S-06E	A seam rider	55.10	3.90	2.80	1.00	0.30	1.40	2.80	32.60	0.10	0.00	0.65	hvBb			59.00	4.10	36.90
Seam: A seam rider				Mean	55.10	3.90	2.80	1.00	0.30	1.40	2.80	32.60	0.10	0.00	0.65	hvBb			59.00	4.10	36.90
				Maximum	55.10	3.90	2.80	1.00	0.30	1.40	2.80	32.60	0.10	0.00	0.65	hvBb			59.00	4.10	36.90
				Minimum	55.10	3.90	2.80	1.00	0.30	1.40	2.80	32.60	0.10	0.00	0.65	hvBb			59.00	4.10	36.90
				Std.Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00	0.00	0.00
179	EM	WKF	06-23S-06E	C-D zone	61.20	18.40	2.90	1.50	0.50	3.30	2.40	9.80	0.00	0.00	0.68	hvBb			79.60	4.90	15.50
181	EM	WKF	31-22S-06E	C-D zone	61.50	14.60	1.90	0.20	6.20	1.50	3.40	10.70	0.00	0.00	0.63	hvBb			76.10	8.30	15.60
183	EM	WKF	08-23S-06E	C-D zone	54.80	18.60	1.10	1.30	1.20	1.20	4.80	17.00	0.00	0.00	0.58	hvBb			73.40	3.60	23.00
184	EM	WKF	31-22S-06E	C-D zone	55.10	16.20	5.60	0.60	2.20	2.40	1.70	15.60	0.50	0.10	0.63	hvBb			71.30	8.40	20.30
187	EM	WKF	08-23S-06E	C-D zone	59.50	1.10	3.60	0.40	3.40	8.20	6.20	17.50	0.10	0.00	0.52	hvCb			60.60	7.40	32.00
193	EM	EME	15-22S-06E	C-D zone	49.80	4.50	3.90	1.30	2.00	2.00	3.60	32.90	0.00	0.00	0.70	hvBb			54.30	7.20	38.50
194	EM	WKF	31-22S-06E	C-D zone	61.90	28.30	1.80	2.10	1.30	1.50	0.60	2.50	0.00	0.00	0.57	hvBb			90.20	5.20	4.60
198	EM	WKF	06-23S-06E	C-D zone	59.80	27.90	3.80	1.30	0.60	2.50	0.40	3.70	0.00	0.00	0.64	hvBb			87.70	5.70	6.60
257	EM	EME	14-22S-06E	C-D zone	53.60	33.70	2.50	0.90	1.70	1.40	4.10	2.10	0.00	0.00	0.70	hvBb			87.30	5.10	7.60
Seam: C-D zone				Mean	57.69	18.14	3.01	1.07	2.12	2.67	3.02	9.00	0.07	0.01	0.63				75.60	6.20	18.19
				Maximum	61.90	33.70	5.60	2.10	6.20	8.20	6.20	32.90	0.50	0.10	0.70				90.20	8.40	38.50
				Minimum	49.80	1.10	1.10	0.20	0.50	1.20	0.40	2.10	0.00	0.00	0.52				54.30	3.60	4.60
				Std. Deviation	4.23	10.18	1.29	0.56	1.66	2.06	1.82	5.73	0.16	0.03	0.06				11.62	1.58	10.93
703	EM	WKF	29-22S-06E	Ferron Ss Mbr.	48.50	2.10	4.80	4.80	1.40	2.70	7.60	27.10	1.00	0.00	0.55	hvCb			50.60	11.00	38.40
728.1	EM	PRC	24-14S-09E	Ferron Ss Mbr.	36.70	0.60	7.20	4.10	5.10	1.60	7.10	17.60	0.60	0.10	0.52	hvCb			37.30	16.40	27.00
728.2	EM	PRC	24-14S-09E	Ferron Ss Mbr.	40.70	1.10	6.00	5.50	2.00	0.90	6.40	27.40	0.30	0.00	0.63	hvBb			41.80	13.50	35.00
728.3	EM	PRC	24-14S-09E	Ferron Ss Mbr.	72.90	1.60	4.80	1.90	2.20	2.00	2.10	6.70	0.60	0.30	0.63	hvBb			74.50	8.90	11.70
728.4	EM	PRC	24-14S-09E	Ferron Ss Mbr.	78.70	5.90	1.80	1.70	1.30	1.40	1.10	0.80	0.20	0.00	0.56	hvCb			84.60	4.80	2.50

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard Shard kg/mm^2	Vitrn %	Exint %	Inert %
Seam: Ferron Ss Mbr.			Mean		55.50	2.26	4.92	3.60	2.40	1.72	4.66	15.92	0.54	0.08	0.58			57.76	10.92	22.92
			Maximum		78.70	5.90	7.20	5.50	5.10	2.70	7.60	27.40	1.00	0.30	0.63			84.60	16.40	38.40
			Minimum		36.70	0.60	1.80	1.70	1.30	0.90	0.10	0.80	0.20	0.20	0.52			37.30	4.80	2.50
			Std. Deviation		17.10	1.89	1.80	1.54	1.39	0.60	3.00	10.71	0.28	0.12	0.04			18.58	3.96	13.75
165	EM	WKF	06-23S-06E	G seam	43.90	29.10	2.10	0.60	1.30	2.90	7.20	12.90	0.00	0.00	0.63	hvBb		73.00	4.00	23.00
178	EM	WKF	31-22S-06E	G seam	65.40	25.10	3.90	0.90	0.80	2.00	0.70	1.20	0.00	0.00	0.56	hvCb		90.50	5.60	3.90
210	EM	WKF	06-23S-06E	G seam	43.60	17.90	2.20	0.80	1.10	5.90	4.70	23.70	0.10	0.00	0.62	hvBb		61.50	4.10	34.40
221	EM	WKF	01-23S-05E	G seam	64.50	23.10	3.00	0.00	2.00	1.00	0.60	5.70	0.10	0.00	0.69	hvBb		87.60	5.00	7.40
248	EM	WKF	06-23S-06E	G seam	50.60	19.30	5.00	1.60	1.80	2.70	3.80	15.20	0.00	0.00	0.59	hvBb		69.90	8.40	21.70
264	EM	WKF	31-22S-06E	G seam	63.30	31.80	1.10	0.20	0.30	1.50	0.60	1.20	0.00	0.00	0.56	hvCb		95.10	1.60	3.30
266	EM	WKF	06-23S-06E	G seam	14.10	81.20	0.80	0.30	1.70	0.80	0.10	1.00	0.00	0.00	0.74	hvAb		95.30	2.80	1.90
Seam: G seam			Mean		49.34	32.50	2.59	0.63	1.29	2.40	2.53	8.70	0.03	0.00	0.63			81.84	4.50	13.66
			Maximum		65.40	81.20	5.00	1.60	2.00	5.90	7.20	23.70	0.10	0.00	0.74			96.30	8.40	34.40
			Minimum		14.10	17.90	0.80	0.00	0.30	0.80	0.10	1.00	0.00	0.00	0.56			61.50	1.60	1.90
			Std. Deviation		16.85	20.40	1.39	0.50	0.56	1.61	2.53	8.16	0.05	0.00	0.06			12.53	2.01	11.72
168	EM	WKF	08-23S-06E	I seam	53.80	25.10	2.90	3.00	0.70	2.90	3.00	8.50	0.10	0.00	0.50	hvCb		78.90	6.60	14.50
207	EM	EME	14-22S-06E	I seam	57.00	22.80	2.40	1.30	0.40	3.40	2.80	9.90	0.00	0.00	0.59	hvBb		79.80	4.10	16.10
220	EM	WKF	12-23S-05E	I seam	63.40	15.40	2.00	1.90	0.80	0.30	3.80	12.20	0.10	0.10	0.69	hvBb		78.80	4.70	16.50
656	EM	WKF	29-22S-07E	I seam	60.80	4.20	2.70	1.40	2.50	3.20	5.90	18.60	0.60	0.10	0.60	hvBb		65.00	6.60	28.40
656.1	EM	WKF	29-22S-07E	I seam	69.80	8.90	2.60	1.00	0.80	3.30	3.40	9.60	0.60	0.00	0.58	hvBb		78.70	4.40	16.90
656.2	EM	WKF	29-22S-07E	I seam	45.00	0.00	3.80	1.70	3.20	0.80	12.70	32.70	0.10	0.00	0.62	hvBb		45.00	8.70	46.30
656.3	EM	WKF	29-22S-07E	I seam	73.00	2.50	3.30	2.20	1.10	1.50	2.00	13.70	0.70	0.00	0.59	hvBb		75.50	6.60	17.90
Seam: I-seam			Mean		60.40	11.27	2.81	1.79	1.36	2.20	4.80	15.03	0.31	0.03	0.60			71.67	5.96	22.37
			Maximum		73.00	25.10	3.80	3.00	3.20	3.40	12.70	32.70	0.70	0.10	0.69			79.80	8.70	46.30
			Minimum		45.00	0.00	2.00	1.00	0.40	0.30	2.00	8.50	0.00	0.00	0.50			45.00	4.10	14.50
			Std.Deviation		8.85	9.26	0.55	0.62	0.98	1.21	3.42	7.87	0.28	0.05	0.05			11.89	1.52	10.65
197	EM	WKF	31-22S-06E	I-J zone	55.20	32.60	3.00	0.40	0.70	3.20	0.90	3.80	0.20	0.00	0.59	hvBb		87.80	4.10	8.10
206	EM	EME	15-22S-06E	I-J zone	60.20	12.30	2.00	0.70	0.80	3.90	3.20	16.90	0.00	0.00	0.64	hvBb		72.50	3.50	24.00
209	EM	WKF	06-23S-06E	I-J zone	85.30	9.80	0.50	0.00	4.10	0.30	0.00	0.00	0.00	0.00	0.67	hvBb		95.10	4.60	0.30
235	EM	WKF	12-23S-05E	I-J zone	64.80	10.70	3.20	1.00	1.30	1.80	1.80	15.30	0.10	0.00	0.64	hvBb		75.50	5.50	19.00
Seam: I-J zone			Mean		66.38	16.35	2.17	0.53	1.72	2.30	1.48	9.00	0.08	0.00	0.64			82.72	4.42	12.85
			Maximum		85.30	32.60	3.20	1.00	4.10	3.90	3.20	16.90	0.20	0.00	0.67			95.10	5.50	24.00
			Minimum		55.20	9.80	0.50	0.00	0.70	0.30	0.00	0.00	0.00	0.00	0.59			72.50	3.50	0.30
			Std. Deviation		11.44	9.42	1.07	0.37	1.39	1.38	1.18	7.25	0.08	0.00	0.03			9.16	0.73	9.25

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard kg/mm²	Shard %	Vitrn %	Exint %	Inert
180	EM	WKF	31-22S-06E	J seam	76.80	10.50	1.90	0.10	1.00	0.70	2.80	6.20	0.00	0.00	0.52	hvCb			87.30	3.00	9.70
Seam: J seam				Mean	76.80	10.50	1.90	0.10	1.00	0.70	2.80	6.20	0.00	0.00	0.52				87.30	3.00	9.70
				Maximum	76.80	10.50	1.90	0.10	1.00	0.70	2.80	6.20	0.00	0.00	0.52				87.30	3.00	9.70
				Minimum	76.80	10.50	1.90	0.10	1.00	0.70	2.80	6.20	0.00	0.00	0.52				87.30	3.00	9.70
				Std. Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00	0.00	0.00
729	EM	EME	14-22S-06E	Unknown	61.60	0.40	5.20	1.50	3.00	2.20	5.60	14.30	0.60	0.00	0.54	hvCb			62.00	9.70	28.30
Seam: Unknown				Mean	61.60	0.40	5.20	1.50	3.00	2.20	5.60	14.30	0.60	0.00	0.54				62.00	9.70	28.30
				Maximum	61.60	0.40	5.20	1.50	3.00	2.20	5.60	14.30	0.60	0.00	0.54				62.00	9.70	28.30
				Minimum	61.60	0.40	5.20	1.50	3.00	2.20	5.60	14.30	0.60	0.00	0.54				62.00	9.70	28.30
				Std. Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00	0.00	0.00

Appendix F. Coal-characteristics Data for the Emery Coal Field (continued).

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
170	EM	A seam	WKF-A018	DH FC-472;700.6-701.6'	0.50	0.50	0.40	0.10	0.40	0.00	1.90	94.70	1.50	1.90	0.00	1.31	3.72
201	EM	A seam	EME-A013	DH-FC-479	0.30	0.00	0.70	0.00	0.10	0.00	1.10	92.10	2.00	4.80	0.00	1.30	3.10
208	EM	A seam	WKF-A031	DH FC-467;322.7-323.7'	0.50	0.00	1.60	0.00	0.50	0.00	2.60	95.30	0.90	1.20	0.00	1.32	
217	EM	A seam	WKF-A034	DH FC-484;846.5-847.3'	0.40	0.00	1.00	0.00	0.60	0.00	2.00	96.30	0.10	1.60	0.00	1.30	
230	EM	A seam	WKF-A038	DH FC-489;525.8-526.6'	0.40	0.40	1.90	0.00	0.90	0.10	3.70	93.10	1.50	1.70	0.00	1.41	
249	EM	A seam	WKF-A040	DH FC-488;780.6-781.3'	1.20	0.00	2.70	0.00	0.70	0.00	4.60	93.90	0.20	1.30	0.00	1.32	2.79
730	EM	A seam		DH UURI#1; 244.7-252.3'	0.00	0.60	0.60	0.00	0.10	0.30	1.60	94.00	0.70	3.20	0.50		
Seam:A seam				Mean	0.47	0.21	1.27	0.01	0.47	0.06	2.50	94.20	0.99	2.24	0.07	1.33	3.20
				Maximum	1.20	0.60	2.70	0.10	0.90	0.30	4.60	96.30	2.00	4.80	0.50	1.41	3.72
				Minimum	0.00	0.00	0.40	0.00	0.10	0.00	1.10	92.10	0.10	1.20	0.00	1.30	2.79
				Std. Deviation	0.34	0.25	0.77	0.03	0.28	0.10	1.15	1.29	0.66	1.21	0.17	0.04	0.39
223	EM	A seam rider	WKF-A037	DH FC-489;513.9-514.5'	0.10	0.00	0.20	0.00	0.00	0.00	0.30	95.90	1.00	2.80	0.00	1.41	
Seam:A seam rider				Mean	0.10	0.00	0.20	0.00	0.00	0.00	0.30	95.90	1.00	2.80	0.00	1.41	
				Maximum	0.10	0.00	0.20	0.00	0.00	0.00	0.30	95.90	1.00	2.80	0.00	1.41	
				Minimum	0.10	0.00	0.20	0.00	0.00	0.00	0.30	95.90	1.00	2.80	0.00	1.41	
				Std. Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
179	EM	C-D zone	WKF-A021	DH FC-468	0.10	0.10	0.30	0.00	0.00	0.00	0.50	95.10	1.50	2.90	0.00		
181	EM	C-D zone	WKF-A025	DH FC-473;482.0-483.0'	1.30	2.40	1.70	0.00	0.80	0.00	6.20	91.70	0.20	1.90	0.00	1.30	
183	EM	C-D zone	WKF-A024	DH FC-467;278.1-278.8'	0.20	0.10	0.40	0.00	0.30	0.20	1.20	96.40	1.30	1.10	0.00	1.38	
184	EM	C-D zone	WKF-A025	DH FC-471;596.6-597.6'	0.00	1.80	0.40	0.00	0.00	0.00	2.20	91.60	0.60	5.60	0.00	1.44	
187	EM	C-D zone	WKF-A027	DH FC-467;293.7-294.4'	0.10	1.10	2.00	0.00	0.00	0.10	3.30	92.70	0.40	3.60	0.00	1.35	
193	EM	C-D zone	EME-A008	DH FC-478	0.70	0.50	0.60	0.00	0.10	0.10	2.00	92.80	1.30	3.90	0.00	1.39	
194	EM	C-D zone	WKF-A028	DH FC-476;832.8-833.8'	0.20	0.80	0.20	0.10	0.00	0.00	1.30	94.80	2.10	1.80	0.00	1.30	3.47
198	EM	C-D zone	WKF-A030	DH FC-472;	0.40	0.00	0.10	0.00	0.00	0.10	0.60	94.30	1.30	3.80	0.00	1.32	3.41
257	EM	C-D zone	EME-A012	DH FC-479	0.60	0.00	0.90	0.00	0.20	0.00	1.70	94.90	0.90	2.50	0.00	1.34	
Seam:C-D zone				Mean	0.38	0.85	0.71	0.01	0.15	0.06	2.16	93.67	1.09	3.07	0.00	1.35	3.44
				Maximum	1.30	2.40	2.00	0.10	0.80	0.20	6.20	96.40	2.10	5.60	0.00	1.44	3.47
				Minimum	0.00	0.00	0.10	0.00	0.00	0.00	0.50	91.60	0.20	1.10	0.00	1.30	3.41
				Std. Deviation	0.41	0.82	0.68	0.03	0.26	0.07	1.75	1.62	0.59	1.36	0.00	0.05	0.03
703	EM	Ferron Ss Mbr.		Emery mine	0.10	0.50	0.40	0.00	0.20	0.20	1.40	89.00	4.80	4.80	0.00		
728.1	EM	Ferron Ss Mbr.		DH 24-3; 1803.5'-1803.7'	0.00	0.30	0.60	0.50	0.00	3.30	4.70	83.60	4.10	7.20	0.40		
728.2	EM	Ferron Ss Mbr.		DH 24-3; 1808.8'-1809.1'	0.00	0.30	0.20	0.00	0.20	1.00	1.70	86.50	5.50	6.00	0.30		
728.3	EM	Ferron Ss Mbr.		DH 24-3; 1811.3'-1811.4'	0.00	0.00	0.20	0.00	0.00	1.80	2.00	91.10	1.90	4.80	0.20		
728.4	EM	Ferron Ss Mbr.		DH 24-3; 1816.3'-1816.4'	0.00	0.00	0.10	0.00	0.00	1.20	1.30	95.20	1.70	1.80	0.00		

