
BIBLIOGRAPHY OF UTAH COAL

1869 THROUGH 1982

*By Dan A. Foster and Archie D. Smith
Compilers*

UTAH GEOLOGICAL AND MINERAL SURVEY
a division of
Utah Department of Natural Resources

Bulletin 120

June 1984



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INTRODUCTION

THE *Bibliography of Utah Coal* has been compiled in recognition of a need for many individuals to know where to find basic geologic and coal information. The bibliography was compiled under a cooperative grant with the Department of Energy, Grant No. DE-FG21-80MC14257, and under the direction of Dan A. Foster and Archie D. Smith. Diane J. Reeves, Darryl L. Chapman, and Sue A. Juch of the Utah Geological and Mineral Survey staff assisted in checking citations.

The compilation process utilized citations from computerized printouts from GEOREF, NTIS, GEOARCHIVE, ENERGYLINE, COMPENDEX, and Department of Energy, as well as Federal and State government reports, and graduate theses.

This bibliography contains 1406 citations to literature published from 1869 through 1982. Considerable effort has been expended to insure accuracy, consistency and completeness of the citations. However, users may note some errors and omissions. Users are encouraged to submit errors and omissions to the Survey for inclusion in future supplements.

A listing of abbreviations is included for clarity. Two index maps are included for use by state land managers as well as for geologists.

It is our hope this bibliography will serve as a useful aid to the professional geologist as well as be informative to the public and to industrial and academic researcher.

CROSS-REFERENCING

EACH of the listings are considered by author, location, and subject descriptors.

Author - citations are arranged alphabetically according to the author(s) name followed by the year and title of the publication.

Location - location is designated by county, coal field and quadrangle where available and applicable. A separate listing of citations by county has been prepared.

Subject Descriptors - as applicable and possible, each citation has been scanned for informational content and key descriptors listed.

Computer Search - the data base for the bibliography is retained on file at Utah Geological and Mineral Survey and may be searched for unique subject matter, phrases, and descriptors. For information concerning fees and/or charges contact the UGMS (801) 581-6831 during business hours.

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² Senior Geologist, Economic Program, Utah Geological and Mineral Survey.

ABBREVIATIONS

Abstr. — Abstracts	Nat. — Natural, National
Acad. — Academy	No. — Number
Am. — America, American	p. — Page, Pages
Ann. — Annual	Pac. — Pacific
Assoc. — Association	Pal. — Paleontology, Paleontological
Bull. — Bulletin	Pet. — Petroleum
Bur. — Bureau	Petr. — Petrology, Petrologists
Circ. — Circular	Proc. — Proceedings
Comm. — Commission	Prof. — Professional
Conf. — Conference	Publ. — Publication
Congr. — Congress, Congressional	Quart. — Quarterly
Conserv. — Conservation	Recl. — Reclamation
Dept. — Department	Res. — Resource, Resources
Div. — Division	Sch. — School
et al. — and others	Sci. — Science, Sciences
Eng. — Engineering	Sec. — Section
Geochem. — Geochemical	Sed. — Sedimentary, Sedimentologist
Geol. — Geology, Geological, Geologists	Ser. — Series
Geophys. — Geophysics	Soc. — Society
Hist. — History, Historical	Spec. — Special
Inf. — Information	Stud. — Studies
Inst. — Institute, Institution	Surv. — Survey
Int. — International	Tech. — Technical
Inv. — Investigation, Investigations	Transp. — Transportation
Intermtn. — Intermountain	U.S. — United States
Jour. — Journal	USGS — United States Geological Survey
Mem. — Memoirs	Univ. — University
Min. — Mineral, Mineralogical	Unpubl. — Unpublished
Misc. — Miscellaneous	Vol. — Volume
Mon. — Monograph	