Sample Number	Coal Field	Coal Seam:	C.Q. No		Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
Seam:Ferron Ss Mbr.				Mean		0.02	0.22	0.30	0.10	0.08	1.50	2.22	89.08	3.60	4.92	0.18		
				Maximum		0.10	0.50	0.60	0.50	0.20	3.30	4.70	95.20	5.50	7.20	0.40		
				Minimum		0.00	0.00	0.10	0.00	0.00	0.20	1.30	83.60	1.70	1.80	0.00		
				Std. Deviation		0.04	0.19	0.18	0.20	0.10	1.04	1.26	3.96	1.54	1.80	0.16		
165	EM	G seam	WKF-A016		DH FC-472;546-549.1'	1.00	0.20	0.10	0.00	0.00	0.00	1.30	96.00	0.60	2.10	0.00	1.39	
178	EM	G seam	WKF-A020		DH FC-471	0.40	0.00	0.10	0.00	0.30	0.00	0.80	94.40	0.90	3.90	0.00	1.31	
210	EM	G seam	WKF-A033		DH FC-640.9-641.7'	0.50	0.40	0.10	0.00	0.00	0.10	1.10	95.90	0.80	2.20	0.00	1.34	
221	EM	G seam	WKF-A036		DH FC-484;671.0-671.9'	1.20	0.00	0.60	0.00	0.00	0.20	2.00	95.00	0.00	3.00	0.00	1.56	
248	EM	G seam			DH FC-468	1.50	0.00	0.20	0.00	0.10	0.00	1.80	91.60	1.60	5.00	0.00	1.32	2.62
264	EM	G seam	WKF-A041		DH FC-473;452.4-453.0'	0.00	0.00	0.30	0.00	0.00	0.00	0.30	98.40	0.20	1.10	0.00	1.31	
266	EM	G seam	WKF-A042		DH FC-463;516.8-517.6'	1.20	0.00	0.30	0.00	0.00	0.20	1.70	97.20	0.30	0.80	0.00	1.35	
Seam: G seam				Mean		0.83	0.09	0.24	0.00	0.06	0.07	1.29	95.50	0.63	2.59	0.00	1.37	2.62
				Maximum		1.50	0.40	0.60	0.00	0.30	0.20	2.00	98.40	1.60	5.00	0.00	1.56	2.62
				Minimum		0.00	0.00	0.10	0.00	0.00	0.00	0.30	91.60	0.00	0.80	0.00	1.31	2.62
				Std. Deviation		0.50	0.15	0.17	0.00	0.10	0.09	0.56	2.01	0.50	1.39	0.00	0.08	0.00
168	EM	I seam	WKF-A017		DH FC-469;143.0-143.4'	0.30	0.00	0.10	0.00	0.30	0.00	0.70	93.40	3.00	2.90	0.00		
207	EM	I seam	EME-A010		DH FC-479	0.30	0.00	0.10	0.00	0.00	0.00	0.40	95.90	1.30	2.40	0.00		
220	EM	I seam	WKF-A035		DH FC-488;600.9-601.7'	0.50	0.00	0.30	0.00	0.00	0.00	0.80	95.30	1.90	2.00	0.00	1.37	2.94
656	EM	I seam	WKF-A046		channel smpl.	0.20	0.40	0.70	0.00	0.10	1.00	2.40	93.40	1.40	2.70	0.10	1.40	0.95
656.1	EM	I seam			channel smpl.,top 0.0'-0.1'	0.00	0.10	0.10	0.40	0.00	0.10	0.70	95.60	1.00	2.60	0.10	1.35	1.00
656.2	EM	I seam			channel smpl.,mid. 2.0'-3.0'	0.00	0.20	0.50	0.70	0.30	1.30	3.00	91.30	1.70	3.80	0.20	1.45	0.94
656.3	EM	I seam			channel smp.;btm. 5.5'-6.7'	0.00	0.00	0.40	0.30	0.00	0.40	1.10	93.40	2.20	3.30	0.00	1.34	1.84
Seam: I seam				Mean		0.19	0.10	0.31	0.20	0.10	0.40	1.30	94.04	1.79	2.81	0.06	1.38	1.53
				Maximum		0.50	0.40	0.70	0.70	0.30	1.30	3.00	95.90	3.00	3.80	0.20	1.45	2.94
				Minimum		0.00	0.00	0.10	0.00	0.00	0.00	0.40	91.30	1.00	2.00	0.00	1.34	0.94
				Std. Deviation		0.18	0.14	0.22	0.26	0.13	0.50	0.92	1.52	0.62	0.56	0.07	0.04	0.78
197	EM	I-J zone	WKF-A029		DH FC-475;656.5-657.5'	0.50	0.00	0.10	0.10	0.00	0.00	0.70	95.90	0.40	3.00	0.00	1.32	5.09
206	EM	I-J zone	EME-A009		DH FC-478	0.20	0.00	0.60	0.00	0.00	0.00	0.80	96.50	0.70	2.00	0.00	1.33	
209	EM	I-J zone	WKF-A032		DH FC-474;494.0-494.5'	0.00	0.40	3.70	0.00	0.00	0.00	4.10	95.40	0.00	0.50	0.00	1.28	
235	EM	I-J zone	WKF-A039		DH FC-487;548.1-548.9'	0.30	0.20	0.70	0.00	0.10	0.00	1.30	94.50	1.00	3.20	0.00	1.35	
Seam: I-J zone				Mean		0.25	0.15	1.27	0.03	0.03	0.00	1.73	95.57	0.53	2.17	0.00	1.32	3.71
				Maximum		0.50	0.40	3.70	0.10	0.10	0.00	4.10	96.50	1.00	3.20	0.00	1.36	5.09
				Minimum		0.00	0.00	0.10	0.00	0.00	0.00	0.70	94.50	0.00	0.50	0.00	1.28	2.34
				Std. Deviation		0.18	0.17	1.42	0.04	0.04	0.00	1.39	0.73	0.37	1.07	0.00	0.03	1.38

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
180	EM	J seam	WKF-A022	DH FC-475; 642.2-642.8'	0.10	0.00	0.50	0.00	0.40	0.00	1.00	97.00	0.10	1.90	0.00	1.56	
Seam: J seam			Mean		0.10	0.00	0.50	0.00	0.40	0.00	1.00	97.00	0.10	1.90	0.00	1.56	
			Maximum		0.10	0.00	0.50	0.00	0.40	0.00	1.00	97.00	0.10	1.90	0.00	1.56	
			Minimum		0.10	0.00	0.50	0.00	0.40	0.00	1.00	97.00	0.10	1.90	0.00	1.56	
			Std. Deviation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
729	EM	Unknown		DH UURI#1; 241.9'-243.2'	0.20	1.00	0.30	0.40	0.30	0.20	2.40	90.30	1.50	5.20	0.60		
Seam: Unknown			Mean		0.20	1.00	0.30	0.40	0.30	0.20	2.40	90.30	1.50	5.20	0.60		
			Maximum		0.20	1.00	0.30	0.40	0.30	0.20	2.40	90.30	1.50	5.20	0.60		
			Minimum		0.20	1.00	0.30	0.40	0.30	0.20	2.40	90.30	1.50	5.20	0.60		
			Std.Deviation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

Appendix G. Coal-characteristics Data for the Sego Coal Field.

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard Shard kg/mm²	Vitrn %	Exint %	Inert %
190	SE	FMC	01-19S-22E	Ballard	64.80	20.00	2.40	1.50	0.40	2.40	2.20	6.30	0.00	0.00	0.65	hvBb		84.80	4.30	10.90
567	SE	SCSW	27-20S-20E	Ballard	65.20	1.60	1.00	0.20	1.90	2.80	7.10	19.50	0.50	0.20	0.59	hvBb		66.80	3.10	30.10
575	SE	SCSW	29-20S-20E	Ballard	71.30	5.10	1.90	0.90	1.40	2.60	3.00	13.40	0.40	0.00	0.64	hvBb		76.40	4.20	19.40
576	SE	SCSW	31-20S-20E	Ballard	67.60	10.20	2.60	0.50	2.10	3.50	3.00	10.00	0.50	0.00	0.61	hvBb		77.80	5.20	17.00
583	SE	SCSW	31-19S-21E	Ballard	64.40	8.60	1.70	0.50	0.90	1.90	16.70	5.00	0.30	0.00	0.66	hvBb		73.00	3.10	23.90
Seam: Ballard				Mean	66.60	9.10	1.92	0.72	1.34	2.64	6.40	10.84	0.34	0.04	0.63			75.76	3.98	20.26
				Maximum	71.30	20.00	2.60	1.50	2.10	3.50	16.70	19.50	0.50	0.20	0.66			84.80	5.20	30.10
				Minimum	64.40	1.60	1.00	0.20	0.40	1.90	2.20	5.00	0.00	0.00	0.59			66.80	3.10	10.90
				Std. Deviation	2.57	6.21	0.56	0.45	0.63	0.52	5.43	5.23	0.19	0.08	0.03			5.90	0.80	6.47
192	SE	FMC	01-19S-22E	Chesterfield	59.50	3.90	1.80	0.80	3.10	2.10	0.80	27.80	0.20	0.00	0.71	hvAb		63.40	5.70	30.90
245	SE	FMC	01-19S-22E	Chesterfield	51.30	40.20	2.70	1.00	1.90	1.00	0.60	1.30	0.00	0.00	0.76	hvAb		91.50	5.60	2.90
531	SE	SCSW	29-20S-20E	Chesterfield	73.30	6.20	1.60	0.30	0.80	1.50	4.70	11.10	0.40	0.10	0.59	hvBb		79.50	2.70	17.80
565	SE	SCSW	31-20S-21E	Chesterfield	70.80	8.10	1.90	1.10	1.50	1.40	3.00	12.00	0.20	0.00	0.61	hvBb		78.90	4.50	16.60
568	SE	SCSW	27-20S-20E	Chesterfield	63.30	8.50	1.80	0.90	1.20	3.20	4.50	15.80	0.70	0.10	0.63	hvBb		71.80	3.90	24.30
573	SE	SCSW	29-20S-20E	Chesterfield	74.10	4.40	1.40	0.50	2.90	2.20	3.10	10.90	0.50	0.00	0.63	hvBb		78.50	4.80	16.70
574	SE	SCSW	31-20S-20E	Chesterfield	70.40	7.20	2.70	1.00	1.70	1.80	4.30	10.40	0.30	0.20	0.55	hvCb		77.60	5.40	17.00
Seam: Chesterfield				Mean	66.10	11.21	1.99	0.80	1.87	1.89	3.00	12.76	0.33	0.06	0.64			77.31	4.66	18.03
				Maximum	74.10	40.20	2.70	1.10	3.10	3.20	4.70	27.80	0.70	0.20	0.76			91.50	5.70	2.90
				Minimum	51.30	3.90	1.40	0.30	0.80	1.00	0.60	1.30	0.00	0.00	0.64			63.40	2.70	2.90
				Std. Deviation	7.81	11.94	0.48	0.27	0.79	0.66	1.58	7.36	0.21	0.07	0.07			7.87	1.00	7.92
571	SE	SCSW	36-20S-20E	Lower Ballard	65.20	4.10	1.80	0.80	0.60	1.60	7.50	17.80	0.50	0.10	0.63	hvBb		69.30	3.20	27.50
Seam: Lower Ballard				Mean	65.20	4.10	1.80	0.80	0.60	1.60	7.50	17.80	0.50	0.10	0.63			69.30	3.20	27.50
				Maximum	65.20	4.10	1.80	0.80	0.60	1.60	7.50	17.80	0.50	0.10	0.63			69.30	3.20	27.50
				Minimum	65.20	4.10	1.80	0.80	0.60	1.60	7.50	17.80	0.50	0.10	0.63			69.30	3.20	27.50
				Std. Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00
581	SE	SCSW	07-20S-21E	Lower Nash Cyn.	64.10	8.60	1.80	0.00	2.00	2.70	3.40	16.90	0.50	0.00	0.64	hvBb		72.70	3.80	23.50
Seam: Lower Nash Cyn.				Mean	64.10	8.60	1.80	0.00	2.00	2.70	3.40	16.90	0.50	0.00	0.64			72.70	3.80	23.50
				Maximum	64.10	8.60	1.80	0.00	2.00	2.70	3.40	16.90	0.50	0.00	0.64			72.70	3.80	23.50
				Minimum	64.10	8.60	1.80	0.00	2.00	2.70	3.40	16.90	0.50	0.00	0.64			72.70	3.80	23.50
				Std. Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_0)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
579	SE	SCSW	31-20S-20E	Lwr. Palisade	64.10	16.10	2.30	1.30	1.90	2.10	3.40	8.60	0.20	0.00	0.60	hvBb			80.20	5.50	14.30
Seam: Lwr.Palisade				Mean	64.10	16.10	2.30	1.30	1.90	2.10	3.40	8.60	0.20	0.00	0.60				80.20	5.50	14.30
				Maximum	64.10	16.10	2.30	1.30	1.90	2.10	3.40	8.60	0.20	0.00	0.60				80.20	5.50	14.30
				Minimum	64.10	16.10	2.30	1.30	1.90	2.10	3.40	8.60	0.20	0.00	0.60				80.20	5.50	14.30
				Std. Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00	0.00	0.00
191	SE	FMC	01-19S-22E	Palisade	38.00	45.80	1.80	0.90	1.80	6.60	2.10	3.00	0.00	0.00	0.70	hvBb			83.80	4.50	11.70
236	SE	FMC	01-19S-22E	Palisade	46.50	45.80	0.80	0.90	2.70	0.90	1.00	1.40	0.00	0.00	0.70	hvBb			92.30	4.40	3.30
577	SE	SCSW	29-20S-20E	Palisade	64.50	17.40	2.00	0.60	2.60	2.60	2.60	7.60	0.00	0.10	0.60	hvBb			81.90	5.20	12.90
Seam: Palisade				Mean	49.67	36.33	1.53	0.80	2.37	3.37	1.90	4.00	0.00	0.03	0.67				86.00	4.70	9.30
				Maximum	64.50	45.80	2.00	0.90	2.70	6.60	2.60	7.60	0.00	0.10	0.70				92.30	5.20	12.90
				Minimum	38.00	17.40	0.80	0.60	1.80	0.90	1.00	1.40	0.00	0.00	0.60				81.90	4.40	3.30
				Std. Deviation	11.05	13.39	0.52	0.14	0.40	2.39	0.67	2.63	0.00	0.05	0.05				4.52	0.36	4.27
205	SE	FMC	01-19S-22E	Unknown	54.80	17.90	1.60	1.60	4.10	1.20	2.70	15.80	0.30	0.00	0.72	hvAb			72.70	7.30	20.00
256	SE	PCH	31-17S-23E	Unknown	50.70	33.10	2.10	1.00	2.50	3.40	3.20	3.80	0.00	0.20	0.73	hvAb			83.80	5.60	10.60
564	SE	SCSW	31-20S-21E	Unknown	56.80	13.30	2.40	1.00	1.00	2.40	5.40	17.20	0.50	0.00	0.64	hvBb			70.10	4.40	25.50
566	SE	SCSW	27-20S-20E	Unknown	61.30	17.10	1.20	0.40	1.00	2.10	3.20	13.20	0.50	0.00	0.62	hvBb			78.40	2.60	19.00
569	SE	SCSW	36-20S-20E	Unknown	68.10	7.90	2.90	1.60	1.80	2.10	4.00	11.20	0.30	0.10	0.63	hvBb			76.00	6.30	17.70
582	SE	SCSW	32-20S-21E	Unknown	58.20	12.10	2.80	0.50	1.50	2.80	5.70	15.90	0.50	0.00	0.62	hvBb			70.30	4.80	24.90
Seam: Unknown				Mean	58.32	16.90	2.17	1.02	1.98	2.33	4.08	12.85	0.35	0.05	0.66				75.22	5.17	19.62
				Maximum	68.10	33.10	2.90	1.60	4.10	3.40	4.70	17.20	0.50	0.20	0.73				83.80	7.30	25.50
				Minimum	50.70	7.90	1.20	0.40	1.00	1.20	2.70	3.80	0.00	0.00	0.62				70.10	2.60	10.60
				Std. Deviation	5.44	7.96	0.61	0.47	1.08	0.68	1.14	4.50	0.18	0.08	0.06				4.86	1.49	4.97
572	SE	SCSW	36-20S-20E	Upper Ballard	63.70	9.50	1.80	1.20	1.80	3.10	4.00	14.20	0.60	0.10	0.61	hvBb			73.20	4.80	22.00
Seam: Upper Ballard				Mean	63.70	9.50	1.80	1.20	1.80	3.10	4.00	14.20	0.60	0.10	0.61				73.20	4.80	22.00
				Maximum	63.70	9.50	1.80	1.20	1.80	3.10	4.00	14.20	0.60	0.10	0.61				73.20	4.80	22.00
				Minimum	63.70	9.50	1.80	1.20	1.80	3.10	4.00	14.20	0.60	0.10	0.61				73.20	4.80	22.00
				Std. Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00	0.00	0.00
580	SE	SCSW	07-20S-21E	U. Nash Canyon	72.30	5.30	1.30	0.50	1.10	2.90	4.20	12.00	0.40	0.00	0.58	hvBb			77.60	2.90	19.50
Seam: U. Nash Canyon				Mean	72.30	5.30	1.30	0.50	1.10	2.90	4.20	12.00	0.40	0.00	0.58				77.60	2.90	19.50
				Maximum	72.30	5.30	1.30	0.50	1.10	2.90	4.20	12.00	0.40	0.00	0.58				77.60	2.90	19.50
				Minimum	72.30	5.30	1.30	0.50	1.10	2.90	4.20	12.00	0.40	0.00	0.58				77.60	2.90	19.50
				Std. Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00	0.00	0.00

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
578	SE	SCSW	31-20S-20E	Upper Palisade	69.10	10.00	2.30	2.10	2.30	3.10	2.80	7.90	0.40	0.00	0.63	hvBb			79.10	6.70	14.20
Seam: Upper Palisade				Mean	69.10	10.00	2.30	2.10	2.30	3.10	2.80	7.90	0.40	0.00	0.63				79.10	6.70	14.20
				Maximum	69.10	10.00	2.30	2.10	2.30	3.10	2.80	7.90	0.40	0.00	0.63				79.10	6.70	14.20
				Minimum	69.10	10.00	2.30	2.10	2.30	3.10	2.80	7.90	0.40	0.00	0.63				79.10	6.70	14.20
				Std. Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00	0.00	0.00

Appendix G. Coal-characteristics Data for the Sego Coal Field (continued)

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
190	SE	Ballard	FMC-A001	DH-5;350.7-352.8'	0.40	0.00	0.00	0.00	0.00	0.00	0.40	95.70	1.50	2.40	0.00	1.36	4.94
567	SE	Ballard		Outcr. smpl.;N9-8-2	0.80	0.10	0.80	0.10	0.00	00.0	1.80	96.90	0.20	1.00	0.10	1.43	2.96
575	SE	Ballard		Outcr. smpl.;N9-15-B1	0.60	0.00	0.10	0.20	0.10	0.20	1.20	95.80	0.90	1.90	0.20	1.46	4.62
576	SE	Ballard		Outcr. smpl.;N9-15-B2	0.90	0.20	0.10	0.20	0.20	0.30	1.90	94.80	0.50	2.60	0.20	1.53	4.02
583	SE	Ballard		Outcrop smpl.;N11-5-B1	0.40	0.00	0.00	0.40	0.10	0.00	0.90	96.90	0.50	1.70	0.00	1.47	2.20
Seam: Ballard				Mean	0.62	0.06	0.20	0.18	0.08	0.10	1.24	96.02	0.72	1.92	0.10	1.45	3.75
				Maximum	0.90	0.20	0.80	0.40	0.20	0.30	1.90	96.90	1.50	2.60	0.20	1.53	4.94
				Minimum	0.40	0.00	0.00	0.00	0.00	0.00	0.40	94.80	0.20	1.00	0.00	1.36	2.20
				Std.Deviation	0.20	0.08	0.30	0.13	0.07	0.13	0.56	0.80	0.45	0.56	0.09	0.06	1.03
192	SE	Chesterfield	FMC-A003	DH-5;311.1-314.5'	2.70	0.10	0.30	0.00	0.00	0.00	3.10	94.30	0.80	1.80	0.00	1.32	3.13
245	SE	Chesterfield	FMC-A006	DH-5;329.8-329.9'	1.70	0.00	0.20	0.00	0.00	0.00	1.90	94.40	1.00	2.70	0.00	1.28	
531	SE	Chesterfield		Blackjack Mine	0.20	0.10	0.10	0.40	0.00	0.00	0.80	97.30	0.30	1.60	0.00	1.41	7.40
565	SE	Chesterfield		Outcrop smpl.;N2-27-1	0.70	0.00	0.30	0.10	0.00	0.40	1.50	95.50	1.10	1.90	0.00	1.52	5.63
568	SE	Chesterfield		Outcrop smpl.;N9-8-3	0.10	0.40	0.30	0.10	0.20	0.10	1.20	96.10	0.90	1.80	0.00	1.48	7.73
573	SE	Chesterfield		Outcrop smpl.;N9-15-CH1	1.40	0.40	0.30	0.50	0.00	0.30	2.90	95.20	0.50	1.40	0.00	1.48	10.50
574	SE	Chesterfield		Outcrop smpl.;N9-15-CH2	0.70	0.30	0.20	0.30	0.10	0.10	1.70	94.60	1.00	2.70	0.00	1.47	2.45
Seam: Chesterfield				Mean	1.07	0.19	0.24	0.20	0.04	0.13	1.87	95.34	0.80	1.99	0.00	1.42	6.14
				Maximum	2.70	0.40	0.30	0.50	0.20	0.40	3.10	97.30	1.10	2.70	0.00	1.52	10.50
				Minimum	0.10	0.00	0.10	0.00	0.00	0.00	0.80	94.30	0.30	1.40	0.00	1.28	2.45
				Std.Deviation	0.86	0.16	0.07	0.19	0.07	0.15	0.79	1.00	0.27	0.48	0.00	0.08	2.77
571	SE	Lower Ballard		Outcrop smpl.;N9-10-2A	0.20	0.00	0.20	0.20	0.00	0.00	0.60	96.80	0.80	1.80	0.00	1.51	11.25
Seam: Lower Ballard				Mean	0.20	0.00	0.20	0.20	0.00	0.00	0.60	96.80	0.80	1.80	0.00	1.51	11.25
				Maximum	0.20	0.00	0.20	0.20	0.00	0.00	0.60	96.80	0.80	1.80	0.00	1.51	11.25
				Minimum	0.20	0.00	0.20	0.20	0.00	0.00	0.60	96.80	0.80	1.80	0.00	1.51	11.25
				Std.Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
581	SE	Lower Nash Cyn.		Outcrop smpl.;N9-17-CH	0.20	0.10	0.80	0.30	0.20	0.40	2.00	96.20	0.00	1.80	0.00	1.44	6.07
Seam: Lower Nash Cyn.				Mean	0.20	0.10	0.80	0.30	0.20	0.40	2.00	96.20	0.00	1.80	0.00	1.44	6.07
				Maximum	0.20	0.10	0.80	0.30	0.20	0.40	2.00	96.20	0.00	1.80	0.00	1.44	6.07
				Minimum	0.20	0.10	0.80	0.30	0.20	0.40	2.00	96.20	0.00	1.80	0.00	1.44	6.07
				Std.Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
579	SE	Lwr. Palisade		Outcrop smpl.;N9-15-P2	1.10	0.10	0.20	0.20	0.10	0.20	1.90	94.50	1.30	2.30	0.00	1.50	4.30
Seam: Lwr. Palisade				Mean	1.10	0.10	0.20	0.20	0.10	0.20	1.90	94.50	1.30	2.30	0.00	1.50	4.30
				Maximum	1.10	0.10	0.20	0.20	0.10	0.20	1.90	94.50	1.30	2.30	0.00	1.50	4.30
				Minimum	1.10	0.10	0.20	0.20	0.10	0.20	1.90	94.50	1.30	2.30	0.00	1.50	4.30
				Std.Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
191	SE	Palisade	FMC-A002	DH-5;427.0-427.6'	1.10	0.00	0.30	0.10	0.30	0.00	1.80	95.50	0.90	1.80	0.00	1.33	
236	SE	Palisade	FMC-A005	DH-5;436-436.9	2.70	0.00	0.00	0.00	0.00	0.00	2.70	95.60	0.90	0.80	0.00	1.34	4.71
577	SE	Palisade		Outcrop smpl.;N9-15-P1	1.60	0.10	0.30	0.30	0.00	0.30	2.60	94.80	0.60	2.00	0.00	1.53	5.56
Seam: Palisade				Mean	1.80	0.03	0.20	0.13	0.10	0.10	2.37	95.30	0.80	1.53	0.00	1.40	5.13
				Maximum	2.70	0.10	0.30	0.30	0.30	0.30	2.70	95.60	0.90	2.00	0.00	1.53	5.56
				Minimum	1.10	0.00	0.00	0.00	0.00	0.00	1.80	94.80	0.60	0.80	0.00	1.33	4.71
				Std.Deviation	0.67	0.05	0.14	0.12	0.14	0.14	0.40	0.36	0.14	0.52	0.00	0.09	0.43
205	SE	Unknown	FMC-A004	DH-5; 467.7-468.7'	3.60	0.00	0.30	0.00	0.20	0.00	4.10	92.70	1.60	1.60	0.00	1.38	6.11
256	SE	Unknown	PCH-A001	USGS DH-4	2.10	0.00	0.30	0.00	0.10	0.00	2.50	94.40	1.00	2.10	0.00	1.33	6.33
564	SE	Unknown		Outcrop smpl.;N2-17-1	0.20	0.30	0.40	0.00	0.00	0.10	1.00	95.60	1.00	2.40	0.00	1.52	11.70
566	SE	Unknown		Outcrop smpl.;N9-8-1	0.30	0.20	0.20	0.10	0.00	0.00	0.80	97.40	0.40	1.20	0.20	1.50	12.74
569	SE	Unknown		Outcrop smpl.;N9-10-1A	1.00	0.30	0.20	0.20	0.00	0.10	1.80	93.70	1.60	2.90	0.00	1.45	10.92
582	SE	Unknown		Outcrop smpl.;N9-18-13-1	0.60	0.10	0.10	0.20	0.00	0.30	1.30	95.20	0.50	2.80	0.20	1.53	2.99
Seam: Unknown				Mean	1.30	0.15	0.25	0.08	0.05	0.08	1.92	94.88	1.02	2.17	0.07	1.45	8.46
				Maximum	3.60	0.30	0.40	0.20	0.20	0.30	4.10	97.40	1.60	2.90	0.20	1.53	12.74
				Minimum	0.20	0.00	0.10	0.00	0.00	0.00	0.80	92.70	0.40	1.20	0.00	1.33	2.99
				Std.Deviation	1.21	0.18	0.10	0.09	0.09	0.08	0.11	1.48	0.47	0.61	0.09	0.07	3.53
572	SE	Upper Ballard		Outcrop smpl.;N9-10-2B	1.10	0.10	0.20	0.20	0.00	0.10	1.70	95.20	1.20	1.80	0.10	1.51	10.29
Seam: Upper Balard				Mean	1.10	0.10	0.20	0.20	0.00	0.10	1.70	95.20	1.20	1.80	0.10	1.51	10.29
				Maximum	1.10	0.10	0.20	0.20	0.00	0.10	1.70	95.20	1.20	1.80	0.10	1.51	10.29
				Minimum	1.10	0.10	0.20	0.20	0.00	0.10	1.70	95.20	1.20	1.80	0.10	1.51	10.29
				Std.Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
580	SE	U.Nash Canyon		Outcrop smpl.;N9-17-CH	0.80	0.00	0.30	0.00	0.00	0.00	1.10	97.10	0.50	1.30	0.00	1.49	6.43
Seam: U.Nash Canyon				Mean	0.80	0.00	0.30	0.00	0.00	0.00	1.10	97.10	0.50	1.30	0.00	1.49	6.43
				Maximum	0.80	0.00	0.30	0.00	0.00	0.00	1.10	97.10	0.50	1.30	0.00	1.49	6.43
				Minimum	0.80	0.00	0.30	0.00	0.00	0.00	1.10	97.10	0.50	1.30	0.00	1.49	6.43
				Std.Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
578	SE	Upper Palisade		Outcrop smpl.; N9-15-P2	0.50	0.60	0.60	0.30	0.00	0.30	2.30	93.30	2.10	2.30	0.00		
Seam: Upper Palisade				Mean	0.50	0.60	0.60	0.30	0.00	0.30	2.30	93.30	2.10	2.30	0.00		
				Maximum	0.50	0.60	0.60	0.30	0.00	0.30	2.30	93.30	2.10	2.30	0.00		
				Minimum	0.50	0.60	0.60	0.30	0.00	0.30	2.30	93.30	2.10	2.30	0.00		
				Std.Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

Appendix H. Coal-characteristics Data for the Henry Mountains Coal Field. (most samples from weathered outcrops)

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
444	HM	MPSW	19-34S-09E	Dakota Fm	58.50	29.10	1.60	1.70	2.40	2.20	2.10	2.40	0.00	0.00	0.57	hvBb			87.60	5.70	6.70
445	HM	MPSW	20-34S-09E	Dakota Fm	72.80	8.70	4.30	0.70	3.40	4.10	3.10	2.70	0.10	0.10	0.52	hvCb			81.50	8.40	10.10
446	HM	WBNE	07-33S-08E	Dakota Fm	4.70	0.50	1.50	0.20	0.40	0.50	45.20	47.00	0.00	0.00	0.57	hvBb			5.20	2.10	92.70
447	HM	WBNE	17-33S-08E	Dakota Fm	27.70	3.50	2.80	0.90	0.90	6.00	22.10	35.60	0.50	0.00	0.46	subb			31.20	4.60	64.20
448	HM	WBNE	29-33S-08E	Dakota Fm	66.20	9.60	2.00	1.40	1.80	10.90	3.50	4.50	0.10	0.00	0.56	hvCb			75.80	5.20	19.00
449	HM		33-33S-08E	Dakota Fm	29.50	2.60	2.50	1.20	1.40	6.20	21.40	35.10	0.10	0.00	0.58	hvBb			32.10	5.10	62.80
450	HM		04-34S-08E	Dakota Fm	39.30	4.80	1.10	0.00	0.90	18.00	9.80	26.00	0.10	0.00	0.61	hvBb			44.10	2.00	53.90
451	HM	MPSW	14-34S-08E	Dakota Fm	53.40	2.70	2.90	0.80	2.60	3.70	12.40	21.50	0.00	0.00	0.49	hvCb			56.10	6.30	37.60
452	HM	MPSW	24-34S-08E	Dakota Fm	46.80	6.40	5.50	2.90	2.50	8.70	17.40	9.40	0.40	0.00	0.53	hvCb			53.20	10.90	35.90
453	HM			Dakota Fm	36.10	3.80	2.30	1.80	0.90	4.30	25.00	25.60	0.20	0.00	0.49	hvCb			39.90	5.00	55.10
454	HM			Dakota Fm	38.50	8.50	1.60	1.00	0.80	3.60	22.50	23.50	0.00	0.00	0.49	hvCb			47.00	3.40	49.60
455	HM	MENW	12-31S-08E	Dakota Fm	18.90	6.30	2.20	0.90	0.60	1.30	33.30	36.40	0.10	0.00	0.53	hvCb			25.20	3.70	71.10
544	HM			Dakota Fm	53.10	3.30	2.20	0.50	2.50	3.60	10.20	24.00	0.40	0.20	0.49	subb			56.40	5.20	38.40
545	HM			Dakota Fm	68.90	3.30	1.70	0.50	1.80	3.40	5.40	14.60	0.40	0.00	0.54	hvCb			72.20	4.00	23.80
546	HM			Dakota Fm	61.10	1.80	1.30	1.00	1.50	2.70	4.80	25.20	0.40	0.20	0.47	hvCb			62.90	3.80	33.30
547	HM			Dakota Fm	64.10	4.30	1.30	0.80	2.00	2.40	5.40	19.60	0.00	0.10	0.48	hvCb			68.40	4.10	27.50
548	HM			Dakota Fm	37.50	3.40	1.90	1.10	4.10	3.20	10.30	38.20	0.20	0.10	0.56	hvCb			40.90	7.10	52.00
549	HM			Dakota Fm	49.60	3.80	4.30	0.40	5.10	3.00	19.50	14.00	0.30	0.00	0.50	hvCb			53.40	9.80	36.80
550	HM			Dakota Fm	58.50	7.70	1.70	0.20	1.60	4.10	7.90	18.10	0.20	0.00	0.45	subb			66.20	3.50	30.30
551	HM			Dakota Fm	50.50	2.30	2.70	0.50	3.20	3.00	11.00	26.50	0.20	0.10	0.48	hvCb			52.80	6.40	40.80
552	HM			Dakota Fm	60.90	4.00	1.50	0.20	2.10	2.70	8.10	19.80	0.40	0.30	0.56	hvCb			64.90	3.80	31.30
606	HM	NSE	20-31S-08E	Dakota Fm	28.70	0.50	3.10	0.80	4.40	0.00	11.50	50.90	0.10	0.00	0.50	hvCb			29.20	8.30	62.50
607	HM	NSE	17-31S-08E	Dakota Fm	23.60	1.10	3.70	3.60	2.50	0.70	14.70	49.90	0.00	0.20	0.53	hvCb			24.70	9.80	65.50
Seam: Dakota Fm				Mean	45.60	5.30	2.42	1.00	2.15	4.27	14.20	24.80	0.18	0.06	0.52				50.91	5.57	43.52
				Maximum	72.80	29.10	5.50	3.60	5.10	18.00	45.20	50.90	0.50	0.30	0.61				87.60	10.90	92.70
				Minimum	4.70	0.50	1.10	0.00	0.40	0.00	0.00	2.10	2.40	0.00	0.00				5.20	2.00	6.70
				Std. Deviation	17.44	5.66	1.10	0.83	1.22	3.80	10.30	13.70	0.16	0.09	0.04				20.04	2.41	20.32