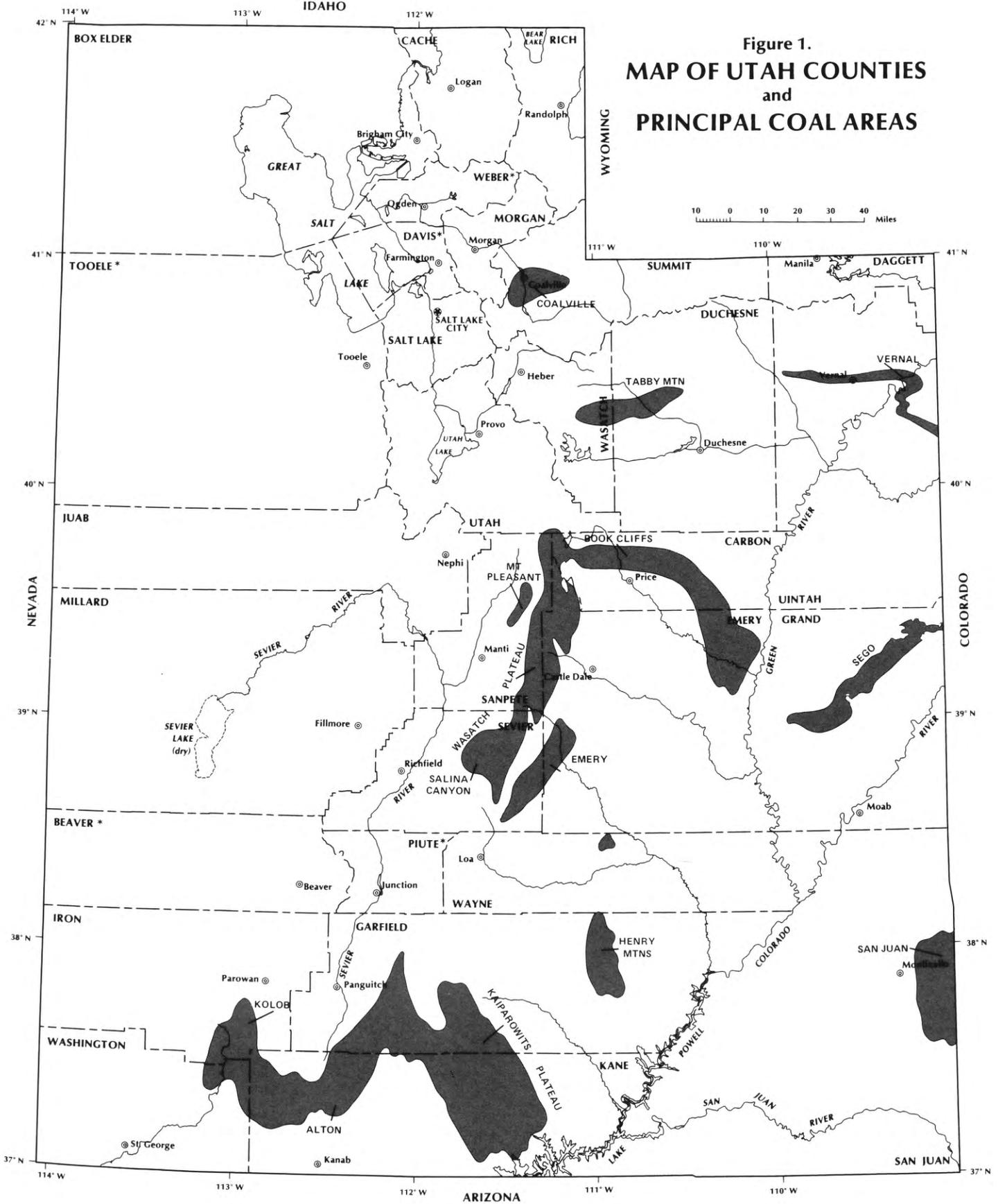
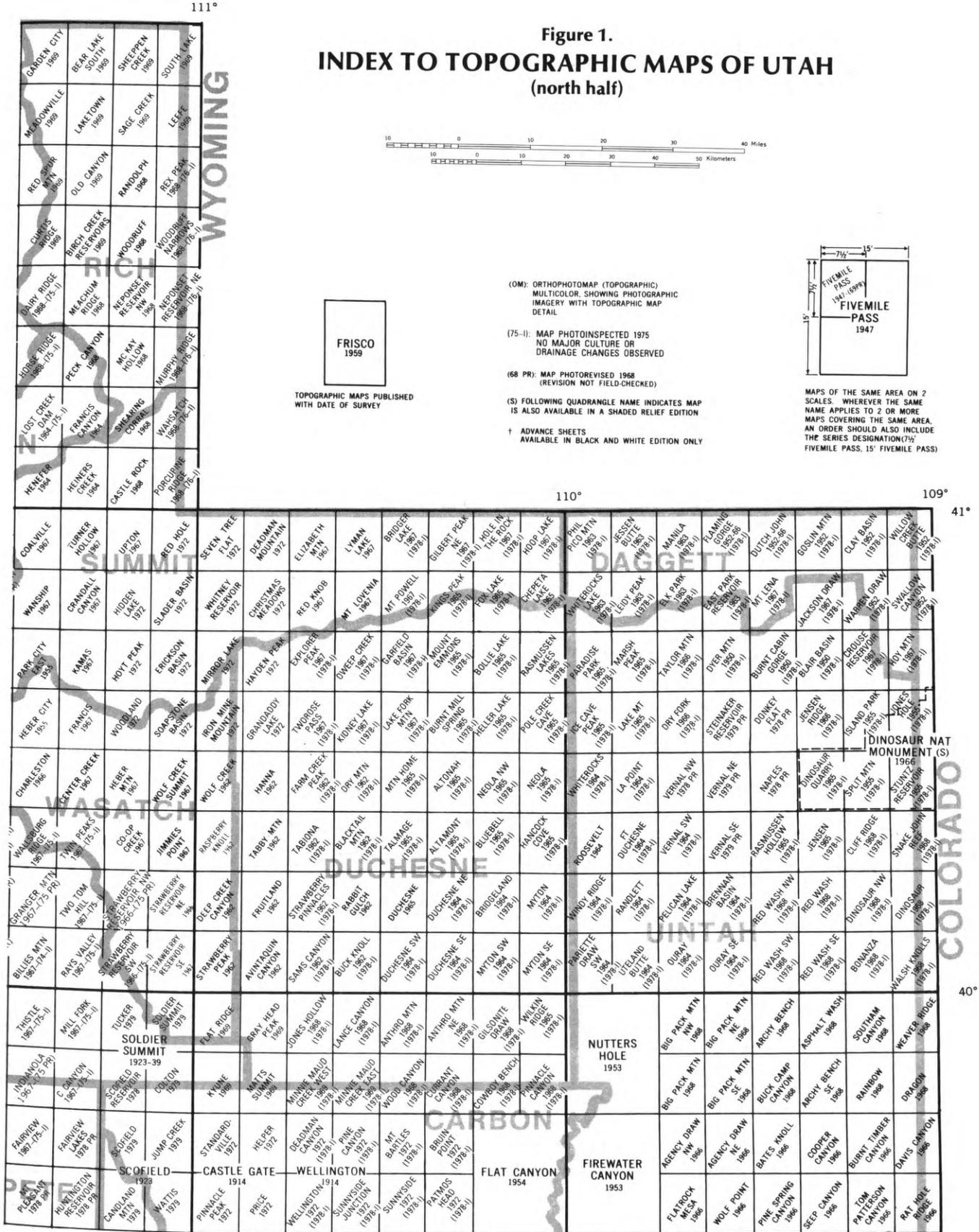
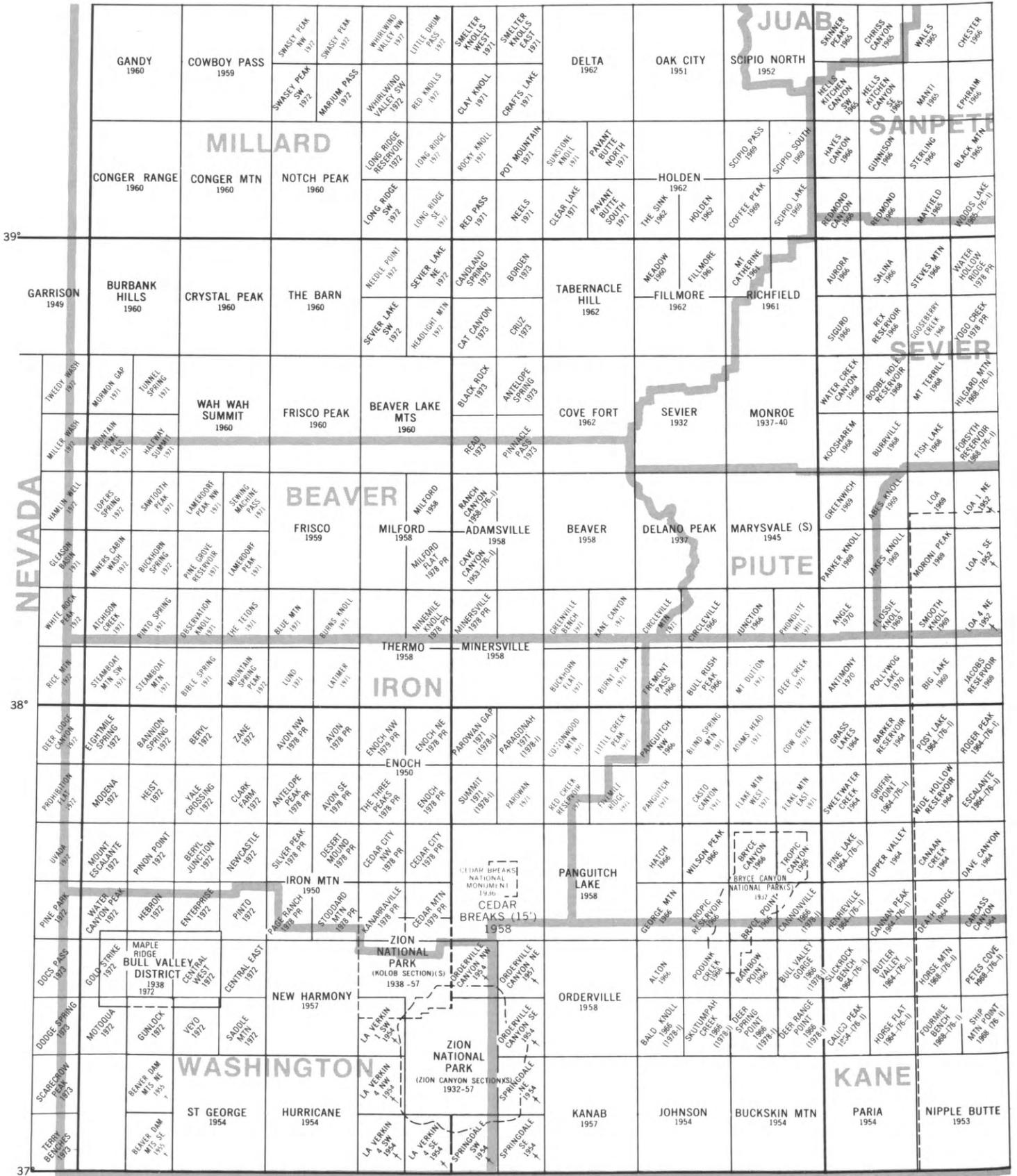


Figure 1.
MAP OF UTAH COUNTIES
and
PRINCIPAL COAL AREAS

● Principal Coal Area Fillmore ● County Seat *Indicates Counties With No References