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard Shard kg/mm²	Vitrn %	Exint %	Inert %
430	HM	MESE	12-32S-09E	Ferron Ss Mbr.	63.20	10.70	2.50	0.60	1.90	5.80	5.30	9.90	0.10	0.00	0.57	hvCb		73.90	5.00	21.10
431	HM	MESE	12-32S-09E	Ferron Ss Mbr.	55.10	3.40	2.30	3.50	2.60	4.50	9.30	19.30	0.00	0.00	0.59	hvBb		58.50	8.40	33.10
432	HM	MESE	12-32S-09E	Ferron Ss Mbr.	76.90	4.20	4.00	2.10	1.90	3.10	3.00	4.80	0.00	0.00	0.55	hvCb		81.10	8.00	10.90
433	HM	MESE	12-32S-09E	Ferron Ss Mbr.	59.10	3.60	1.20	3.20	1.60	4.20	6.80	20.00	0.30	0.00	0.60	hvBb		62.70	6.00	31.30
434	HM	MESE	12-32S-09E	Ferron Ss Mbr.	58.90	7.60	2.70	1.60	1.50	5.40	6.60	14.90	0.00	0.80	0.60	hvBb		66.50	5.80	27.70
435	HM	MESE	12-32S-09E	Ferron Ss Mbr.	71.60	5.00	2.30	1.80	0.70	4.00	6.40	8.00	0.20	0.00	0.63	hvBb		76.60	4.80	18.60
436	HM	MESE	12-32S-09E	Ferron Ss Mbr.	70.20	5.80	1.00	1.00	0.50	3.90	7.30	9.90	0.40	0.00	0.62	hvBb		76.00	2.50	21.50
437	HM	MESE	12-32S-09E	Ferron Ss Mbr.	66.00	8.70	1.90	0.70	1.60	4.30	4.70	11.90	0.10	0.10	0.63	hvBb		74.70	4.20	21.10
438	HM	MESE	13-32S-09E	Ferron Ss Mbr.	60.40	6.70	1.80	2.20	1.20	6.70	8.10	12.70	0.10	0.10	0.61	hvBb		67.10	5.20	27.70
440	HM	MESE	08-32S-10E	Ferron Ss Mbr.	74.70	7.90	1.00	0.70	1.00	4.60	4.50	5.60	0.00	0.00	1.20	mvb		82.60	2.70	14.70
456	HM	MPSW	19-34S-09E	Ferron Ss Mbr.	49.60	7.90	3.00	1.10	3.00	5.00	10.50	19.80	0.10	0.00	0.51	hvCb		57.50	7.10	35.40
457	HM	MPSW	29-34S-09E	Ferron Ss Mbr.	52.90	5.80	2.50	1.50	3.80	6.20	14.70	12.40	0.10	0.10	0.52	hvCb		58.70	7.80	33.50
458	HM	WBSE	28-34S-08E	Ferron Ss Mbr.	47.70	7.80	3.90	1.10	4.70	6.50	12.90	15.20	0.20	0.00	0.51	hvCb		55.50	9.70	34.80
464	HM			Ferron Ss Mbr.	55.20	6.10	4.30	1.40	2.10	4.30	10.50	15.80	0.30	0.00	0.46	subb		61.30	7.80	30.90
465	HM			Ferron Ss Mbr.	57.10	10.90	3.50	0.90	1.40	5.20	10.80	9.90	0.30	0.00	0.50	hvCb		68.00	5.80	26.20
466	HM	FBNW	12-28S-08E	Ferron Ss Mbr.	54.50	18.50	1.60	1.40	0.60	3.70	7.80	11.80	0.10	0.00	0.46	subb		73.00	3.60	23.40
467	HM			Ferron Ss Mbr.	43.10	31.80	2.30	0.80	1.30	4.30	6.90	9.50	0.00	0.00	0.49	hvCb		74.90	4.40	20.70
486	HM	FSE	35-28S-08E	Ferron Ss Mbr.	58.90	18.00	4.90	4.20	0.80	2.30	4.80	5.80	0.30	0.00	0.50	hvCb		76.90	9.90	13.20
487	HM	FSE	21-29S-08E	Ferron Ss Mbr.	68.40	8.60	2.20	1.90	0.60	6.70	4.50	6.50	0.60	0.00	0.50	hvCb		77.00	4.70	18.30
488	HM	FSE	28-29S-08E	Ferron Ss Mbr.	79.90	10.50	2.10	2.10	0.90	3.60	0.20	0.60	0.00	0.10	0.54	hvCb		90.40	5.10	4.50
489	HM	NNE	04-30S-08E	Ferron Ss Mbr.	39.60	2.60	4.60	2.70	6.50	2.50	10.40	30.90	0.20	0.00	0.53	hvCb		42.20	13.80	44.00
490	HM	NNE	27-30S-08E	Ferron Ss Mbr.	40.10	6.00	2.80	7.00	3.80	0.70	14.20	25.30	0.10	0.00	0.47	subb		46.10	13.60	40.30
491	HM	NNE	22-30S-08E	Ferron Ss Mbr.	49.00	1.60	2.70	2.30	2.50	2.00	14.20	25.60	0.10	0.00	0.51	hvCb		50.60	7.50	41.90
492	HM	NNE	15-30S-08E	Ferron Ss Mbr.	58.00	15.90	1.70	3.40	2.90	3.90	4.20	9.70	0.20	0.10	0.54	hvCb		73.90	8.00	18.10
493	HM	NSE	09-32S-08E	Ferron Ss Mbr.	57.70	11.50	4.00	7.40	4.20	2.80	2.60	9.70	0.10	0.00	0.44	subb		69.20	15.60	15.20
494	HM	NSE	16-32S-08E	Ferron Ss Mbr.	40.30	7.90	3.70	0.90	5.40	6.60	11.70	23.30	0.10	0.10	0.51	hvBb		48.20	10.00	41.80
501	HM	MPSW	22-34S-09E	Ferron Ss Mbr.	62.90	3.50	2.60	6.40	3.30	1.00	4.70	15.60	0.00	0.00	0.47	hvCb		66.40	12.30	21.30
502	HM	MPSW	22-34S-09E	Ferron Ss Mbr.	60.00	7.00	3.60	2.70	3.50	3.30	6.80	13.00	0.10	0.00	0.54	hvCb		67.00	9.80	23.20
503	HM	MPSW	22-34S-09E	Ferron Ss Mbr.	53.50	12.70	4.90	2.40	4.20	2.70	4.90	14.30	0.40	0.00	0.52	hvCb		66.20	11.50	22.30
504	HM	MPSW	22-34S-09E	Ferron Ss Mbr.	59.60	15.90	2.70	1.30	2.80	2.50	4.50	10.40	0.30	0.00	0.49	hvCb		75.50	6.80	17.70
505	HM	MPSE	25-34S-10E	Ferron Ss Mbr.	54.10	5.60	2.60	1.90	5.50	2.30	8.60	19.10	0.30	0.00	0.50	hvCb		59.70	10.00	30.30
506	HM	MPSE	25-34S-10E	Ferron Ss Mbr.	60.40	6.40	4.30	1.70	5.50	1.30	5.70	14.40	0.30	0.00	0.53	hvCb		66.80	11.50	21.70
507	HM	MPSW	23-34S-09E	Ferron Ss Mbr.	52.90	4.10	3.50	1.00	5.60	3.90	10.90	17.70	0.40	0.00	0.52	hvCb		57.00	10.10	32.90
508	HM	MPSW	23-34S-09E	Ferron Ss Mbr.	58.60	6.10	2.50	2.20	3.10	1.90	7.10	17.90	0.60	0.00	0.45	subb		64.70	7.80	27.50
509	HM	MPSW	23-34S-09E	Ferron Ss Mbr.	60.70	7.30	2.90	1.50	3.90	1.70	6.30	15.70	0.00	0.00	0.55	hvCb		68.00	8.30	23.70
510	HM	MPSE	19-34S-10E	Ferron Ss Mbr.	45.70	4.30	2.80	1.70	4.30	3.00	10.30	27.60	0.30	0.00	0.54	hvCb		50.00	8.80	41.20
511	HM	MPSE	29-34S-10E	Ferron Ss Mbr.	47.70	2.30	4.60	2.50	2.80	2.10	10.40	27.00	0.60	0.00	0.52	hvCb		50.00	9.90	40.10
512	HM	MPSE	29-34S-10E	Ferron Ss Mbr.	48.10	1.00	3.50	2.60	4.70	3.10	12.20	24.20	0.60	0.00	0.55	hvCb		49.10	10.80	40.10
513	HM	MPSE	34-34S-10E	Ferron Ss Mbr.	47.80	6.80	2.60	1.90	2.90	2.00	12.20	23.00	0.80	0.00	0.52	hvCb		54.60	7.40	38.00
514	HM	MPSE	34-34S-10E	Ferron Ss Mbr.	48.80	5.80	2.50	1.80	1.50	2.60	11.60	25.20	0.20	0.00	0.51	hvCb		54.60	5.80	39.60
515	HM	MPSE		Ferron Ss Mbr.	52.50	4.90	3.70	3.70	2.60	1.70	9.10	21.40	0.40	0.00	0.52	hvCb		57.40	10.00	32.60
516	HM	MPSE		Ferron Ss Mbr.	48.00	3.80	4.00	1.30	2.40	4.10	12.70	23.20	0.40	0.10	0.55	hvCb		51.80	7.70	40.50
517	HM	FBSW	02-29S-09E	Ferron Ss Mbr.	54.70	5.90	3.10	1.80	1.80	3.60	9.10	19.60	0.40	0.00	0.53	hvCb		60.60	6.70	32.70
518	HM	FBSW	02-29S-09E	Ferron Ss Mbr.	57.70	5.00	3.40	2.20	9.40	2.50	5.90	13.60	0.30	0.00	0.57	hvBb		62.70	15.00	22.30
519	HM	FBSW	25-28S-09E	Ferron Ss Mbr.	48.00	1.20	3.40	1.00	3.20	2.40	12.60	28.00	0.20	0.00	0.53	hvCb		49.20	7.60	43.20
520	HM	FBSW	02-29S-09E	Ferron Ss Mbr.	55.30	6.80	2.70	1.60	11.50	12.50	1.30	8.30	0.00	0.00	0.53	hvCb		62.10	15.80	22.10
521	HM	FBSW	02-29S-09E	Ferron Ss Mbr.	52.40	0.40	2.90	1.20	4.80	0.70	16.90	20.50	0.20	0.00	0.51	hvCb		52.80	8.90	38.30

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
522	HM	FBSW	12-29S-09E	Ferron Ss Mbr.	49.40	3.10	3.20	2.10	4.30	2.70	11.80	23.20	0.20	0.00	0.54	hvCb			52.50	9.60	37.90
523	HM	FBSW	12-29S-09E	Ferron Ss Mbr.	16.20	5.00	1.80	1.40	0.10	1.00	14.50	59.50	0.50	0.00	0.54	hvCb			21.20	3.30	75.50
524	HM	FBSE	18-29S-10E	Ferron Ss Mbr.	31.00	5.80	2.70	0.90	3.10	1.90	12.70	41.70	0.20	0.00	0.47	subb			36.80	6.70	56.50
525	HM	FBSE	20-29S-10E	Ferron Ss Mbr.	31.60	2.90	3.10	1.90	3.90	1.90	14.30	40.00	0.40	0.00	0.56	hvCb			34.50	8.90	56.60
526	HM	FBSW	23-28S-09E	Ferron Ss Mbr.	48.80	25.20	0.10	0.10	0.30	1.50	4.80	18.90	0.30	0.00	0.93	hvAb			74.00	0.50	25.50
527	HM	MENE	16-30S-10E	Ferron Ss Mbr.	56.90	16.10	2.00	3.40	1.40	1.00	4.40	14.70	0.10	0.00	0.51	hvCb			73.00	6.80	20.20
528	HM	MENE	16-30S-10E	Ferron Ss Mbr.	48.60	7.10	2.30	2.20	3.30	3.70	11.60	21.00	0.20	0.00	0.57	hvCb			55.70	7.80	36.50
529	HM	MENE	33-30S-10E	Ferron Ss Mbr.											3.30	anth.			0.00	0.00	0.00
530	HM		21-27S-10E	Ferron Ss Mbr.	44.80	3.50	0.60	0.60	1.20	1.50	13.60	33.80	0.40	0.00	0.59	hvBb			48.30	2.40	49.30
597	HM	NSE	19-32S-08E	Ferron Ss Mbr.	57.50	4.40	3.00	4.00	4.50	1.80	4.20	19.90	0.70	0.00	0.49	hvCb			61.90	11.50	26.60
599	HM	WBNE	31-32S-08E	Ferron Ss Mbr.	39.50	3.40	5.10	3.80	3.50	1.40	7.00	36.20	0.10	0.00	0.48	hvCb			42.90	12.40	44.70
600	HM	WBNE	06-33S-08E	Ferron Ss Mbr.	50.10	14.10	2.80	5.90	4.00	0.00	13.60	9.50	0.00	0.00	0.48	hvCb			64.20	12.70	23.10
601	HM		10-34S-08E	Ferron Ss Mbr.	45.00	5.50	1.80	10.80	2.80	0.00	10.30	23.40	0.40	0.00	0.44	subb			50.50	15.40	34.10
704	HM	FBNW	02-27S-09E	Ferron Ss Mbr.	62.20	3.80	3.20	1.20	3.40	2.30	6.80	16.40	0.70	0.00	0.51	hvCb			66.00	7.80	26.20
Seam: Ferron Ss Mbr.				Mean	53.65	7.53	2.85	2.34	3.07	3.24	8.61	18.45	0.25	0.03	0.54				61.18	8.26	30.57
				Maximum	79.90	31.80	5.10	10.80	11.50	12.50	16.90	59.50	0.80	0.80	3.30				90.40	15.80	75.50
				Minimum	16.20	0.40	0.10	0.10	0.10	0.00	0.20	0.60	0.00	0.00	0.44				21.20	0.50	4.50
				Std. Deviation	10.91	5.68	1.05	1.87	2.05	2.06	3.83	10.04	0.20	0.11	0.11				12.76	3.44	12. 24
469	HM			Ferron Ss-lwr.	42.30	3.60	6.00	0.90	1.50	6.70	11.40	27.50	0.10	0.00	0.52	hvCb			45.90	8.40	45.70
484	HM			Ferron Ss-lwr.	70.60	8.70	3.50	0.90	3.10	1.60	4.90	6.40	0.30	0.00	0.52	hvCb			79.30	7.50	13.20
496	HM	MPSE	32-34S-10E	Ferron Ss-lwr.	39.30	3.40	3.60	3.10	6.30	2.30	15.60	26.20	0.20	0.00	0.53	hvCb			42.70	13.00	44.30
498	HM	MPSE	05-35S-10E	Ferron Ss-lwr.	43.80	4.30	2.40	2.00	2.70	1.80	18.80	23.80	0.40	0.00	0.50	hvCb			48.10	7.10	44.80
500	HM	MPSE	26-34S-10E	Ferron Ss-lwr.	49.10	2.40	4.00	1.60	4.20	5.20	11.90	21.10	0.40	0.10	0.47	subb			51.50	9.80	38.70
605	HM	MPSW	24-34S-08E	Ferron Ss-lwr.	38.20	1.10	3.60	1.40	6.00	2.80	9.60	37.00	0.20	0.10	0.55	hvCb			39.30	11.00	49.70
Seam: Ferron Ss-lwr.				Mean	47.22	3.92	3.85	1.65	3.97	3.40	12.03	23.67	0.27	0.03	0.52				51.13	9.47	39.40
				Maximum	70.60	8.70	6.00	3.10	6.30	6.70	18.80	37.00	0.40	0.10	0.55				79.30	13.00	49.70
				Minimum	38.20	1.10	2.40	0.90	1.50	1.60	4.90	6.40	0.10	0.00	0.47				39.30	7.10	13.20
				Std. Deviation	11.03	2.37	1.08	0.75	1.74	1.89	4.39	9.16	0.11	0.05	0.03				13.17	2.06	12.15
603	HM	MPSW	24-34S-08E	Ferron Ss-mid.	41.30	0.20	4.90	2.70	3.50	0.30	5.30	41.30	0.50	0.00	0.48	hvCb			41.50	11.10	47.40
604	HM	MPSW	24-34S-08E	Ferron Ss-mid.	44.70	0.80	4.00	1.50	5.30	3.40	9.10	31.00	0.20	0.00	0.49	hvCb			45.50	10.80	43.70
Seam: Ferron Ss-mid.				Mean	43.00	0.50	4.45	2.10	4.40	1.85	7.20	36.15	0.35	0.00	0.48				43.50	10.95	45.55
				Maximum	44.70	0.80	4.90	2.70	5.30	3.40	9.10	41.30	0.50	0.00	0.49				45.50	11.10	47.40
				Minimum	41.30	0.20	4.00	1.50	3.50	0.30	5.30	31.00	0.20	0.00	0.48				41.50	10.80	43.70
				Std. Deviation	1.70	0.30	0.45	0.60	0.90	1.55	1.90	5.15	0.15	0.00	0.00				2.00	0.15	1.85