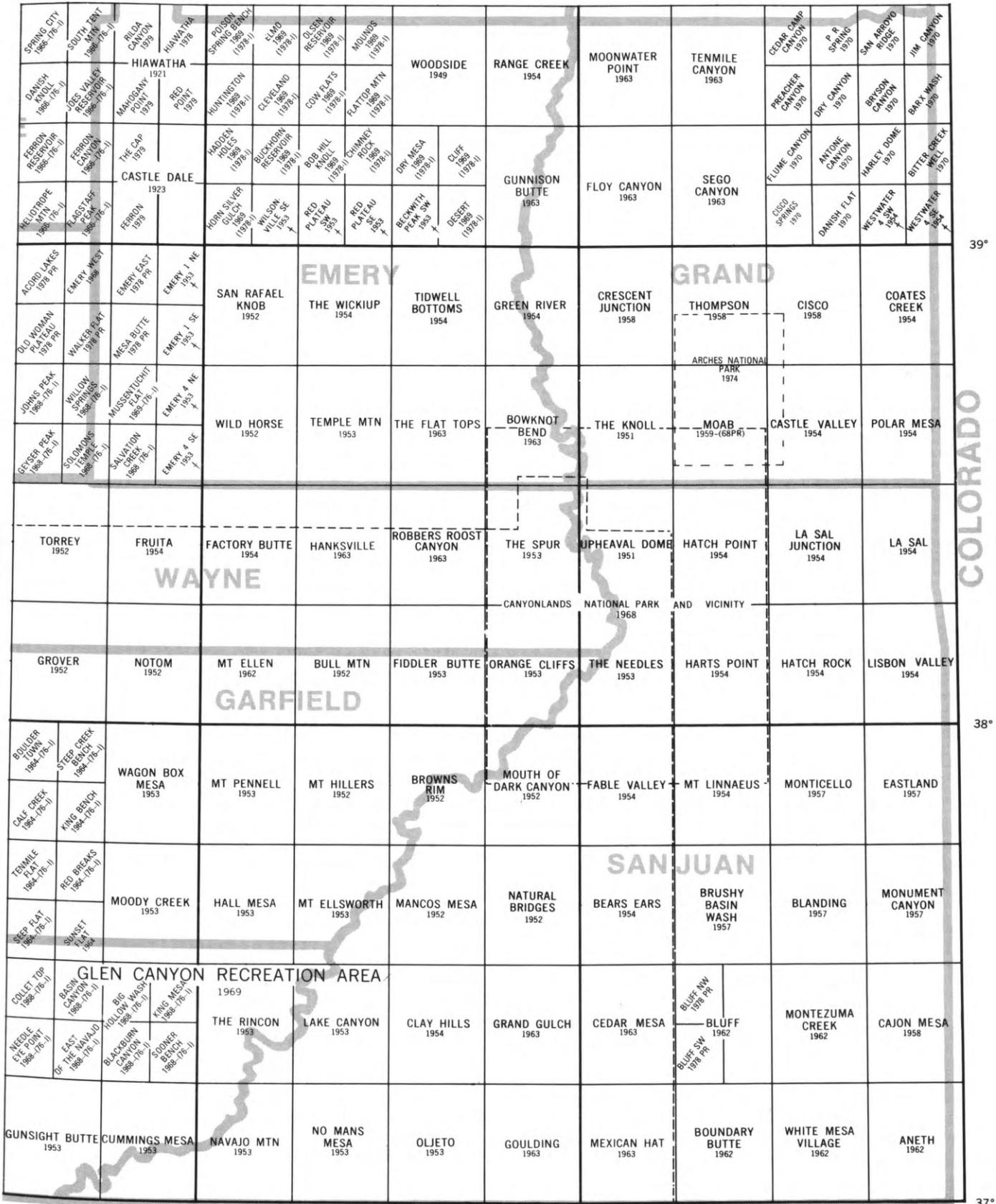


Figure 2. INDEX TO TOPOGRAPHIC MAPS OF UTAH (south half)

ONA

111°

37°

AUTHOR INDEX

A

- AAA Engineering and Drafting, Inc.**, 1979a, Coal resources of the Heliotrope Mountain Quadrangle, Sanpete and Sevier Counties, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1006, 20 p.
Sanpete and Sevier Counties; Wasatch Plateau Coal Field; Heliotrope Mountain Quadrangle.
Descriptors: Utah; Sanpete and Sevier Counties; economic geology; coal; maps; organic residues; deposits; resources; economic geology maps; explanatory text; Heliotrope Mountain Quadrangle; USGS.
- AAA Engineering and Drafting, Inc.**, 1979b, Coal resources of the Hilgard Mountain Quadrangle, Sevier County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1014, 19 p.
Sevier County; Salina Canyon Coal Field; Hilgard Mountain Quadrangle.
Descriptors: coal; Sevier County; technical production management; reserve estimation; materials distribution maps and surveys; Utah.
- AAA Engineering and Drafting, Inc.**, 1979c, Coal resources of the Joes Valley Reservoir Quadrangle, Sanpete and Emery Counties, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1002, 24 p.
Sanpete and Emery Counties; Wasatch Plateau Coal Field; Joes Valley Reservoir Quadrangle.
Descriptors: Utah; Sanpete and Emery Counties; economic geology; coal; maps; organic residues; deposits; resources; economic geology maps; explanatory text; Joes Valley Reservoir Quadrangle; USGS.
- AAA Engineering and Drafting, Inc.**, 1979d, Coal resources of the Kyune Quadrangle, Carbon County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-150, 18 p.
Carbon and Utah Counties; Book Cliffs Coal Field; Kyune Quadrangle.
Descriptors: Carbon and Utah Counties; coal resource occurrence; coal development potential maps; Kyune Quadrangle; physiography; climate; stratigraphy; structure; coal geology; mining operations; coal data map; columnar sections.
- AAA Engineering and Drafting, Inc.**, 1979e, Coal resources of the Matts Summit Quadrangle, Carbon County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-151, 14 p.
Duchesne, Utah, and Carbon Counties; Book Cliffs Coal Field; Matts Summit Quadrangle.
Descriptors: economic geology; coal; maps; Carbon, Duchesne, and Utah Counties; organic residues; deposits; resources; explanatory text; economic geology maps; Matts Summit Quadrangle; physiography; climate; land status; stratigraphy; coal geology; chemical analyses; mining operations; development potential; surface mining; subsurface mining; *in situ* gasification; coal data map; columnar section.
- AAA Engineering and Drafting, Inc.**, 1979f, Coal resources of the Minnie Maud Creek East Quadrangle, Carbon County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-488, 18 p.
Duchesne and Carbon Counties; Book Cliffs Coal Field; Minnie Maud Creek East Quadrangle.
Descriptors: economic geology; coal; maps; Carbon and Duchesne Counties; organic residues; deposits; resources; explanatory text; economic geology maps; Minnie Maud Creek East Quadrangle.
- AAA Engineering and Drafting, Inc.**, 1979g, Coal resources of the NE quarter of the Woodside 15-min. Quadrangle, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-896, 16 p.
Emery County; Book Cliffs Coal Field; NE quarter of the Woodside 15-min. Quadrangle.
Descriptors: economic geology; coal; maps; Emery County; organic residues; deposits; resources; explanatory text; economic geology maps; Woodside Quadrangle.

- AAA Engineering and Drafting, Inc., 1979h**, Coal resources of the NW quarter Woodside 15-min. Quadrangle, Emery and Carbon Counties, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-896, 19 p. Emery and Carbon Counties; Book Cliffs Coal Field; NW quarter Woodside 15-min. Quadrangle.
Descriptors: economic geology; coal; maps; Emery and Carbon Counties; organic residues; deposits; resources; explanatory text; economic geology maps; Woodside Quadrangle.
- AAA Engineering and Drafting, Inc., 1979i**, Coal resources of the SE quarter of the Range Creek 15-min. Quadrangle, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1017, 15 p. Emery County; Book Cliffs Coal Field; SE quarter of the Range Creek 15-min. Quadrangle.
Descriptors: economic geology; coal; maps; Emery and Grand Counties; organic residues; deposits; resources; economic geology maps; explanatory text; Range Creek Quadrangle; USGS.
- AAA Engineering and Drafting, Inc., 1979j**, Coal resources of the SW quarter of the Range Creek 15-min. Quadrangle, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1016, 15 p. Emery County; Book Cliffs Coal Field; SW quarter of the Range Creek 15-min. Quadrangle.
Descriptors: Utah; economic geology; coal; maps; Emery County; organic residues; deposits; resources; economic geology maps; explanatory text; Range Creek Quadrangle.
- AAA Engineering and Drafting, Inc., 1979k**, Coal resources of the SW quarter of the Soldier Summit 15-min. Quadrangle, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-481, 17 p. Utah and Carbon Counties; Wasatch Plateau Coal Field; SW quarter of the Soldier Summit 15-min. Quadrangle.
Descriptors: economic geology; coal; maps; Utah and Carbon Counties; organic residues; deposits; resources; economic geology maps; explanatory text; Soldier Summit Quadrangle.
- AAA Engineering and Drafting, Inc., 1979l**, Coal resources of the Walker Flat Quadrangle, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1013, 21 p. Sevier and Emery Counties; Emery Coal Field; Walker Flat Quadrangle.
Descriptors: Utah; economic geology; coal; maps; Sevier and Emery Counties; organic residues; deposits; resources; economic geology maps; explanatory text; Walker Flat Quadrangle; USGS.
- AAA Engineering and Drafting, Inc., 1979m**, Coal resources of the Water Hollow Ridge Quadrangle, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1008, 20 p. Sevier County; Wasatch Plateau Coal Field; Water Hollow Ridge Quadrangle.
Descriptors: economic geology; coal; maps; Sevier County; organic residues; deposits; resources; economic geology maps; explanatory text; Water Hollow Ridge Quadrangle.
- AAA Engineering and Drafting, Inc., 1979n**, Coal resources of the Yogo Creek Quadrangle, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1011, 20 p. Sevier County; Salina Canyon Coal Field; Yogo Creek Quadrangle.
Descriptors: economic geology; coal; maps; Sevier County; organic residues; deposits; resources; economic geology maps; explanatory text; Yogo Creek Quadrangle.
- AAA Engineering and Drafting, Inc., 1979o**, Coal resource occurrence and coal development potential maps of the Acord Lakes Quadrangle, Sevier County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1009, 24 p. Sevier County; Wasatch Plateau Coal Field; Acord Lakes Quadrangle.
Descriptors: economic geology; coal; maps; Sevier County; organic residues; deposits; resources; explanatory text; economic geology maps; Acord Lakes Quadrangle.
- AAA Engineering and Drafting, Inc., 1979p**, Coal resource occurrence and coal development potential maps of the Deadman Canyon Quadrangle, Emery County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-149, 15 p. Carbon County; Book Cliffs Coal Field; Deadman Canyon Quadrangle.
Descriptors: coal resource occurrence; coal development potential maps; Deadman Canyon Quadrangle; Carbon county; physiography; climate; land status; stratigraphy; structure; coal geology; mining operations; *in situ* gasification; coal data map, columnar sections.
- AAA Engineering and Drafting, Inc., 1979q**, Coal resource occurrence and coal development potential maps of the Dinosaur Quadrangle, Rio Blanco and Moffat Counties, Colorado, and Uintah County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1418, 18 p. Uintah County; Vernal Coal Field; Dinosaur Quadrangle.
Descriptors: Uintah County; economic geology; coal; maps; organic residues; deposits; resources; economic geology maps; explanatory text; inventory; Dinosaur Quadrangle.
- AAA Engineering and Drafting, Inc., 1979r**, Coal resource occurrence and coal development potential maps of the Emery West Quadrangle, Sevier and Emery Counties, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1010, 23 p. Sevier and Emery Counties; Emery Coal Field; Emery West Quadrangle.
Descriptors: economic geology; coal; maps; Sevier

and Emery Counties; organic residues; deposits; resources; economic geology maps; explanatory text; Emery West Quadrangle.

AAA Engineering and Drafting, Inc., 1979s, Coal resource occurrence and coal development potential maps of the Ferron Canyon Quadrangle, Sanpete, and Emery Counties, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1003, 11 p.

Sanpete and Emery Counties; Wasatch Plateau Coal Field; Ferron Canyon Quadrangle.

Descriptors: economic geology; coal; maps; Sanpete and Emery Counties; organic residues; deposits; resources; economic geology maps; explanatory text; inventory; Ferron Canyon Quadrangle.

AAA Engineering and Drafting, Inc., 1979t, Coal resource occurrence and coal development potential maps of the Flagstaff Peak Quadrangle, Sanpete, Sevier and Emery Counties, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1007, 19 p.

Sanpete, Sevier, and Emery Counties; Wasatch Plateau Coal Field; Flagstaff Peak Quadrangle.

Descriptors: economic geology; coal; maps; Sanpete, Emery, and Sevier Counties; organic residues; deposits; resources; explanatory text; economic geology maps; Flagstaff Peak Quadrangle.

AAA Engineering and Drafting, Inc., 1979u, Coal resource occurrence and coal development potential maps of the Helper Quadrangle, Carbon County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-148, 18 p.

Carbon County; Book Cliffs Coal Field; Helper Quadrangle.

Descriptors: economic geology; coal; maps; Carbon County; organic residues; deposits; resources; explanatory text; economic geology maps; Helper Quadrangle.

AAA Engineering and Drafting, Inc., 1979v, Coal resource occurrence and coal development potential maps of the John's Peak Quadrangle, Sevier County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1015, 22 p.

Sevier County; Emery Coal Field; John's Peak Quadrangle.

Descriptors: Utah; economic geology; coal; maps; Sevier County; organic residues; deposits; resources; economic geology maps; explanatory text; Johns Peak Quadrangle; USGS.

AAA Engineering and Drafting, Inc., 1979w, Coal resource occurrence and coal development potential maps of the Mount Bartles Quadrangle, Carbon County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-490, 15 p.

Carbon County; Book Cliffs Coal Field; Mount Bartles Quadrangle.

Descriptors: economic geology; coal; maps; Carbon County; organic residues; deposits; resources; explanatory text; economic geology maps; Mount Bartles Quadrangle.

AAA Engineering and Drafting, Inc., 1979x, Coal resource occurrence and coal development potential maps of the NE quarter of the Hiawatha 15-min. Quadrangle, Carbon County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-899, 18 p.

Carbon County; Wasatch Plateau Coal Field; NE quarter of the Hiawatha 15-min. Quadrangle.

Descriptors: economic geology; coal; maps; Carbon County; organic residues; deposits; resources; economic geology maps; explanatory text; Hiawatha Quadrangle.

AAA Engineering and Drafting, Inc., 1979y, Coal resource occurrence and coal development potential maps of the NE quarter of the Scofield 15-min. Quadrangle, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-484, 18 p.

Emery, Carbon, and Sanpete Counties; Wasatch Plateau Coal Field; NE quarter of the Scofield 15-min. Quadrangle.

Descriptors: economic geology; coal; maps; Emery, Carbon, and Sanpete Counties; coal resource occurrence; coal development potential maps; Quadrangle; physiography; climate; land status; stratigraphy; structure; coal geology; mining operations; *in situ* gasification; coal data map; columnar section.

AAA Engineering and Drafting, Inc., 1979z, Coal resource occurrence and coal development potential maps of the NE quarter of the Woodside 15-min. Quadrangle, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-897, 15 p.

Emery County; Book Cliffs Coal Field; NE quarter of the Woodside 15-min. Quadrangle.

Descriptors: economic geology; coal; maps; Emery County; organic residues; deposits; resources; explanatory text; economic geology maps; Woodside Quadrangle.

AAA Engineering and Drafting, Inc., 1979aa, Coal resource occurrence and coal development potential maps of the NW quarter of the Castledale 15-min. Quadrangle, Emery County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1004, 16 p.

Emery County; Wasatch Plateau Coal Field; NW quarter of the Castlegate 15-min. Quadrangle.

Descriptors: economic geology; coal; maps; Emery County; organic residues; deposits; resources; explanatory text; economic geology maps; Castle Dale Quadrangle.

AAA Engineering and Drafting, Inc., 1979bb, Coal resource occurrence and coal development potential maps of the NW quarter of the Hiawatha 15-min. Quadrangle, Carbon County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-487, 16 p.

Carbon County; Wasatch Plateau Coal Field; NW quarter of Hiawatha 15-min. Quadrangle.