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
459	HM			Ferron Ss-upp.	45.80	10.30	3.90	0.30	3.50	5.10	14.10	16.10	0.60	0.30	0.49	hvCb			56.10	7.70	36.20
460	HM			Ferron Ss-upp.	43.60	14.80	3.10	1.00	4.00	5.80	13.10	14.20	0.40	0.00	0.48	hvCb			58.40	8.10	33.50
461	HM			Ferron Ss-upp.	53.70	12.10	2.60	1.70	1.60	4.40	9.40	14.30	0.20	0.00	0.54	hvCb			65.80	5.90	28.30
462	HM			Ferron Ss-upp.	50.20	10.80	3.60	1.20	1.70	5.20	11.80	15.40	0.10	0.00	0.50	hvCb			61.00	6.50	32.50
463	HM			Ferron Ss-upp.	49.00	14.30	4.30	0.90	1.30	4.20	9.20	16.50	0.20	0.10	0.52	hvCb			63.30	6.50	30.20
468	HM			Ferron Ss-upp.	52.00	2.70	3.70	1.10	1.40	6.30	11.50	21.10	0.20	0.00	0.52	hvCb			54.70	6.20	39.10
470	HM	FBNW	16-27S-09E	Ferron Ss-upp.	50.40	8.40	3.40	0.90	1.70	7.50	11.10	16.50	0.10	0.00	0.55	hvCb			58.80	6.00	35.20
471	HM	FBNW	16-27S-09E	Ferron Ss-upp.	51.20	11.50	1.90	1.00	2.40	4.60	9.40	17.90	0.10	0.00	0.47	hvCb			62.70	5.30	32.00
472	HM			Ferron Ss-upp.	53.30	10.60	4.00	0.90	4.10	5.20	8.70	13.10	0.10	0.00	0.55	hvCb			63.90	9.00	27.10
473	HM	FBNW	03-27S-09E	Ferron Ss-upp.	56.70	10.90	2.30	0.90	1.10	4.00	9.30	14.20	0.60	0.00	0.49	hvCb			67.60	4.30	28.10
474	HM			Ferron Ss-upp.	58.20	11.40	5.00	1.30	5.60	7.10	3.90	7.40	0.10	0.00	0.53	hvCb			69.60	11.90	18.50
475	HM	FBNW	11-27S-09E	Ferron Ss-upp.	54.00	12.00	2.30	0.50	2.20	4.40	5.80	18.80	0.00	0.00	0.55	hvCb			66.00	5.00	29.00
476	HM	FBNW	12-28S-09E	Ferron Ss-upp.	53.90	25.00	3.50	1.70	1.90	4.80	3.40	5.80	0.00	0.00	0.57	hvCb			78.90	7.10	14.00
477	HM			Ferron Ss-upp.	43.20	10.30	3.20	1.20	2.50	3.60	9.50	26.40	0.00	0.10	0.62	hvBb			53.50	6.90	39.60
478	HM			Ferron Ss-upp.	49.30	8.80	3.60	1.20	2.80	6.30	9.40	18.30	0.30	0.00	0.59	hvBb			58.10	7.60	34.30
479	HM			Ferron Ss-upp.	51.50	5.50	4.70	3.20	2.10	0.80	9.60	22.50	0.10	0.00	0.49	hvCb			57.00	10.00	33.00
480	HM			Ferron Ss-upp.	65.40	12.70	3.50	2.20	4.10	0.80	4.00	7.20	0.00	0.10	0.48	hvCb			78.10	9.80	12.10
481	HM			Ferron Ss-upp.	50.90	6.30	3.70	2.40	3.20	5.60	6.60	21.20	0.00	0.10	0.57	hvBb			57.20	9.30	33.50
482	HM			Ferron Ss-upp.	29.80	4.90	3.30	0.70	1.40	2.90	18.70	38.30	0.00	0.00	0.52	hvCb			34.70	5.40	59.90
483	HM			Ferron Ss-upp.	32.00	0.90	4.10	1.10	4.30	3.40	12.60	41.60	0.00	0.00	0.56	hvCb			32.90	9.50	57.60
485	HM			Ferron Ss-upp.	67.70	13.00	3.60	1.50	6.80	3.80	0.80	2.80	0.00	0.00	0.49	hvCb			80.70	11.90	7.40
497	HM	MPSE	32-34S-10E	Ferron Ss-upp.	50.70	1.80	3.10	1.90	2.50	2.70	16.80	20.10	0.40	0.00	0.48	hvCb			52.50	7.50	40.00
499	HM	MHSW	04-35S-10E	Ferron Ss-upp.	54.00	21.40	1.90	1.90	2.20	1.30	7.00	10.00	0.20	0.10	0.53	hvCb			75.40	6.00	18.60
602	HM	MPSW	24-34S-08E	Ferron Ss-upp.	70.10	2.40	2.30	1.80	3.60	1.80	3.90	13.60	0.50	0.00	0.50	hvCb			72.50	7.70	19.80
Seam: Ferron Ss-upp.				Mean	51.53	10.12	3.34	1.35	2.83	4.25	9.15	17.22	0.18	0.03	0.52				61.64	7.55	30.81
				Maximum	70.10	25.00	5.00	3.20	6.80	7.50	18.70	41.60	0.60	0.30	0.62				80.70	11.90	59.90
				Minimum	29.80	0.90	1.90	0.30	1.10	0.80	0.80	2.80	0.00	0.00	0.47				32.90	4.30	7.40
				Std. Deviation	8.98	5.60	0.80	0.64	1.41	1.81	4.21	8.77	0.19	0.07	0.04				11.61	2.01	12.10
388	HM	MESW	24-31S-08E	Muley Canyon	74.50	4.50	2.10	0.50	1.90	3.50	5.20	4.30	0.10	3.40	0.49	hvCb			79.00	4.50	16.50
389	HM	MESW	23-31S-08E	Muley Canyon	66.00	12.70	1.70	0.10	1.80	4.10	4.20	9.10	0.20	0.10	0.54	hvCb			78.70	3.60	17.70
390	HM	MESW	14-31S-08E	Muley Canyon	74.70	6.60	1.10	0.20	0.80	1.70	4.80	10.10	0.00	0.00	0.52	hvCb			81.30	2.10	16.60
391	HM	MESW	11-31S-08E	Muley Canyon	58.10	5.60	2.80	0.30	1.80	5.50	8.30	17.40	0.00	0.20	0.54	hvCb			63.70	4.90	31.40
392	HM	NSE	03-31S-08E	Muley Canyon	51.80	28.20	2.80	0.40	2.00	7.20	2.70	4.80	0.10	0.00	0.48	hvCb			80.00	5.20	14.80
393	HM	MESW	14-31S-08E	Muley Canyon	0.40	74.50	0.40	0.00	24.50	0.20	0.00	0.00	0.00	0.00	0.39	subb			74.90	24.90	0.20
394	HM	NSE	04-31S-08E	Muley Canyon	53.00	13.20	6.20	0.30	2.70	8.70	5.40	10.10	0.20	0.20	0.47	subb			66.20	9.20	24.60
395	HM	NSE	16-31S-08E	Muley Canyon	70.40	5.90	1.50	0.10	2.20	2.00	12.60	4.90	0.20	0.20	0.50	hvCb			76.30	3.80	19.90
396	HM	NNE	01-30S-08E	Muley Canyon	56.20	21.00	4.50	2.00	3.40	4.70	2.60	5.20	0.30	0.10	0.47	hvCb			77.20	9.90	12.90
397	HM	NNE	01-30S-08E	Muley Canyon	63.30	18.30	2.10	0.50	3.00	4.10	3.00	5.60	0.10	0.00	0.50	hvCb			81.60	5.60	12.80
398	HM	MESW	07-31S-09E	Muley Canyon	55.70	12.70	3.60	0.20	1.80	5.60	6.10	14.30	0.00	0.00	0.55	hvCb			68.40	5.60	26.00
399	HM		24-30S-08E	Muley Canyon	55.20	19.10	1.30	0.70	3.20	3.40	7.10	9.80	0.20	0.00	0.53	hvCb			74.30	5.20	20.50
400	HM			Muley Canyon	66.80	7.90	2.30	0.30	0.70	3.20	5.10	13.60	0.10	0.00	0.57	hvCb			74.70	3.30	22.00
401	HM	MESW	07-31S-09E	Muley Canyon	53.50	23.40	2.50	0.20	3.50	6.40	5.20	5.20	0.10	0.00	0.53	hvCb			76.90	6.20	16.90

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_0)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
402	HM	NNE	01-30S-08E	Muley Canyon	64.80	14.20	3.80	0.80	2.80	5.70	2.50	5.10	0.10	0.20	0.48	hvCb			79.00	7.40	13.60
403	HM	MPNW	15-33S-09E	Muley Canyon	82.80	4.70	0.70	0.20	3.70	1.70	4.10	2.10	0.00	0.00	0.50	hvCb			87.50	4.60	7.90
404	HM	MPNW	19-33S-09E	Muley Canyon	67.50	21.00	0.80	0.00	1.00	3.60	2.80	3.20	0.00	0.10	0.48	hvCb			88.50	1.80	9.70
405	HM	MPNW	01-34S-08E	Muley Canyon	74.00	9.50	1.50	1.00	0.90	1.90	3.80	7.30	0.10	0.00	0.51	hvCb			83.50	3.40	13.10
406	HM	MPNW	14-33S-09E	Muley Canyon	71.40	10.60	0.60	0.10	1.10	2.30	6.00	7.90	0.00	0.00	0.52	hvCb			82.00	1.80	16.20
407	HM			Muley Canyon	71.50	13.10	1.20	0.30	4.50	3.80	2.40	3.20	0.00	0.00	0.52	hvCb			84.60	6.00	9.40
409	HM	MPNW	19-33S-09E	Muley Canyon	76.60	9.40	0.80	0.10	1.50	2.60	3.30	5.70	0.00	0.00	0.55	hvCb			86.00	2.40	11.60
410	HM	MPNW	19-33S-09E	Muley Canyon	73.30	10.60	1.30	0.60	2.20	2.60	3.50	5.80	0.10	0.00	0.54	hvCb			83.90	4.10	12.00
411	HM	MPNW	17-33S-09E	Muley Canyon	74.80	9.40	2.10	0.00	3.50	2.00	2.70	5.30	0.10	0.10	0.53	hvCb			84.20	5.60	10.20
412	HM	MPNW	15-33S-09E	Muley Canyon	77.60	11.20	1.60	0.00	2.90	2.00	1.70	2.70	0.10	0.20	0.55	hvCb			88.80	4.50	6.70
413	HM	MPNW	15-33S-09E	Muley Canyon	61.50	18.90	1.70	0.30	3.70	4.10	6.10	3.70	0.00	0.00	0.50	hvCb			80.40	5.70	13.90
414	HM	MPNW	22-33S-09E	Muley Canyon	78.30	10.20	1.00	0.50	2.60	3.80	2.50	1.00	0.00	0.10	0.51	hvCb			88.50	4. 10	7.40
415	HM	MPNW	11-33S-09E	Muley Canyon	63.90	22.00	0.90	0.00	2.00	2.70	4.20	4.30	0.00	0.00	0.52	hvCb			85.90	2.90	11.20
416	HM	MESW	34-31S-09E	Muley Canyon	68.60	14.20	3.10	0.40	1.80	2.70	4.50	4.50	0.00	0.20	0.51	hvCb			82.80	5.30	11.90
417	HM	MESW	34-31S-09E	Muley Canyon	71.80	13.30	2.80	0.30	3.90	2.00	2.80	2.90	0.10	0.10	0.49	hvCb			85.10	7.00	7.90
418	HM	MESW	23-32S-09E	Muley Canyon	82.60	6.50	1.80	0.00	1.90	4.00	2.20	1.00	0.00	0.00	0.44	subb			89.10	3.70	7.20
419	HM	MESW	23-32S-09E	Muley Canyon	73.30	12.60	1.90	0.50	1.20	3.60	4.00	2.90	0.00	0.00	0.57	hvCb			85.90	3.60	10.50
420	HM	MESW	28-31S-09E	Muley Canyon	61.90	23.00	1.90	0.70	0.70	3.70	5.20	2.90	0.00	0.00	0.53	hvCb			84.90	3.30	11.80
421	HM	MESW	28-31S-09E	Muley Canyon	67.70	8.90	3.00	0.10	1.90	6.40	3.70	7.40	0.60	0.30	0.51	hvCb			76.60	5.00	18.40
422	HM	MESW	21-31S-09E	Muley Canyon	68.90	20.70	1.50	0.30	1.40	3.10	1.70	2.30	0.00	0.10	0.53	hvCb			89.60	3.20	7.20
423	HM	MESW	11-32S-09E	Muley Canyon	70.10	11.30	3.20	0.40	1.90	2.90	3.50	6.40	0.20	0.10	0.51	hvCb			81.40	5.50	13.10
424	HM	MESW	30-31S-09E	Muley Canyon	62.40	9.10	2.50	0.70	2.30	8.50	5.30	9.00	0.20	0.00	0.49	hvCb			71.50	5.50	23.00
425	HM	MESW	31-31S-09E	Muley Canyon	66.60	9.00	3.80	0.20	1.90	6.10	4.40	7.50	0.00	0.50	0.50	hvCb			75.60	5.90	18.50
426	HM	MWSW	24-31S-09E	Muley Canyon	60.70	4.40	5.10	0.60	2.00	10.50	5.60	10.20	0.80	0.10	0.52	hvCb			65.10	7 70	27.20
427	HM	MESW	12-31S-08E	Muley Canyon	69.10	8.20	3.10	0.00	2.10	8.40	2.90	5.80	0 30	0.10	0.54	hvCb			77.30	5.20	17.50
428	HM	MESW	11-31S-08E	Muley Canyon	74.70	6.90	2.80	0.30	2.40	4.50	2.20	5.80	0.40	0.00	0.51	hvCb			81.60	5.50	12.90
429	HM	MESW	25-31S-08E	Muley Canyon	57.60	13.00	3.70	0.50	2.20	6.10	6.70	9.60	0.60	0.00	0.52	hvCb			70.60	6.40	23.00
441	HM	MPSW	11-34S-08E	Muley Canyon	72.90	11.70	2.30	0.60	2.20	3.50	3.10	3.40	0.20	0.10	0.51	hvCb			84.60	5.10	10.30
553	HM	MPSE	05-35S-10E	Muley Canyon	57.30	14.70	2.30	1.30	2.30	3.30	5.20	13.10	0.40	0.10	0.54	hvCb			72.00	5.90	22.10
554	HM	MPSE	05-35S-10E	Muley Canyon	69.20	11.70	3.10	1.20	1.30	2.30	3.50	7.30	0 20	0.20	0.50	hvCb			80.90	5.60	13.50
555	HM			Muley Canyon	55.70	3.60	1.60	0.20	0.90	3.30	11.10	23.60	0.00	0.00	0.55	hvCb			59.30	2.70	38.00
556	HM	MPSE	04-35S-10E	Muley Canyon	67.00	7.20	3.10	0.10	2.00	4.40	4.40	11.20	0.50	0.10	0.51	hvCb			74.20	5.20	20.60
557	HM			Muley Canyon	69.00	5.40	2.20	0.50	4.30	2.60	4.00	11.40	0.40	0.20	0.48	hvCb			74.40	7.00	18.60
558	HM			Muley Canyon	72.80	7.30	2.30	0.10	2.00	1.90	10.00	3.20	0.20	0.20	0.50	hvCb			80.10	4.40	15.50
559	HM			Muley Canyon	52.10	3.00	3.90	0.00	4.00	1.00	8.00	27.50	0.30	0.20	0.46	subb			55.10	7.90	37.00
560	HM			Muley Canyon	77.90	11.70	1.80	0.10	1.80	3.80	1.00	1.80	0.00	0.10	0.53	hvCb			89.60	3.70	6.70
561	HM			Muley Canyon	72.40	7.70	2.20	1.00	1.60	1.20	4.40	9.20	0.20	0.10	0.50	hvCb			80.10	4.80	15.10
562	HM			Muley Canyon	77.90	2.80	2.00	1.00	1.90	2.50	4.20	7.40	0.20	0.10	0.46	subb			80.70	4.90	14.40
563	HM			Muley Canyon	56.80	2.30	2.10	0.70	5.80	4.00	6.90	21.00	0.30	0.10	0.49	hvCb			59.10	8.60	32.30
Seam: Muley Canyon				Mean	65.94	12.62	2.30	0.41	2.71	3.88	4.50	7.36	0.15	0.15	0.51				78.55	5.41	16.04
				Maximum	82.80	74.50	6.20	2.00	24.50	10.50	12.60	27.50	0.80	3.40	0.57				89.60	24.90	38.00
				Minimum	0.40	2.30	0.40	0.00	0.70	0.20	0.00	0.00	0.00	0.00	0.39				55.10	1.80	0.20
				Std. Deviation	12.18	10.42	1.15	0.39	3.20	2.09	2.36	5.50	0.18	0.46	0.03				8.06	3.22	7.65