Descriptors: economic geology; coal; maps; Emery County; organic residues; deposits; resources; ex-

- planatory text; economic geology maps; Hiawatha Quadrangle.
- AAA Engineering and Drafting, Inc., 1979cc,** Coal resource occurrence and coal development potential maps of the NW quarter of the Scofield 15-min. Quadrangle, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-483, 17 p.
Carbon County; Wasatch Plateau Coal Field; NW quarter of the Scofield 15-min. Quadrangle.
Descriptors: economic geology; coal; maps; Carbon County; organic residues; deposits; resources; explanatory text; economic geology maps; Scofield Quadrangle.
- AAA Engineering and Drafting, Inc., 1979dd,** Coal resource occurrence and coal development potential maps of the Old Woman Plateau, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1012, 22 p.
Sevier County; Salina Canyon Coal Field; Old Woman Plateau.
Descriptors: economic geology; coal; maps; Sevier County; organic residues; deposits; resources; economic geology maps; explanatory text; Old Woman Plateau Quadrangle; USGS.
- AAA Engineering and Drafting, Inc., 1979ee,** Coal resource occurrence and coal development potential maps of the Patmos Head Quadrangle, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-492, 17 p.
Carbon County; Book Cliffs Coal Field; Patmos Head Quadrangle.
Descriptors: economic geology; coal; maps; Carbon County; deposits; resources; explanatory text; economic geology maps; Patmos Head Quadrangle.
- AAA Engineering and Drafting, Inc., 1979ff,** Coal resource occurrence and coal development potential maps of the Pine Canyon Quadrangle, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-489, 18 p.
Carbon County; Book Cliffs Coal Field; Pine Canyon Quadrangle.
Descriptors: economic geology; coal; maps; Carbon County; organic residues; deposits; resources; explanatory text; economic geology maps; Pine Canyon Quadrangle.
- AAA Engineering and Drafting, Inc., 1979gg,** Coal resource occurrence and coal development potential maps of the SE quarter of the Hiawatha 15-min. Quadrangle, Emery County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1001, 15 p.
Emery County; Wasatch Plateau Coal Field; SE quarter of the Hiawatha 15-min. Quadrangle.
Descriptors: economic geology; coal; maps; Emery County; organic residues; deposits; resources; explanatory text; economic geology maps; Hiawatha Quadrangle.
- AAA Engineering and Drafting, Inc., 1979hh,** Coal resource occurrence and coal development potential maps of the SE quarter of the Scofield 15-min. Quadrangle, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-486, 17 p.
Carbon, Emery, and Sanpete Counties; Wasatch Plateau Coal Field; SE quarter of the Scofield 15-min. Quadrangle.
Descriptors: coal resource occurrence; coal development potential maps; Emery, Carbon, and Sanpete Counties; Wattis Quadrangle; climate; land status; stratigraphy; structure; coal geology; mining operations; *in situ* gasification; coal data map; columnar section.
- AAA Engineering and Drafting, Inc., 1979ii,** Coal resource occurrence and coal development potential maps of the SE quarter of the Soldier Summit 15-min. Quadrangle, Carbon County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-482, 12 p.
Carbon County; Wasatch Plateau Coal Field; SE quarter of the Soldier Summit 15-min. Quadrangle.
Descriptors: economic geology; coal; maps; Carbon County; organic residues; deposits; resources; explanatory text; economic geology maps; Soldier Summit Quadrangle.
- AAA Engineering and Drafting, Inc., 1979jj,** Coal resource occurrence and coal development potential maps of the SE quarter of the Woodside 15-min. Quadrangle, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-898, 16 p.
Emery County; Book Cliffs Coal Field; SE quarter of the Woodside 15-min. Quadrangle.
Descriptors: economic geology; coal; maps; Emery County; organic residues; deposits; resources; explanatory text; economic geology maps; Woodside Quadrangle.
- AAA Engineering and Drafting, Inc., 1979kk,** Coal resource occurrence and coal development potential maps of the SW quarter of the Castledale 15-min. Quadrangle, Emery County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1005, 12 p.
Emery County; Wasatch Plateau Coal Field; SW quarter of the Castlegate 15-min. Quadrangle.
Descriptors: economic geology; coal; maps; Emery County; organic residues; deposits; resources; explanatory text; economic geology maps; Castle Dale Quadrangle.
- AAA Engineering and Drafting, Inc., 1979ll,** Coal resource occurrence and coal development potential maps of the SW quarter of the Hiawatha 15-min. Quadrangle, Emery County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-900, 15 p.
Emery County; Wasatch Plateau Coal Field; SW quarter of the Hiawatha 15-min. Quadrangle.
Descriptors: economic geology; coal; maps; Emery County; organic residues; deposits; resources; explanatory text; economic geology maps; Hiawatha Quadrangle.
- AAA Engineering and Drafting, Inc., 1979mm,** Coal resource occurrence and coal development potential

maps of the SW quarter of the Scofield 15-min. Quadrangle, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-485, 16 p.

Emery, Carbon, and Sanpete Counties; Wasatch Plateau Coal Field; SW quarter of the Scofield 15-min. Quadrangle.

Descriptors: economic geology; coal; maps; Emery, Carbon, and Sanpete Counties; organic residues; deposits; resources; explanatory text; economic geology maps; Candland Mountain Quadrangle; coal resource occurrence; coal development potential; physiography; climate; land status; stratigraphy; structure; coal geology; mining operations; surface mining; *in situ* coal gasification; coal data map; composite columnar section.

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Carbon County; Book Cliffs Coal Field; Standardville Quadrangle.

Descriptors: economic geology; coal; maps; Carbon County; organic residues; deposits; resources; explanatory text; economic geology maps; Standardville Quadrangle.

AAA Engineering and Drafting, Inc., 1979oo, Coal resource occurrence and coal development potential maps of the Sunnyside Quadrangle, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-491, 17 p.

Carbon County; Wasatch Plateau Coal Field; Sunnyside Quadrangle.

Descriptors: economic geology; coal; maps; Carbon County; organic residues; deposits; resources; explanatory text; economic geology maps; Sunnyside Quadrangle.

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Emery County; Wasatch Plateau Coal Field; The Cap and Mahogany Point Quadrangles.

Descriptors: well-logging; mining geology; economic geology; general; evaluation; coal; Emery County; organic residues; deposits; exploration; drilling; The Cap Quadrangle; Mahogany Point Quadrangle.

Abbay, T. R., 1979b, Geophysical logs of seven coal drill holes, The Cap and Mahogany Point Quadrangles. Chapter B of drilling during 1979 in Emery County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1495-B, 8 p., logs.

Emery County; Wasatch Plateau Coal Field; The Cap and Mahogany Point Quadrangles.

Descriptors: well-logging; economic geology; mining geology; interpretation; evaluation; coal; Emery County; The Cap Quadrangle; Mahogany Point Quadrangle; general; organic residues; deposits; boreholes.

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Emery County; Wasatch Plateau Coal Field.

Descriptors: well-logging; mining geology; economic geology; general; geology; evaluation; coal; Emery County; organic residues; deposits; exploration; drilling.

Abbay, T. R., 1979d, Geophysical logs of three coal boreholes, North Horn Mountain, Utah. Chapter A of coal drilling during 1979 in Emery County, Utah: U.S. Geol. Surv., Open-File Rept., No. 79-1495-A, 9 p.

Emery County; Wasatch Plateau Coal Field.

Descriptors: well-logging; mining geology; economic geology; interpretation; evaluation; coal; Emery County; North Horn Mountain; general; organic residues; deposits; boreholes.

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Carbon and Emery Counties; Book Cliffs Coal Field.

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Descriptors: coal; flame photometry; ash constituents; slag properties; coal fusibility; Utah coals; tables.

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Descriptors: coal; spectrochemical analysis; trace elements; ash; western states; coal zones; tables.

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Carbon County; Book Cliffs Coal Field; Helper Quadrangle.

Descriptors: economic geology; coal; maps; Carbon County; organic residues; deposits; resources; explanatory text; economic geology maps; Helper Quadrangle.

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Carbon County; Book Cliffs Coal Field; Mount Bartles Quadrangle.

Descriptors: economic geology; coal; maps; Carbon County; organic residues; deposits; resources; explanatory text; economic geology maps; Mount Bartles Quadrangle.

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Emery, Carbon, and Sanpete Counties; Wasatch Plateau Coal Field; NE quarter of the Scofield 15-min. Quadrangle.

Descriptors: economic geology; coal; maps; Emery, Carbon, and Sanpete Counties; coal resource occurrence; coal development potential maps; Jump Creek Quadrangle; physiography; climate; land status; stratigraphy; structure; coal geology; mining operations; *in situ* gasification; coal data map; columnar section.

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Descriptors: coal resource occurrence; coal development potential maps; Emery, Carbon, and Sanpete Counties; Wattis Quadrangle; climate; land status; stratigraphy; structure; coal geology; mining operations; *in situ* gasification; coal data map; columnar section.
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Descriptors: coal mine bumps; seismic surveys; Sunnyside district; Carbon and Emery Counties; Book Cliffs Coal Field; seismic study; epicenters; coking coal; hazards; daily records of tremors caused by bumps; seasonal patterns; maxima; prediction of location; releases of strain energy; surface and sub-surface mapping; structural and lithological conditions in coal and associated rocks; instruments; interpretation; geologic and topographic setting.

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Sanpete, Sevier, Carbon, and Emery Counties; Wasatch Plateau Coal Field.

Descriptors: faults; sedimentation; economic geology; displacements; environment; coal; normal faults; paleochannels; Sevier County; Blackhawk Formation; Star Point Sandstone; Mancos Shale; Ferron Sandstone Member; organic residues; Wasatch Plateau; John's Peak Quadrangle; Emery; Last Chance Creek; Upper Last Chance Creek.

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Emery, Carbon, and Utah Counties; Book Cliffs and Wasatch Plateau Coal Fields.

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Henry Mountains, Emery, Wasatch Plateau, Book Cliffs, and Sego Coal Fields.

Descriptors: geology; mineral resources; engineering geology characteristics; environmental geochemistry; east-central Utah; coal development; stratigraphy; Henry Mountains, Emery, Wasatch Plateau, Book Cliffs, and Sego Coal Fields; coal quality and composition; oil and gas; non-petroleum gases; oil shale; bituminous sandstone; uranium; base metals; clays; underground coal mining; coal mine subsidence; earthquakes; maps; stratigraphic correlations.

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Descriptors: Coal; Utah and Colorado; Cretaceous; Economic geology; Sanpete, Carbon, Emery, Utah, Wasatch, Duchesne, Uintah, and Garfield Counties; Wasatch Plateau and Book Cliffs Coal Fields; deposits; genesis; controls; environment; lagoons; barrier islands; sedimentary rocks.

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Descriptors: bituminous; subbituminous coal; estimate of reserves; source of estimate; table; classification by characteristics; reserves, original, remaining, recoverable; mining; distribution; coking coal; strippable coal; production; use; uranium; ownership of coal lands; peat; world coal reserves.

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Descriptors: mineral fuels; coal resources; rank; production; market; Henry's Fork, Tabby Mountain,

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Descriptors: Utah, mineral fuels; coal resources; rank; production; market; Henry's Fork, Tabby Mountain, Vernal, Book Cliffs, Wales, Salina Canyon, Henry Mountains, Kolob, Kaiparowits, San Juan, Lost Creek, Coalville, and Harmony Coal Fields; stratigraphy; structure; lithology.

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Descriptors: coal mine bumps; seismic surveys; Sunnyside district; Carbon and Emery Counties; Book Cliffs Coal Field; seismic study; epicenters;

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Descriptors: bituminous; subbituminous coal; estimate of reserves; source of estimate; table; classification by characteristics; reserves, original, remaining, recoverable; mining; distribution; coking coal; strippable coal; production; use; uranium; ownership of coal lands; peat; world coal reserves.

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Descriptors: coal; mining; history; resources; properties; mining methods; development; market; transportation; coking capability; production; coal field geology; chemical analysis; Coalville, Henrys Fork, Vernal, Blacktail (Tabby) Mountain, Book Cliffs, Wasatch Plateau, Emery, Henry Mountains, Kaiparowits Plateau, and Kolob-Harmony Coal Fields; maps; tables.

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Henry's Fork, Blacktail (Tabby) Mountain, Vernal, Book Cliffs, Sego, Wasatch Plateau, Mount Pleasant, Wales, Salina Canyon, Emery, Henry Mountains, Kolob-Harmony, Kaiparowits Plateau, San Juan, Lost Creek, and Coalville Coal Fields.

Descriptors: bituminous; subbituminous coal; estimate of reserves; source of estimate; table; classifica-

tion by characteristics; reserves, original, remaining, recoverable; mining; distribution; coking coal; strippable coal; production; use; uranium; ownership of coal lands; peat; world coal reserves.

Averitt, P., 1964, Coal, in Mineral and water resources of Utah: Utah Geol. and Min. Surv., Bull., No. 73.

Henry's Fork, Tabby Mountain, Vernal, Book Cliffs, Wales, Salina Canyon, Henry Mountains, Kolob, Kaiparowits, San Juan, Lost Creek, Coalville, and Harmony Coal Fields.

Descriptors: Utah, mineral fuels; coal resources; rank; production; market; Henry's Fork, Tabby Mountain, Vernal, Book Cliffs, Wales, Salina Canyon, Henry Mountains, Kolob, Kaiparowits, San Juan, Lost Creek, Coalville, and Harmony Coal Fields; stratigraphy; structure; lithology.

Brown, R. W., 1929, Additions to the flora of the Green River Formation: U.S. Geol. Surv., Prof. Paper, No. 154-J, p. 279-294.

Uintah County.

Descriptors: Green River Formation; Uinta Basin; fossil flora additions.

Campbell, M. R., 1917, Coal fields of the United States, general introduction: U.S. Geol. Surv., Prof. Paper, No. 100-A.

Vernal, Coalville, Book Cliffs, Wasatch Plateau, Kaiparowits Plateau, and Kolob Coal Fields.

Descriptors: southwestern Utah; map of coal fields; estimate of coal reserves of different rank; heat efficiency; classification of coal areas; Vernal, Wasatch Plateau, Coalville, San Juan, Kaiparowits Plateau, Emery, and Kolob Coal Fields.

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Emery, Sevier, Rich, and Uintah Counties.

Covington, R. E., 1957, The bituminous sandstones of the Asphalt Ridge area, northeastern Utah, in Guidebook to the geology of the Uinta Basin: Intermtn. Assoc. Pet. Geol., 8th Ann. Field Conf., p. 172-5.

Duchesne and Uintah Counties.

Descriptors: Asphalt Ridge area; Vernal area; bituminous sandstones; physiography; geology; stratigraphy; asphalt saturation; origin and time of accumulation; economics; mining methods.

Covington, R. E., 1963, Bituminous sandstone and limestone deposits of Utah, in Oil and gas possibilities of Utah, re-evaluated: Utah Geol. and Min. Surv., Bull., No. 54, p. 225-47.

Duchesne and Uintah Counties.

Descriptors: bituminous sands; Uinta Basin; Sunnyside area; stratigraphy; structure; nature; deposits; tables; charts.

Covington, R. E., 1964a, Bituminous sandstones in the Uinta Basin, in Guidebook to the geology and mineral resources of the Uinta Basin: Intermtn. Assoc. Pet. Geol., 13th Ann. Field Conf., p. 227-42.

Duchesne and Uintah Counties.

Descriptors: Uinta Basin; bituminous sandstones; Sunnyside area; Asphalt Ridge; White Rocks area; P. R. Springs deposit; Chapita wells area; Dragon-Asphalt wash area; Deep Creek area; mining economics; methods.

Covington, R. E., 1964b, Thermal recovery may bring industry's quiet revolution: Oil and Gas Jour., Nov. 23, 1964, p. 112-18.

Duchesne, Uintah, and Carbon Counties; Vernal and Book Cliffs Coal Fields.