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
443	HM	MESW	24-30S-08E	L.Muley Cyn.	70.50	9.20	2.10	0.40	1.30	5.70	5.10	5.70	0.00	0.00	0.60	hvBb			79.70	3.80	16.50
Seam: L.Muley Cyn.				Mean	70.50	9.20	2.10	0.40	1.30	5.70	5.10	5.70	0.00	0.00	0.60				79.70	3.80	16.50
				Maximum	70.50	9.20	2.10	0.40	1.30	5.70	5.10	5.70	0.00	0.00	0.60				79.70	3.80	16.50
				Minimum	70.50	9.20	2.10	0.40	1.30	5.70	5.10	5.70	0.00	0.00	0.60				79.70	3.80	16.50
				Std. Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00	0.00	0.00
442	HM	MENW	24-30S-08E	U.Muley Cyn.	68.50	7.70	3.80	0.70	2.30	5.70	4.50	6.80	0.00	0.00	0.53	hvCb			76.20	6.80	17.00
Seam: U.Muley Cyn.				Mean	68.50	7.70	3.80	0.70	2.30	5.70	4.50	6.80	0.00	0.00	0.53				76.20	6.80	17.00
				Maximum	68.50	7.70	3.80	0.70	2.30	5.70	4.50	6.80	0.00	0.00	0.53				76.20	6.80	17.00
				Minimum	68.50	7.70	3.80	0.70	2.30	5.70	4.50	6.80	0.00	0.00	0.53				76.20	6.80	17.00
				Std. Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00	0.00	0.00
439	HM	MESE	30-31S-10E	Unknown											3.93	anth.			0.00	0.00	0.00
608	HM			Unknown	55.00	1.90	2.00	1.50	2.70	4.70	7.10	24.60	0.50	0.00	0.53	hvCb			56.90	6.20	36.90
Seam: Unknown				Mean	55.00	1.90	2.00	1.50	2.70	4.70	7.10	24.60	0.50	0.00	2.23				28.45	3.10	18.45
				Maximum	55.00	1.90	2.00	1.50	2.70	4.70	7.10	24.60	0.50	0.00	3.93				56.90	6.20	36.90
				Minimum	55.00	1.90	2.00	1.50	2.70	4.70	7.10	24.60	0.50	0.00	0.53				0.00	0.00	0.00
				Std. Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.70				28.45	3.10	18.45

Appendix H. Coal-characteristics Data for the Henry Mountains Coal Field (continued)

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
444	HM	Dakota Fm		HMP-16-132-weathered	0.90	0.10	1.10	0.00	0.20	0.10	2.40	94.30	1.70	1.60	0.00	1.61	7.32
445	HM	Dakota Fm		HMP-16-135-weathered	1.60	0.40	1.00	0.00	0.40	0.00	3.40	91.60	0.70	4.30	0.00	1.48	3.17
446	HM	Dakota Fm		HMP-18-weathered	0.10	0.10	0.10	0.00	0.10	0.00	0.40	97.90	0.20	1.50	0.00	1.77	19.47
447	HM	Dakota Fm		HMP-19-weathered	0.30	0.20	0.30	0.00	0.00	0.10	0.90	95.40	0.90	2.80	0.00	1.69	25.51
448	HM	Dakota Fm		HMP-20-weathered	1.10	0.00	0.70	0.00	0.00	0.00	1.80	94.80	1.40	2.00	0.00	1.97	6.13
449	HM	Dakota Fm		HMP-21-weathered	0.50	0.00	0.90	0.00	0.00	0.00	1.40	94.90	1.20	2.50	0.00	1.92	22.22
450	HM	Dakota Fm		HMP-22-weathered	0.50	0.20	0.20	0.00	0.00	0.00	0.90	98.00	0.00	1.10	0.00	2.28	36.85
451	HM	Dakota Fm		HMP-23-weathered	0.20	0.70	1.60	0.00	0.00	0.10	2.60	93.70	0.80	2.90	0.00	1.63	8.52
452	HM	Dakota Fm		HMP-24-weathered	0.40	0.50	1.60	0.00	0.00	0.00	2.50	89.10	2.90	5.50	0.00	1.55	10.95
453	HM	Dakota Fm		HMP-25-weathered	0.20	0.00	0.70	0.00	0.00	0.00	0.90	95.00	1.80	2.30	0.00	1.70	19.39
454	HM	Dakota Fm		HMP-26-weathered	0.30	0.00	0.40	0.00	0.10	0.00	0.80	96.60	1.00	1.60	0.00	1.69	28.87
455	HM	Dakota Fm		HMP-27-weathered	0.40	0.10	0.10	0.00	0.00	0.00	0.60	96.30	0.90	2.20	0.00	1.87	23.16
544	HM	Dakota Fm		HMP-46;AK# 326;weath.	0.00	0.10	2.60	0.00	0.30	1.10	4.10	92.90	1.90	1.10	0.00	1.55	10.49
545	HM	Dakota Fm		HMP-47;AK# 327;weath.	0.30	0.10	0.40	0.20	0.60	0.20	1.80	96.00	0.50	1.70	0.00	1.47	12.75
546	HM	Dakota Fm		HMP-48;AK# 328;weath.	0.20	0.20	0.30	0.20	0.50	0.10	1.50	96.20	1.00	1.30	0.00	1.72	22.71
547	HM	Dakota Fm		HMP-49;AK# 329;weath.	0.70	0.40	0.30	0..20	0.30	0.10	2.00	95.90	0.80	1.30	0.00	1.50	14.39
548	HM	Dakota Fm		HMP-50;AK# 330;weath.	0.00	0.10	2.60	0.00	0.30	1.10	4.10	92.90	1.10	1.90	0.00	1.63	8.17
549	HM	Dakota Fm		HMP-51;AK# 331;weath.	0.10	2.50	1.30	0.20	0.10	0.70	4.90	90.20	0.40	4.30	0.20	1.66	4.00
550	HM	Dakota Fm		HMP-52;AK# 332;weath.	0.60	0.40	0.10	0.00	0.00	0.30	1.40	96.50	0.20	1.70	0.20	1.47	7.42
551	HM	Dakota Fm		HMP-53;AK# 333;weath.	0.80	0.80	0.80	0.10	0.30	0.40	3.20	93.60	0.50	2.70	0.00	1.54	5.32
552	HM	Dakota Fm		HMP-54;AK# 334;weath.	0.30	0.70	0.70	0.10	0.20	0.10	2.10	96.20	0.20	1.50	0.00	1.53	9.48
606	HM	Dakota Fm		Station AK232	0.00	0.60	2.80	0.10	0.00	0.90	4.40	91.70	0.80	3.10	0.00	1.86	10.47
607	HM	Dakota Fm		Station AK233	0.00	0.30	1.20	0.10	0.40	0.50	2.50	90.20	3.60	3.70	0.00	2.14	15.83
Seam: Dakota Fm				Mean	0.41	0.37	0.95	0.05	0.17	0.25	2.20	94.34	1.07	2.37	0.02	1.71	14.46
				Maximum	1.60	2.50	2.80	0.20	0.60	1.10	4.90	98.00	3.60	5.50	0.20	2.28	36.85
				Minimum	0.00	0.00	0.10	0.00	0.00	0.00	0.40	89.10	0.00	1.10	0.00	1.47	3.17
				Std.Deviation	0.39	0.51	0.80	0.08	0.18	0.35	1.27	2.42	0.85	1.14	0.06	0.21	8.66

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
430	HM	Ferron Ss Mbr.		HM-LBM-1a-weathered	0.40	0.00	0.90	0.00	0.10	0.50	1.90	95.00	0.60	2.50	0.00	1.69	10.44
431	HM	Ferron Ss Mbr.		HM-LBM-1b-weathered	0.10	0.00	2.00	0.00	0.40	0.10	2.60	91.60	3.50	2.30	0.00	1.56	5.05
432	HM	Ferron Ss Mbr.		HM-LBM-2a-weathered	0.00	0.00	1.00	0.00	0.00	0.90	1.00	92.00	2.10	4.00	0.00	1.98	4.17
433	HM	Ferron Ss Mbr.		HM-LBM-2b-weathered	0.00	0.00	1.50	0.00	0.00	0.10	1.50	94.00	3.20	1.20	0.00	1.51	6.72
434	HM	Ferron Ss Mbr.		HM-LBM-3-weathered	0.20	0.00	0.80	0.00	0.00	0.50	1.50	94.20	1.60	2.70	0.00	1.56	5.37
435	HM	Ferron Ss Mbr.		HM-LBM-4-weathered	0.00	0.00	0.70	0.00	0.00	0.00	0.70	95.20	1.80	2.30	0.00	1.41	3.43
436	HM	Ferron Ss Mbr.		HM-LBM-5-weathered	0.00	0.00	0.50	0.00	0.00	0.00	0.50	97.50	1.00	1.00	0.00	1.66	5.36
437	HM	Ferron Ss Mbr.		HM-LBM-6-weathered	0.10	0.00	1.50	0.00	0.00	0.00	1.60	95.80	0.70	1.90	0.00	1.47	5.66
438	HM	Ferron Ss Mbr.		HM-LBM-7-weathered	0.20	0.00	0.90	0.00	0.10	0.00	1.20	94.80	2.20	1.80	0.00	1.58	2.23
440	HM	Ferron Ss Mbr.		HM-LBM-9-weathered	0.50	0.00	0.30	0.00	0.20	0.00	1.00	97.30	0.70	1.00	0.00	1.60	7.89
456	HM	Ferron Ss Mbr.		HMP-28-K240-weathered	0.40	0.30	2.30	0.00	0.00	0.00	3.00	92.90	1.10	3.00	0.00	1.64	6.82
457	HM	Ferron Ss Mbr.		HMP-29-K242-weathered	0.30	0.00	3.10	0.00	0.00	0.40	3.80	92.20	1.50	2.50	0.00	1.50	3.96
458	HM	Ferron Ss Mbr.		HMP-30-K243-weathered	0.70	0.40	2.90	0.00	0.00	0.70	4.70	90.30	1.10	3.90	0.00	1.68	4.96
464	HM	Ferron Ss Mbr.		HMP-104a-weathered	0.10	0.10	1.90	0.00	0.00	0.00	2.10	92.20	1.40	4.30	0.00	1.55	12.82
465	HM	Ferron Ss Mbr.		HMP-105b-weathered	0.10	0.20	0.70	0.00	0.10	0.30	1.40	94.20	0.90	3.50	0.00	1.49	3.79
466	HM	Ferron Ss Mbr.		HMP-106a-weathered	0.20	0.00	0.40	0.00	0.00	0.00	0.60	96.40	1.40	1.60	0.00	1.58	17.29
467	HM	Ferron Ss Mbr.		HMP-107a-weathered	0.60	0.10	0.40	0.00	0.10	0.10	1.30	95.60	0.80	2.30	0.00	1.56	4.48
486	HM	Ferron Ss Mbr.		HMP-202-weathered	0.00	0.00	0.20	0.00	0.00	0.60	0.80	90.10	4.20	4.90	0.00	1.57	9.36
487	HM	Ferron Ss Mbr.		HMP-205-weathered	0.00	0.20	0.40	0.00	0.00	0.00	0.60	95.30	1.90	2.20	0.00	1.48	4.21
488	HM	Ferron Ss Mbr.		HMP-207-weathered	0.00	0.30	0.40	0.20	0.00	0.00	0.90	94.90	2.10	2.10	0.00	1.60	11.25
489	HM	Ferron Ss Mbr.		HMP-209-weathered	0.00	1.80	4.50	0.10	0.10	0.00	6.50	86.20	2.70	4.60	0.00	1.56	14.41
490	HM	Ferron Ss Mbr.		HMP-212-weathered	0.20	0.70	1.00	0.00	0.00	1.90	3.80	86.40	7.00	2.80	0.00	1.65	7.16
491	HM	Ferron Ss Mbr.		HMP-214-weathered	0.10	0.50	1.30	0.00	0.40	0.20	2.50	92.50	2.30	2.70	0.00	1.58	5.09
492	HM	Ferron Ss Mbr.		HMP-215-weathered	0.20	0.70	1.60	0.10	0.30	0.00	2.90	92.00	3.40	1.70	0.00	1.47	4.18
493	HM	Ferron Ss Mbr.		HMP-218-weathered	1.00	0.70	1.80	0.00	0.30	0.40	4.20	84.40	7.40	4.00	0.00	1.79	14.40
494	HM	Ferron Ss Mbr.		HMP-219-weathered	0.30	1.80	2.60	0.40	0.30	0.00	5.40	90.00	0.90	3.70	0.00	1.51	5.33
501	HM	Ferron Ss Mbr.		HMP-31-244a-weathered	0.10	0.20	2.00	0.10	0.10	0.80	3.30	87.70	6.40	2.60	0.00	1.81	3.92
502	HM	Ferron Ss Mbr.		HMP-30-244b-weathered	0.00	0.50	2.70	0.00	0.30	0.00	3.50	90.20	2.70	3.60	0.00	1.50	3.42
503	HM	Ferron Ss Mbr.		HMP-32-246-weathered	0.00	0.90	2.40	0.00	0.70	0.20	4.20	88.50	2.40	4.90	0.00	1.53	4.92
504	HM	Ferron Ss Mbr.		HMP-33-253-weathered	0.00	0.30	1.30	0.00	0.80	0.40	2.80	93.20	1.30	2.70	0.00	1.58	5.06
505	HM	Ferron Ss Mbr.		HMP-34-257-weathered	0.00	0.60	4.00	0.20	0.30	0.40	5.50	90.00	1.90	2.60	0.00	1.44	2.55
506	HM	Ferron Ss Mbr.		HMP-35-257-weathered	0.00	0.70	3.90	0.00	0.60	0.30	5.50	88.50	1.70	4.30	0.00	1.45	2.77
507	HM	Ferron Ss Mbr.		HMP-36-258-weathered	0.00	0.70	3.60	0.00	0.90	0.40	5.60	89.90	1.00	3.50	0.00	1.47	2.63
508	HM	Ferron Ss Mbr.		HMP-38-258-weathered	0.00	0.20	1.90	0.00	0.30	0.70	3.10	92.20	2.20	2.50	0.00	1.63	5.79
509	HM	Ferron Ss Mbr.		HMP-37-258-weathered	0.00	0.80	2.20	0.20	0.40	0.30	3.90	91.70	1.50	2.90	0.00	1.51	10.06
510	HM	Ferron Ss Mbr.		HMP-39-266-weathered	0.10	0.60	2.80	0.10	0.40	0.30	4.30	91.20	1.70	2.80	0.00	1.50	2.70
511	HM	Ferron Ss Mbr.		HMP-40-268-weathered	0.00	0.50	1.00	0.10	0.20	1.00	2.80	90.10	2.50	4.60	0.00	1.68	2.81
512	HM	Ferron Ss Mbr.		HMP-41-268-weathered	0.00	1.00	2.60	0.10	0.40	0.60	4.70	89.20	2.60	3.50	0.00	1.52	4.89
513	HM	Ferron Ss Mbr.		HMP-42-279-weathered	0.10	0.80	1.50	0.10	0.20	0.20	2.90	92.60	1.90	2.60	0.00	1.68	3.99
514	HM	Ferron Ss Mbr.		HMP-43-279-weathered	0.00	0.10	0.60	0.00	0.30	0.50	1.50	94.20	1.80	2.50	0.00	1.62	5.08
515	HM	Ferron Ss Mbr.		HMP-44-281-weathered	0.00	0.20	1.70	0.20	0.50	0.00	2.60	90.00	3.70	3.70	0.00	1.58	3.92
516	HM	Ferron Ss Mbr.		HMP-45-281-weathered	0.00	0.40	1.40	0.00	0.30	0.30	2.40	92.30	1.30	4.00	0.00	1.50	6.57
517	HM	Ferron Ss Mbr.		KB-1-weathered	0.10	0.30	1.00	0.20	0.20	0.00	1.80	93.30	1.80	3.10	0.00	1.56	4.29
518	HM	Ferron Ss Mbr.		KB-3-weathered	0.00	2.60	6.00	0.20	0.60	0.00	9.40	85.00	2.20	3.40	0.00	1.52	1.72
519	HM	Ferron Ss Mbr.		KB-5-weathered	0.10	0.60	1.80	0.00	0.50	0.20	3.20	92.40	1.00	3.40	0.00	1.55	7.81
520	HM	Ferron Ss Mbr.		KB-9a-weathered	0.10	3.50	6.80	0.30	0.30	0.50	11.50	84.20	1.60	2.70	0.00	1.58	8.70
521	HM	Ferron Ss Mbr.		KB-9b-weathered	0.00	1.10	2.70	0.10	0.50	0.40	4.80	91.10	1.20	2.90	0.00	1.69	8.59

Sample Number	Coal Field	Coal Seam: C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
522	HM	Ferron Ss Mbr.	KB-10-weathered	0.00	0.70	3.10	0.20	0.30	0.00	4.30	90.40	2.10	3.20	0.00	1.57	3.72
523	HM	Ferron Ss Mbr.	KB-12-weathered	0.00	0.00	0.10	0.00	0.00	0.00	0.10	96.70	1.40	1.80	0.00	1.73	21.26
524	HM	Ferron Ss Mbr.	KB-14-weathered	0.00	0.20	2.90	0.00	0.00	0.00	3.10	93.30	0.90	2.70	0.00	1.68	16.95
525	HM	Ferron Ss Mbr.	KB-15-weathered	0.10	0.20	3.30	0.00	0.20	0.10	3.90	91.10	1.90	3.10	0.00	1.59	8.24
526	HM	Ferron Ss Mbr.	KB-17-weathered	0.00	0.00	0.20	0.00	0.10	0.00	0.30	99.50	0.10	0.10	0.00	1.82	9.51
527	HM	Ferron Ss Mbr.	KB-20a-weathered	0.20	0.10	0.10	0.00	0.40	0.00	0.80	97.30	0.30	1.60	0.00	1.58	9.80
528	HM	Ferron SS Mbr.	KB-20b-weathered	0.00	0.70	1.40	0.20	0.50	0.50	3.30	92.20	2.20	2.30	0.00	1.60	12.31
530	HM	Ferron Ss Mbr.	KB-23-weathered	0.00	0.00	1.10	0.10	0.00	0.00	1.10	97.60	0.60	0.60	0.00	1.58	14.27
597	HM	Ferron Ss Mbr.	Station 220	0.10	0.70	1.60	0.40	0.50	1.20	4.50	88.50	4.00	3.00	0.00	1.74	10.87
599	HM	Ferron Ss Mbr.	Station 221	0.10	0.30	0.70	0.00	0.10	2.30	3.50	87.60	3.80	5.10	0.00	1.83	22.02
600	HM	Ferron Ss Mbr.	Station 222	0.20	0.50	1.00	0.30	1.60	0.40	4.00	87.30	5.90	2.80	0.00	2.18	21.18
601	HM	Ferron Ss Mbr.	Station 226	0.00	0.20	0.90	0.10	1.40	0.20	2.80	84.60	10.80	1.80	0.00	2.05	21.15
704	HM	Ferron Ss Mbr.	State Lands and Forestry	0.00	0.90	0.90	0.20	0.50	0.10	2.60	92.20	1.20	3.20	0.80		
Seam: Ferron Ss Mbr.			Mean	0.12	0.48	1.78	0.07	0.28	0.32	3.03	91.81	2.29	2.84	0.01	1.61	7.82
			Maximum	1.00	3.50	6.60	0.40	1.60	2.30	11.50	99.50	10.80	5.10	0.80	2.18	22.02
			Minimum	0.00	0.00	0.10	0.00	0.00	0.00	0.10	84.20	0.10	0.10	0.00	1.41	1.72
			Std.Deviation	0.19	0.63	1.37	0.11	0.32	0.44	2.08	3.51	1.88	1.06	0.10	0.14	5.26
469	HM	Ferron Ss -lwr.	HMP-109b-weathered	0.20	0.10	1.00	0.00	0.00	0.20	1.50	91.60	0.90	6.00	0.00	1.61	6.98
484	HM	Ferron Ss -lwr.	HMP-123b-weathered	0.00	0.00	2.90	0.00	0.10	0.10	3.10	92.50	0.90	3.50	0.00	1.68	4.87
496	HM	Ferron Ss -lwr.	MR-HMP-1-weathered	0.00	0.10	4.80	0.00	0.10	1.30	6.30	87.00	3.10	3.60	0.00	1.70	3.19
498	HM	Ferron Ss -lwr.	MR-HMP-3-weathered	0.70	0.40	0.70	0.30	0.10	0.50	2.70	92.90	2.00	2.40	0.00	1.62	6.41
500	HM	Ferron Ss -lwr.	MR-HMP-5-weathered	0.00	0.50	3.00	0.10	0.60	0.00	4.20	90.20	1.60	4.00	0.00	1.45	6.78
605	HM	Ferron Ss -lwr.	Station 227	0.00	0.40	4.50	0.00	0.20	0.90	6.00	89.00	1.40	3.60	0.00	1.49	4.14
Seam: Ferron Ss -lwr.			Mean	0.15	0.25	2.82	0.07	0.18	0.50	3.97	90.53	1.65	3.85	0.00	1.59	5.40
			Maximum	0.70	0.50	4.80	0.30	0.60	1.30	6.30	92.90	3.10	6.00	0.00	1.70	6.98
			Minimum	0.00	0.00	0.70	0.00	0.00	0.00	1.50	87.00	0.90	2.40	0.00	1.45	3.19
			Std.Deviation	0.26	0.19	1.56	0.11	0.20	0.47	1.74	2.06	0.75	1.08	0.00	0.09	1.42
603	HM	Ferron Ss.-mid.	Station 227	0.00	0.10	1.00	0.30	1.10	1.00	3.50	88.90	2.70	4.90	0.00	1.69	7.95
604	HM	Ferron Ss.-mid.	Station 227	0.10	0.40	2.90	0.10	0.90	0.80	5.20	89.20	1.50	4.00	0.10	1.51	10.09
Seam: Ferron Ss.-mid.			Mean	0.05	0.25	1.95	0.20	1.00	0.90	4.36	89.05	2.10	4.45	0.05	1.60	9.02
			Maximum	0.10	0.40	2.90	0.30	1.10	1.00	5.20	89.20	2.70	4.90	0.10	1.69	10.09
			Minimum	0.10	0.00	1.00	0.10	0.90	0.80	3.50	88.90	1.50	4.00	0.00	1.51	7.95
			Std.Deviation	0.05	0.15	0.95	0.10	0.10	0.10	0.85	0.15	0.60	0.45	0.05	0.09	1.07

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
459	HM	Ferron Ss -uppr.		HMP-100a-weathered	0.40	1.40	1.40	0.00	0.30	0.00	3.50	92.30	0.30	3.90	0.00	1.45	0.92
460	HM	Ferron Ss -uppr.		HMP-100b-weathered	0.60	1.80	1.40	0.00	0.10	0.10	4.00	91.90	1.00	3.10	0.00	1.42	1.95
461	HM	Ferron Ss -uppr.		HMP-101b-weathered	0.30	0.20	0.80	0.00	0.30	0.00	1.60	94.10	1.70	2.60	0.00	1.63	9.94
462	HM	Ferron Ss -uppr.		HMP-102a-weathered	0.00	0.20	1.50	0.00	0.00	0.00	1.70	93.50	1.20	3.60	0.00	1.47	11.35
463	HM	Ferron Ss -uppr.		HMP-103a-weathered	0.60	0.00	0.60	0.00	0.00	0.10	1.30	93.50	0.90	4.30	0.00	1.52	1.59
468	HM	Ferron Ss -uppr.		HMP-108b-weathered	0.10	0.00	0.80	0.00	0.10	0.40	1.00	93.80	1.10	3.70	0.00	1.53	5.69
470	HM	Ferron Ss -uppr.		HMP-110a-weathered	0.10	1.00	0.60	0.00	0.00	0.00	1.70	94.00	0.90	3.40	0.00	1.53	3.85
471	HM	Ferron Ss -uppr.		HMP-110b-weathered	0.10	0.30	2.00	0.00	0.00	0.00	2.40	94.70	1.00	1.90	0.00	1.57	8.85
472	HM	Ferron Ss -uppr.		HMP-111b-weathered	0.20	3.40	0.30	0.00	0.20	0.00	4.10	91.00	0.90	4.00	0.00	1.49	5.85
473	HM	Ferron Ss -uppr.		HMP-112a-weathered	0.00	0.10	1.00	0.00	0.00	0.10	1.20	95.60	0.90	2.30	0.00	1.52	7.24
474	HM	Ferron Ss -uppr.		HMP-113b-weathered	1.00	2.00	2.50	0.10	0.00	0.00	5.60	88.10	1.30	5.00	0.00	1.44	2.76
475	HM	Ferron Ss -uppr.		HMP-114a-weathered	0.40	0.00	1.50	0.00	0.30	0.00	2.20	95.00	0.50	2.30	0.00	1.55	4.87
476	HM	Ferron Ss -uppr.		HMP-115a-weathered	0.60	0.30	0.90	0.00	0.00	0.10	1.90	92.90	1.70	3.50	0.00	1.59	11.72
477	HM	Ferron Ss -uppr.		HMP-116a-weathered	0.50	0.00	1.90	0.00	0.10	0.00	2.50	93.10	1.20	3.20	0.00	1.61	5.14
478	HM	Ferron Ss -uppr.		HMP-117a-weathered	0.50	0.60	1.70	0.00	0.00	0.00	2.80	92.40	1.20	3.60	0.00	1.58	1.89
479	HM	Ferron Ss -uppr.		HMP-118b-weathered	0.00	1.20	0.70	0.00	0.20	0.00	2.10	90.00	3.20	4.70	0.00	1.76	6.02
480	HM	Ferron Ss -uppr.		HMP-119b-weathered	0.20	1.70	1.90	0.00	0.30	0.00	4.10	90.20	2.20	3.50	0.00	1.60	11.96
481	HM	Ferron Ss -uppr.		HMP-120a-weathered	0.50	0.10	2.60	0.00	0.00	0.00	3.20	90.70	2.40	3.70	0.00	1.56	16.92
482	HM	Ferron Ss -uppr.		HMP-121-weathered	0.00	0.00	1.20	0.00	0.10	0.10	1.40	94.60	0.70	3.30	0.00	1.69	14.77
483	HM	Ferron Ss -uppr.		HMP-122b-weathered	0.50	0.30	3.50	0.00	0.00	0.00	4.30	90.50	1.10	4.10	0.00	1.52	5.36
485	HM	Ferron Ss -uppr.		HMP-123b-weathered	0.50	0.00	5.30	0.00	0.50	0.50	6.80	88.10	1.50	3.60	0.00	1.65	7.76
497	HM	Ferron Ss -uppr.		MR-HMP-2-weathered	0.10	0.10	1.30	0.10	0.00	0.90	2.50	92.50	1.90	3.10	0.00	1.64	3.19
499	HM	Ferron Ss -uppr.		MR-HMP-4-weathered	0.20	0.50	1.20	0.00	0.00	0.00	1.90	94.00	1.90	1.90	0.30	1.82	2.01
602	HM	Ferron Ss -uppr.		Station 227	0.10	0.70	0.90	0.30	1.30	0.30	3.60	92.30	1.80	2.30	0.00	1.66	7.39
Seam: Ferron Ss -uppr.			Mean		0.33	0.64	1.60	0.02	0.16	0.11	2.84	92.56	1.27	3.30	0.01	1.57	6.81
			Maximum		1.00	3.40	5.30	0.30	1.30	0.90	6.80	95.60	2.40	5.00	0.30	1.82	18.92
			Minimum		0.00	0.00	0.30	0.00	0.00	0.00	1.00	88.10	0.30	1.90	0.00	1.42	0.92
			Std.Deviation		0.25	0.85	1.07	0.07	0.28	0.22	1.45	1.98	0.52	0.77	0.06	0.09	4.37
388	HM	Muley Canyon		HMP-1-weathered	0.70	0.20	0.60	0.00	0.40	0.00	1.90	95.50	0.50	2.10	0.00	1.47	
389	HM	Muley Canyon		HMP-2-weathered	0.50	0.10	0.80	0.00	0.40	0.00	1.80	96.40	0.10	1.70	0.00	1.45	7.11
390	HM	Muley Canyon		HMP-3-weathered	0.20	0.00	0.50	0.00	0.10	0.00	0.80	97.90	0.20	1.10	0.00	1.47	13.04
391	HM	Muley Canyon		HMP-4-weathered	0.70	0.10	0.90	0.00	0.00	0.10	1.80	95.10	0.30	2.80	0.00	1.47	8.37
392	HM	Muley Canyon		HMP-5-weathered	1.40	0.10	0.50	0.00	0.00	0.00	2.00	94.80	0.40	2.80	0.00	1.47	5.07
393	HM	Muley Canyon		HMP-6-weathered	0.30	0.00	24.20	0.00	0.00	0.00	24.50	75.10	0.00	0.40	0.00	1.33	7.04
394	HM	Muley Canyon		HMP-7-weathered	0.80	0.20	1.60	0.00	0.10	0.00	2.70	90.80	0.30	6.20	0.00	1.55	9.42
395	HM	Muley Canyon		HMP-8-weathered	0.80	0.40	0.70	0.00	0.30	0.00	2.20	96.20	0.10	1.50	0.00	1.48	
396	HM	Muley Canyon		HMP-9-weathered	2.00	0.10	2.20	0.00	0.10	1.00	5.40	88.10	2.00	4.50	0.00	1.40	7.19
397	HM	Muley Canyon		HMP-10-weathered	1.40	0.00	1.40	0.10	0.00	0.10	2.80	94.40	0.50	2.10	0.00	1.63	9.63
398	HM	Muley Canyon		HMP-11-weathered	1.20	0.10	0.40	0.00	0.00	0.10	1.80	94.50	0.20	3.50	0.00	1.45	7.65
399	HM	Muley Canyon		HMP-12a-weathered	1.90	0.10	1.00	0.00	0.10	0.10	3.20	94.80	0.70	1.30	0.00	1.51	12.23
400	HM	Muley Canyon		HMP-12b-weathered	0.40	0.00	0.20	0.00	0.10	0.00	0.70	96.70	0.30	2.30	0.00	1.49	23.77
401	HM	Muley Canyon		HMP-13-weathered	2.40	0.00	0.80	0.00	0.30	0.00	3.50	93.80	0.20	2.50	0.00	1.51	7.69
402	HM	Muley Canyon		HMP-5b-weathered	0.80	0.20	0.50	0.00	0.10	1.20	2.80	92.60	0.80	3.80	0.00	1.51	

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
403	HM	Muley Canyon		HM-CS-1-weathered	1.80	0.20	0.90	0.00	0.10	0.70	3.70	95.40	0.20	0.70	0.00	1.71	4.46
404	HM	Muley Canyon		HM-CS-3-weathered	0.30	0.10	0.40	0.00	0.10	0.10	1.00	98.20	0.00	0.80	0.00	1.52	5.29
405	HM	Muley Canyon		HM-CS-4-weathered	0.30	0.20	0.30	0.00	0.10	0.00	0.90	96.60	1.00	1.50	0.00	1.97	15.71
406	HM	Muley Canyon		HM-CS-5-weathered	0.80	0.00	0.20	0.00	0.10	0.00	1.10	98.20	0.10	0.60	0.00	1.58	2.95
407	HM	Muley Canyon		HM-CS-6-weathered	3.50	0.20	0.70	0.00	0.10	0.00	4.50	94.00	0.30	1.20	0.00	1.56	13.16
409	HM	Muley Canyon		HM-CS-7L-weathered	1.00	0.10	0.30	0.00	0.10	0.00	1.50	97.60	0.10	0.80	0.00	1.88	9.83
410	HM	Muley Canyon		HM-CS-7U-weathered	1.30	0.10	0.30	0.00	0.10	0.40	2.20	95.90	0.60	1.30	0.00	1.61	14.47
411	HM	Muley Canyon		HM-CS-8-weathered	1.80	0.30	0.60	0.00	0.20	0.60	3.50	94.40	0.00	2.10	0.00	1.62	7.02
412	HM	Muley Canyon		HM-CS-9-weathered	1.10	0.10	0.70	0.00	0.10	0.90	2.90	95.50	0.00	1.60	0.00	1.66	
413	HM	Muley Canyon		HM-CS-9U-weathered	2.50	0.10	1.00	0.00	0.00	0.10	3.70	94.30	0.30	1.70	0.00	1.49	
414	HM	Muley Canyon		HM-CS-10-weathered	1.20	0.00	0.30	0.00	0.00	1.10	2.60	95.90	0.50	1.00	0.00	1.64	
415	HM	Muley Canyon		HM-CS-11-weathered	1.20	0.00	0.50	0.00	0.10	0.20	2.00	97.10	0.00	0.90	0.00	1.57	
416	HM	Muley Canyon		HM-WWW-1-weathered	0.90	0.00	0.70	0.10	0.10	0.00	1.90	94.70	0.40	3.10	0.00	1.42	4.04
417	HM	Muley Canyon		HM-WWW-2-weathered	0.60	0.30	2.10	0.00	0.10	0.80	3.90	93.00	0.30	2.80	0.00	1.49	7.33
418	HM	Muley Canyon		HM-WWW-3-weathered	0.50	0.00	1.20	0.00	0.00	0.20	1.90	96.30	0.00	1.80	0.00	1.20	5.19
419	HM	Muley Canyon		HM-WWW-4-weathered	0.40	0.00	0.70	0.00	0.10	0.00	1.20	96.40	0.50	1.90	0.00	1.42	5.61
420	HM	Muley Canyon		HM-WWW-5-weathered	0.30	0.00	0.40	0.00	0.00	0.00	0.70	96.70	0.70	1.90	0.00	1.44	7.24
421	HM	Muley Canyon		HM-WWW-6-weathered	0.90	0.10	0.90	0.00	0.00	0.00	1.90	95.00	0.10	3.00	0.00	1.48	4.18
422	HM	Muley Canyon		HM-WWW-7-weathered	0.50	0.40	0.40	0.00	0.10	0.00	1.40	96.80	0.30	1.50	0.00	1.43	6.41
423	HM	Muley Canyon		HM-WWW-8-weathered	0.80	0.40	0.50	0.10	0.10	0.00	1.90	94.50	0.40	3.20	0.00	1.39	
424	HM	Muley Canyon		HM-WWW-9-weathered	1.20	0.30	0.70	0.00	0.10	0.00	2.30	94.50	0.70	2.50	0.00	1.49	
425	HM	Muley Canyon		HM-WWW-10-weathered	0.70	0.30	0.90	0.00	0.00	0.00	1.90	94.10	0.20	3.80	0.00	1.49	
426	HM	Muley Canyon		HM-WWW-11-weathered	0.80	0.20	0.80	0.00	0.20	0.00	2.00	92.30	0.60	5.10	0.00	1.51	
427	HM	Muley Canyon		HM-WWW-12-weathered	0.40	0.10	1.10	0.00	0.10	0.40	2.10	94.80	0.00	3.10	0.00	1.50	
428	HM	Muley Canyon		HM-WWW-13-weathered	0.90	0.20	1.00	0.10	0.20	0.00	2.10	94.50	0.30	2.80	0.00	1.44	8.75
429	HM	Muley Canyon		HM-WWW-14-weathered	0.80	0.30	0.90	0.00	0.20	0.00	2.20	93.60	0.50	3.70	0.00	1.50	6.43
441	HM	Muley Canyon		HM-14-weathered	1.50	0.00	0.50	0.00	0.20	0.00	2.20	94.90	0.60	2.30	0.00	1.38	3.25
553	HM	Muley Canyon		MR-10 weathered	0.50	0.40	0.80	0.20	0.10	0.10	2.10	94.10	1.30	2.30	0.20	1.49	14.63
554	HM	Muley Canyon		MR-11 weathered	0.20	0.00	0.60	0.20	0.00	0.10	1.10	94.40	1.20	3.10	0.20	1.41	3.47
555	HM	Muley Canyon		MR-12 weathered	0.20	0.20	0.50	0.00	0.00	0.00	0.90	97.30	0.20	1.60	0.00	1.53	11.23
556	HM	Muley Canyon		MR-13 weathered	0.20	0.50	0.60	0.20	0.40	0.10	2.00	94.80	0.10	3.10	0.00	1.45	3.83
557	HM	Muley Canyon		MR-14 weathered	1.50	0.40	1.00	0.10	0.20	0.90	4.10	93.00	0.50	2.20	0.20	1.46	10.36
558	HM	Muley Canyon		MR-15 weathered	0.90	0.50	0.20	0.20	0.10	0.10	2.00	95.60	0.10	2.30	0.00	1.38	7.34
559	HM	Muley Canyon		MR-16 weathered	1.50	0.00	2.20	0.00	0.30	0.00	4.00	92.10	0.00	3.90	0.00	1.57	12.06
560	HM	Muley Canyon		MR-17-uppr. weatherd	0.80	0.20	0.50	0.00	0.30	0.00	1.80	96.30	0.10	1.80	0.00	1.62	16.10
561	HM	Muley Canyon		MR-17 lwr. weathered	0.50	0.30	0.10	0.10	0.40	0.20	1.60	95.20	1.00	2.20	0.00	1.49	15.18
562	HM	Muley Canyon		MR-18 weathered	0.60	0.00	0.50	0.30	0.20	0.30	1.90	95.10	1.00	2.00	0.00	1.53	9.71
563	HM	Muley Canyon		MR-19 weathered	3.30	0.50	1.20	0.00	0.40	0.40	5.80	91.40	0.70	2.10	0.00	1.50	7.39
Seam: Muley Canyon				Mean	1.01	0.16	1.20	0.03	0.13	0.19	2.72	94.55	0.41	2.30	0.01	1.51	8.80
				Maximum	3.50	0.50	24.20	0.30	0.40	1.20	24.50	98.20	2.00	6.20	0.20	1.97	23.77
				Minimum	0.20	0.00	0.10	0.00	0.00	0.00	0.70	75.10	0.00	0.40	0.00	1.20	2.95
				Std.Deviation	0.73	0.15	3.22	0.07	0.12	0.32	3.22	3.28	0.39	1.15	0.05	0.12	4.33