Descriptors: Uinta Basin; bituminous sandstone; thermal recovery method; fire flooding; steam-caustic injections; production; Sunnyside; Asphalt Ridge; Whiterocks; Green River desert; reserves.

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Duchesne, Uintah, and Carbon Counties; Vernal and Book Cliffs Coal Fields.

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Duchesne, Uintah, and Wasatch Counties.

Descriptors: stratigraphic and facies relationships; Green River Formation; Uinta Formation; Duchesne, Uintah, and Wasatch Counties; correlation; tuff beds; lacustrine; playa; mud-flat; saline facies; Eocene; oil shale; lateral facies changes; correlated columnar sections; description of members; lithology.

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algal fossils; petrographic studies; algal diversity; oil shale.

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Uintah County; Vernal Coal Field.

Descriptors: Vernal Coal Field; location; geography; physiography; stratigraphy; lithologic descriptions; coal deposits; mining; exploration; production; chemical analysis; reserves; land control; quadrangle reports; maps.

Doelling, H. H., and R. L. Graham, 1972, Eastern and northern Utah coal fields: Vernal, Henry Mountains, Segó, La Sal-San Juan, Tabby Mountain, Coalville, Henry's Fork, Goose Creek and Lost Creek: Utah Geol. and Min. Surv., Mon. Ser., No. 2, 411 p.

Vernal, Henry Mountains, Segó, La Sal-San Juan, Tabby Mountain, Coalville, Henry's Fork, and Lost Creek Coal Fields; Goose Creek lignite field.

Descriptors: Cretaceous; coal; lignite; economic geology; lithostratigraphy; Vernal, Henry Mountains, Segó, La Sal-San Juan, Tabby Mountain, Coalville, Henry's Fork, and Lost Creek Coal Fields; Goose Creek lignite field; occurrence.

Doelling, H. H., R. L. Graham, R. D. Gray and F. E. May, 1970, Vernal coal field: Unpubl. Utah Geol. and Min. Surv., Rept.

Uintah County; Vernal Coal Field.

Donnell, J. R., 1965, Geology and oil-shale resources of the Green River Formation: The Mountain Geologist, Vol. 2, No. 3, p. 95-100.

Duchesne and Uintah Counties.

Descriptors: Green River Formation; intracratonic lakes; Uinta Basin; Piceance basin; stratigraphy; depositional environment; oil shale resources.

Fieldner, A. C., 1914, Analyses of mine and car samples of coal collected in the year 1911-1913. U.S. Bur. Mines, Bull., No. 85.

Carbon, Emery, Sevier, Summit, Uintah, and Wasatch Counties.

Descriptors: sampling and analytical methods; car samples; mine sampling; determination of ash, moisture, Volatiles, carbon, sulfur, hydrogen, nitrogen and calorific values; proximate and ultimate analyses; descriptions of samples; Carbon, Emery, Sevier, Summit, Uintah, and Wasatch Counties; Hiawatha, Knight, Sunnyside, Browning, Casper, Williams, Hogan, Kearns and Duggins, Rees-Grass, Superior, Wasatch, Blue Bell, Green, Reynolds, Winchester, and Cummings mines,; sections.

Fieldner, A. C., H. M. Cooper and F. D. Osgood, 1924, Analyses of mine samples of coal in Utah: U.S. Bur. Mines, Tech. Pub., No. 345.

Coalville, Henry's Fork, Vernal, Blacktail (Tabby) Mountain, Book Cliffs, Wasatch Plateau, Emery, Henry Mountains, Kaiparowits, Kolob, and Harmony Coal Fields.

Descriptors: coal; geology; Coalville, Henry's Fork, Vernal, Blacktail (Tabby) Mountain, Book Cliffs, Wasatch Plateau, Emery, Henry Mountains, Kaiparowits, Kolob, and Harmony Coal Fields; location; occurrence; structure; lithologic descriptions; chemical analyses; coking capabilities; tables.

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Descriptors: Uinta Basin; Mesaverde Group; stratigraphy; physiography; structure; lithology; nomenclature; facies descriptions; Star Point Sandstone; Blackhawk Formation; Price River Formation; depositional environment; correlation.

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Duchesne and Uintah Counties.

Descriptors: oil shale; processing techniques; Green River Formation; mining retorting; gas combustion; Union Oil process; Tosco process; in-situ retorting.

Hansen, A. R., 1963, The Uinta Basin - structure, stratigraphy and tectonic history, *in* Oil and gas possibilities of Utah, re-evaluated: Utah Geol. and Min. Surv., Bull., No. 54, p. 175-176.

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Descriptors: Uinta Basin; structure; stratigraphy; depositional environments; tectonism; interpretation.

Hileman, D. H., A. B. Collins, and S. R. Wilson, 1970, Coal production from the Uinta region, Colorado and Utah: U.S. Bur. Mines, Inf. Circ., No. 8497.

Daggett and Uintah Counties.

Descriptors: coal mining; feasibility studies; bituminous coal; coal reserves; cost; economics; productivity; Utah.

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Descriptors: Utah; paleogeography; structural history; depositional environments; orogenic episodes; physiography.

Howard, J. D., 1969, Depositional control of Upper Cretaceous coal units: Mt. Geol. 6: 3: Guidebook issue,

Raton Basin, Colorado and New Mexico, Sept. 3-6, p. 143-146.

Sanpete, Carbon, Emery, Utah, Wasatch, Duchesne, Uintah, and Garfield Counties; Wasatch Plateau and Book Cliffs Coal Fields.

Descriptors: Coal; Utah and Colorado; Cretaceous; Economic geology; Sanpete, Carbon, Emery, Utah, Wasatch, Duchesne, Uintah, and Garfield Counties; Wasatch Plateau and Book Cliffs Coal Fields; deposits; genesis; controls; environment; lagoons; barrier islands; sedimentary rocks.

Hunt, J. M., F. Stewart, and P. A. Dickey, 1954, Origin of hydrocarbons of Uinta Basin, Utah: *Am. Assoc. Pet. Geol. Bull.*, Vol. 38, p. 1671-1698.

Duchesne and Uintah Counties.

Descriptors: origin of hydrocarbons; Uinta Basin; Eocene; fluvial; deltaic; shales; sands; bituminous siliceous dolomites; oil shale; Salt Lake; chemically stratified; asphalts; stratigraphic units; source rock; field geology; organic solvents; chemical data; geologic data; changes in lithology; chemical character of hydrocarbons and depositional environment; no evidence of metamorphism, catalytic cracking or depth of burial; subsurface samples; organic matter; stagnant; saline; sulfides; Wasatch, Green River, and Uinta formations; sections; petrography of sediments; composition of hydrocarbons; infrared spectrograms; frequency distribution of refractive indices; chromatography; infrared optical densities; stages of development of lake.

Jacobsen, S. C., 1933, Engineering factors relating to the utilization of channel coal of southern Utah: B.S. thesis, Univ. of Utah.

Carbon, Iron, and Uintah Counties; Book Cliffs, Kolob-Harmony, and Vernal Coal Fields.

Descriptors: carbonaceous materials; solid fuels; oil products; commercial uses; oil shale; economic factors; low-temperature carbonization; plant and refinery; Carbon County; power; smokeless fuels; rock asphalt; Vernal; paraffin; road oil; gasoline; diesel fuel; Cedar City; Utah markets; engineering experiments; heat requirements; distillation; burning properties.

Jones, D. J., 1957, Geosynclinal nature of the Uinta Basin: *Intermtn. Assoc. Pet. Geol. Guidebook*, Eighth Ann. Field Conf., p. 30-34.

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Descriptors: non-marine Cenozoic; correlation table; research project; petroleum project; petroleum

activity; Uinta Basin; stratigraphic successions; lithology; lacustrine; fluvial; terrestrial; pyroclastic; diastrophism; vertebrate faunas; mammalian; invertebrates; age determination; depositional environments; glacial; alluvial; playa; algal biotherms.