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
443	HM	L.Muley Cyn.		HMP-6b-weathered	0.70	0.10	0.40	0.00	0.00	0.10	1.30	96.20	0.40	2.10	0.00	1.53	14.00
Seam: L.Muley Cyn.				Mean	0.70	0.10	0.40	0.00	0.00	0.10	1.30	96.20	0.40	2.10	0.00	1.53	14.00
				Maximum	0.70	0.10	0.40	0.00	0.00	0.10	1.30	96.20	0.40	2.10	0.00	1.53	14.00
				Minimum	0.70	0.10	0.40	0.00	0.00	0.10	1.30	96.20	0.40	2.10	0.00	1.53	14.00
				Std.Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
442	HM	U.Muley Cyn.		HM-6a-weathered	0.80	0.10	0.70	0.10	0.30	0.30	2.30	93.20	0.70	3.80	0.00	1.57	14.00
Seam: U.Muley Cyn.				Mean	0.80	0.10	0.70	0.10	0.30	0.30	2.30	93.20	0.70	3.80	0.00	1.57	14.00
				Maximum	0.80	0.10	0.70	0.10	0.30	0.30	2.30	93.20	0.70	3.80	0.00	1.57	14.00
				Minimum	0.80	0.10	0.70	0.10	0.30	0.30	2.30	93.20	0.70	3.80	0.00	1.57	14.00
				Std.Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
439	HM	Unknown		HM-LBM-8-weathered	0.60	0.00	0.00	0.00	0.20	0.00	0.80	99.00	0.00	0.20	0.00	1.58	1.30
608	HM	Unknown		Station AK235	0.00	0.70	0.10	0.00	0.30	0.60	2.70	93.80	1.50	2.00	0.00	2.07	8.18
Seam: Unknown				Mean	0.30	0.35	0.55	0.00	0.25	0.30	1.75	96.40	0.75	1.10	0.00	1.82	4.74
				Maximum	0.60	0.70	1.10	0.00	0.30	0.60	2.70	99.00	1.50	2.00	0.00	2.07	8.18
				Minimum	0.00	0.00	0.00	0.00	0.20	0.00	0.80	93.80	0.00	0.20	0.00	1.58	1.30
				Std.Deviation	0.30	0.35	0.55	0.00	0.05	0.30	0.95	2.60	0.75	0.90	0.00	0.25	3.44

Appendix I. Coal-characteristics Data for the Coalville Coal Field.

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_0)	Coal Rank	Vhard kg/mm^2	Shard	Vitrn %	Exint %	Inert %
662	CVL	UPT	25-3N-06E	Wasatch	79.40	3.10	1.90	0.50	1.70	2.10	1.30	8.90	0.50	0.60	0.41	subb			82.50	4.10	13.40
662.1	CVL	UPT	25-3N-06E	Wasatch	71.00	2.10	2.50	0.60	2.90	1.90	4.00	13.80	0.70	0.50	0.38	subb			73.10	6.00	20.90
662.2	CVL	UPT	25-3N-06E	Wasatch	77.70	4.40	1.80	0.70	0.90	3.00	2.20	9.10	0.20	0.00	0.41	subb			82.10	3.40	14.50
662.3	CVL	UPT	25-3N-06E	Wasatch	88.20	3.30	1.40	0.60	0.70	0.90	0.70	3.60	0.40	0.20	0.41	subb			91.50	2.70	5.80
Summary Statisticks																					
Seam: Wasatch			Mean		79.08	3.23	1.90	0.60	1.55	1.98	2.05	8.85	0.45	0.33	0.40				82.30	4.05	13.65
			Maximum		88.20	4.40	2.50	0.70	2.90	3.00	4.00	13.80	0.70	0.60	0.41				91.50	6.00	20.90
			Minimum		71.00	2.10	1.40	0.50	0.70	0.90	0.70	3.60	0.20	0.00	0.38				73.10	2.70	5.80
			Std. Deviation		6.13	0.82	0.39	0.07	0.86	0.75	1.25	3.61	0.18	0.24	0.01				6.51	1.23	5.36

Appendix I. Coal-characteristics Data for the Coalville Coal Field (continued).

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
662	BC	Wasatch	UPT-A001	channel smpl.	0.10	0.00	0.30	0.70	0.10	0.30	1.50	95.90	0.50	1.90	0.20	1.38	2.38
662.1	BC	Wasatch		channel smpl.,top 0.0'-1.0'	0.30	0.50	0.50	0.90	0.20	0.20	2.60	94.00	0.60	2.50	0.30	1.42	2.29
662.2	BC	Wasatch		channel smpl.,mid. 2.5'-3.5'	0.00	0.20	0.00	0.10	0.10	0.40	0.80	96.60	0.70	1.80	0.10	1.36	3.33
662.3	BC	Wasatch		channel smpl.,btm.5.7'- 6.7'	0.10	0.10	0.00	0.30	0.00	0.20	0.70	97.30	0.60	1.40	0.00	1.36	2.89
Seam:Wasatch				Mean	0.13	0.20	0.20	0.50	0.10	0.28	1.40	95.95	0.07	0.39	0.11	1.38	2.72
				Maximum	0.30	0.50	0.50	0.90	0.20	0.40	2.60	97.30	0.70	2.50	0.30	1.42	3.33
				Minimum	0.00	0.00	0.00	0.10	0.00	0.20	0.70	94.00	0.50	1.40	0.00	1.36	2.29
				Std. Deviation	0.11	0.19	0.21	0.32	0.07	0.08	0.76	1.23	0.07	0.39	0.11	0.02	0.42

Appendix J. Coal-characteristics Data for the Kaiparowits Plateau Coal Field.

Sample Number	Coal Field	Qd (7.5')	Cadastral Location	Coal Seam	V %	PV %	Spor %	Cut %	Res %	Mic %	Fus %	SF %	Macr %	Sclr %	Refl (R_o)	Coal Rank	Vhard kg/mm²	Shard	Vitrn %	Exint %	Inert %
377	KP	PNE	13-41S-02W	Chinle Fm.?	69.40	15.60	1.40	0.90	1.10	1.10	1.70	8.70	0.00	0.10	0.62	hvBb			85.00	3.40	11.60
Seam: Chinle Fm.?			Mean		69.40	15.60	1.40	0.90	1.10	1.10	1.70	8.70	0.00	0.10	0.62				85.00	3.40	11.60
			Maximum		69.40	15.60	1.40	0.90	1.10	1.10	1.70	8.70	0.00	0.10	0.62				85.00	3.40	11.60
			Minimum		69.40	15.60	1.40	0.90	1.10	1.10	1.70	8.70	0.00	0.10	0.62				85.00	3.40	11.60
			Std. Deviation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00	0.00	0.00
712	KP	TBB	20-41S-04E	Christensen	76.50	3.60	2.80	1.00	2.70	2.10	3.30	7.40	0.40	0.20	0.46	subb			80.10	6.50	13.40
712.1	KP	TBB	20-41S-04E	Christensen	74.90	2.10	3.90	0.50	3.50	1.70	3.50	9.10	0.50	0.30	0.46	subb			77.00	7.90	15.10
712.2	KP	TBB	20-41S-04E	Christensen	74.50	2.60	3.30	1.20	3.40	2.70	2.40	9.30	0.50	0.10	0.48	hvCb			77.10	7.90	15.00
712.3	KP	TBB	20-41S-04E	Christensen	77.50	7.00	4.60	0.70	3.00	1.40	1.20	4.50	0.10	0.00	0.44	subb			84.50	8.30	7.20
712.4	KP	TBB	20-41S-04E	Christensen	79.10	10.70	3.90	0.80	1.40	0.30	0.30	3.20	0.20	0.10	0.44	subb			89.80	6.10	4.10
712.5	KP	TBB	20-41S-04E	Christensen	67.20	4.60	3.30	0.80	4.20	1.60	6.00	11.80	0.40	0.10	0.45	subb			71.80	8.30	19.90
712.6	KP	TBB	20-41S-04E	Christensen	74.50	6.40	3.00	0.50	2.00	0.70	4.30	8.10	0.30	0.20	0.48	hvCb			80.90	5.50	13.60
713	KP	TBB	20-41S-04E	Christensen	70.80	2.20	4.30	0.70	2.90	4.10	4.40	9.90	0.40	0.30	0.46	subb			73.00	7.90	19.10
714	KP	TBB	20-41S-04E	Christensen	72.90	2.60	3.80	0.20	2.10	2.00	2.80	13.00	0.40	0.20	0.47	hvCb			75.50	6.10	18.40
Seam: Christensen			Mean		74.21	4.64	3.66	0.71	2.80	1.84	3.13	8.48	0.36	0.17	0.46				78.86	7.17	13.98
			Maximum		79.10	10.70	4.60	1.20	4.20	4.10	6.00	13.00	0.50	0.30	0.48				89.80	8.30	19.90
			Minimum		67.20	2.10	2.80	0.20	1.40	0.30	0.30	3.20	0.10	0.00	0.44				71.80	5.50	4.10
			Std. Deviation		3.38	2.73	0.56	0.28	0.81	1.05	1.62	2.97	0.13	0.09	0.01				5.37	1.04	5.02
710	KP	TBB	20-41S-04E	Unknown	71.00	3.40	3.60	0.90	5.80	3.00	3.70	8.10	0.50	0.00	0.46	subb			74.40	10.30	15.30
711	KP	TBB	20-41S-04E	Unknown	72.60	7.50	3.40	0.70	4.50	3.40	2.30	5.20	0.20	0.20	0.44	subb			80.10	8.60	11.30
Seam: Unknown			Mean		71.80	5.45	3.50	0.80	5.15	3.20	3.00	6.65	0.35	0.10	0.45				77.25	9.45	13.30
			Maximum		72.60	7.50	3.60	0.90	5.80	3.40	3.70	8.10	0.50	0.20	0.46				80.10	10.30	15.30
			Minimum		71.00	3.40	3.40	0.70	4.50	3.00	2.30	5.20	0.20	0.00	0.44				74.40	8.60	11.30
			Std. Deviation		0.80	2.05	0.10	0.10	0.65	0.20	0.70	1.45	0.15	0.10	0.01				2.85	0.85	2.00

Appendix J. Coal-characteristics Data for the Kaiparowits Plateau Coal Field (continued)

Sample Number	Coal Field	Coal Seam:	C.Q. No	Comments	G %	Y %	O %	Fl %	Exud %	Bit %	Total Resin	NF %	Cutin %	Sporin %	Alg %	Density g/cc	Porosity %
377	KP	Chinle Fm.?		Calico Peak quadr.	0.60	0.00	0.50	0.00	0.00	0.00	1.10	96.60	0.90	1.40	0.00	1.63	
Seam: Chinle Fm.?			Mean		0.60	0.00	0.50	0.00	0.00	0.00	1.10	96.60	0.90	1.40	0.00	1.63	
			Maximum		0.60	0.00	0.50	0.00	0.00	0.00	1.10	96.60	0.90	1.40	0.00	1.63	
			Minimum		0.60.	0.00	0.50	0.00	0.00	0.00	1.10	96.60	0.90	1.40	0.00	1.63	
			Std.Deviation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
712	KP	Christensen		DH 407; channel sample	1.10	0.30	0.10	0.80	0.20	0.00	2.50	93.50	1.00	2.80	0.20		
712.1	KP	Christensen		DH 407; 575'-578'	0.60	1.00	0.80	0.50	0.20	0.00	3.10	92.10	0.50	3.90	0.40		
712.2	KP	Christensen		DH 407; 578'-579.7'	0.40	0.70	0.80	0.70	0.50	0.00	3.10	92.10	1.20	3.30	0.30		
712.3	KP	Christensen		DH 407; 579.7'-585.2'	1.40	0.50	0.30	0.50	0.00	0.10	2.80	91.70	0.70	4.60	0.20		
712.4	KP	Christensen		DH 407; 585.2'-586.6'	0.30	0.40	0.10	0.60	0.00	0.00	1.40	93.90	0.80	3.90	0.00		
712.5	KP	Christensen		DH 407; 590.7'-595.0'	1.40	0.60	0.10	0.70	1.10	0.10	4.00	91.70	0.80	3.30	0.20		
712.6	KP	Christensen		DH 407; 596.2'-600.2'	0.60	0.60	0.20	0.00	0.40	0.00	1.80	94.50	0.50	3.00	0.20		
713	KP	Christensen		DH 406; 572.5'-577.5'	1.00	0.30	0.50	0.20	0.60	0.20	2.80	92.10	0.70	4.30	0.10		
714	KP	Christensen		DH 406; 593.5'-599.0'	0.50	0.40	0.20	0.40	0.40	0.00	1.90	93.90	0.20	3.80	0.20		
Seam: Christensen			Mean		0.81	0.53	0.34	0.49	0.38	0.04	2.60	92.83	0.71	3.66	0.20		
			Maximum		1.40	1.00	0.80	0.80	1.10	0.20	4.00	94.50	1.20	4.60	0.40		
			Minimum		0.30	0.30	0.10	0.00	0.00	0.00	1.40	91.70	0.20	2.80	0.00		
			Std.Deviation		0.40	0.21	0.27	0.24	0.32	0.07	0.75	1.04	0.28	0.56	0.11		
710	KP	Unknown		DH 407; 520'-530'	1.30	1.10	1.40	0.80	0.30	0.00	4.90	89.70	0.90	3.60	0.90		
711	KP	Unknown		DH 407; cuttings	2.20	0.50	0.40	0.90	0.20	0.00	4.20	91.40	0.70	3.40	0.30		
Seam: Unknown			Mean		1.75	0.80	0.90	0.85	0.25	0.00	4.55	90.55	0.80	3.50	0.60		
			Maximum		2.20	1.10	1.40	0.90	0.30	0.00	4.90	91.40	0.90	3.60	0.90		
			Minimum		1.30	0.50	0.40	0.80	0.20	0.00	4.20	89.70	0.70	3.40	0.30		
			Std.Deviation		0.45	0.30	0.50	0.05	0.05	0.00	0.35	0.85	0.10	0.10	0.30		