Kinney, D. M., 1951, Geology of the Uinta River and Brush Creek-Diamond Mountain areas, Duchesne and Uintah Counties, Utah: *U.S. Geol. Surv., Oil and Gas Inv.*, Map OM 123.

Duchesne and Uintah Counties.

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Duchesne and Uintah Counties.

Descriptors: Brush Creek area; Uintah and Duchesne Counties; geology; stratigraphy; Mississippian coals; Cretaceous coals; structure; geomorphology; economic geology; coal deposits; petroleum; natural gas; coal; reserves; tonnage; physical properties; chemical analysis; production; tables.

Kinney, D. M., and J. F. Rominger, 1947, Geology of the Whiterocks River-Ashley Creek area, Uintah County, Utah: *U.S. Geol. Surv., Oil and Gas Prel. Map* 82.

Uintah County.

Lupton, C. T., 1910, The Deep Creek District of the Vernal Coal Field, Uinta County, Utah: *U.S. Geol. Surv., Bull.*, No. 471-I, p. 579-594.

Uintah County; Vernal Coal Field.

Descriptors: Deep Creek district; Vernal Coal Field; Uintah County; location; physiography; geology; stratigraphy; structure; lithologic descriptions; coal; occurrence; quality; physical properties; chemical analysis; reserves; tonnage; recoverable reserves; maps; tables; figures.

Maione, S. J., 1971, Stratigraphy of the Frontier Sandstone Member of the Mancos Shale (Upper Cretaceous) on the south flank of the eastern Uinta Mountains, Utah and Colorado: *Wyo. Geol. Assoc., Earth Sci. Bull.*, Vol. 4, p. 27-58.

Uintah County.

Descriptors: eastern Uinta Mountains; Frontier Sandstone; stratigraphy; depositional environment; lithology; correlation; paleogeography; facies; biostratigraphy; zircon-tourmaline ratios.

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Uintah County; Vernal Coal Field.

Descriptors: tar sands; Threemile Canyon area; P. R. Spring deposit; analyses; cores; oil zone; average properties; saturation; permeability; thickness; Uinta

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- Marsell, R. E.**, 1964, Geomorphology of the Uinta Basin - a brief sketch, in *Geology and mineral resources of the Uinta Basin: Intermtn. Assoc. Pet. Geol. Guidebook, 13th Ann. Field Conf.*, p. 29-39.
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Descriptors: Uinta Basin; geomorphology; topography; climate; physiography; landscape districts; plateaus.
- McCullough, T.**, 1956, Hydrocarbons and other compounds obtained from gilsonite: Ph.D. dissertation, Univ. of Utah.
Uintah County; Vernal Coal Field.
Descriptors: Uinta Basin; Utah and Colorado; vertical veins; mining operations; asphaltite class; specific gravity; fixed carbon content; black inks; paints; varnishes; nonconductivity; thermal and electrical insulation; street and highway surfacing; gasoline; metallurgical coke; pyrolysis; sulfuric acid; paraffinic; pyridines; quinolines; distillate; naphthenes; olefins; phenols; chromatography; bitumens; resins; oils.
- McGee, L.**, 1956, Porphyrins in gilsonite: Ph.D. dissertation, Univ. of Utah.
Uintah County; Vernal Coal Field.
Descriptors: asphaltite; early settlers; Vintaite; commercial utility; Uinta Basin; Colorado; vertical beds; glance pitch; grahamite; petroleum metamorphosis; hardness; organic dyes; bituminous; ether extracts; spectra; porphyrins; isolation; hemin; alkylated pyrroles; structure.
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Uintah County; Vernal Coal Field.
Descriptors: Colorado, Utah, and Wyoming; environmental geology; impact statements; White River Basin; Yampa River Basin; resources; water quality; energy sources; pollution; coal; organic residues; oil shale.
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Duchesne and Uintah Counties.
- Murany, E. E.**, 1964, Wasatch Formation of the Uinta Basin: *Intermtn. Assoc. Pet. Geol. Guidebook, Thirteenth Ann. Field Conf.*, p. 145-155.
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Duchesne and Uintah Counties.
Descriptors: stream deposits; stream table experiments; stratigraphic records; stream descriptions and features; discharge; terminology; statistical methods; physical characteristics; grain size distribution; rose diagrams.
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Descriptors: subsurface stratigraphy; lithology; Green River Formation; Uinta Basin; microscopic studies; well samples; lacustrine environment; fluvial; Lake Uinta; paleogeography; main events; transgression; stability; regression; stratigraphy; black shale facies; formational contact; paleontologic content; age relationships; delta facies; tuff beds; time-equivalence; saline depositional environment; oil; tectonic framework; hydrocarbons; oil exploration history; oil production by field; geologic summary of oil and gas fields; cross-sections; well log.
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Descriptors: paleocurrents; shoreline orientations; Green River Formation; Eocene; Raven Ridge and Red Wash areas; northeastern Uinta Basin; ripplemarks; cross-stratification; sandstone-body trends; lacustrine; fluvial; vertical stratigraphic variation; asymmetric and symmetric; arcs of azimuths; stable current system; exploration for oil and gas; regional structure; stratigraphy; maximum inclination of foresets; description of structures used; directional results; rose diagrams; regional map.
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Descriptors: coal deposits; natural gas reserves; oil shale deposits; petroleum deposits; phosphates reserves; sandstone reserves; copper; lead; silver; mineral resources; Uintah County; Mesaverde Group; Frontier Formation; chemical analysis.
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Grand, Carbon, Duchesne, and Uintah Counties; Book Cliffs, Segó, and Vernal Coal Fields.
Descriptors: American Gilsonite Company; Grand Junction; hydrocarbon; gasoline; carbon-coke; Bonanza; Book Cliffs; refinery; pipeline; blacksmith; Whiterocks Indian Agency; bitumen; grahamite; glance pitch; Uinta Basin; history; industry; origin; characteristics; uses; Rector; mining camp; White River.
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Descriptors: asphalts; hydrocarbons; carbon disulfide; metamorphic products; gilsonite; glance pitch; grahamite; Uinta Basin; Colorado; vertical veins; economic importance; paraffin; naphthenes; fractional distillation.
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Descriptors: economic geology; coal; Utah and Colorado; Grand River District; Sunnyside; Book Cliffs; maps; deposits; exploration; evaluation; geologic.
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Descriptors: Uinta Mountain; north flank; faulting; Henry's Fork Fault; Uinta Fault; Sporks Fault; displacement; dip; faulting history; petroleum exploration.
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Descriptors: Uinta Mountains; Carboniferous formations; biostratigraphic studies; tectonic history; Mississippian; Pennsylvanian; fossil record; lithologic correlation.
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Duchesne and Uintah Counties; Tabby Mountain, Book Cliffs, and Vernal Coal Fields.
Descriptors: Uinta Basin; coal; resources; stratigraphy; Blackhawk coal zones; Neslen Formation; Frontier Sandstone; coal rank; mining methods; room and pillar; longwall.

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 Uintah County.
Descriptors: hydrocarbons; asphaltite; carbon disulfide; carbon tetrachloride; nonpolar organic solvents; Uinta Basin; Uintah County; vertical fissures; Green River Formation; calcareous shales; commercial development; paraffins; naphthenes; nitrogen containing compounds; acid extraction; pyrolytic degradation; alkylated pyridines; fractional distillation.
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Descriptors: coal; geology; Coalville, Henry's Fork, Vernal, Blacktail (Tabby) Mountain, Book Cliffs, Wasatch Plateau, Emery, Henry Mountains, Kaiparowits, Kolob, Kanab, and Harmony Coal Fields; location; occurrence; structure; lithologic descriptions; chemical analyses; coking capabilities; tables.
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Descriptors: Cretaceous; Colorado Plateau; fossil collections; non-marine microfossils; plants and mollusks; Cedar Mountain Formation; Burro Canyon Formation; Uinta, Emery, and Grand Counties; description of fossil localities; columnar section; criteria for corelation; Morrison Formation; contacts and thickness; sections; regional implications; stratigraphy; Dakota Formation.
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Descriptors: Uinta Mountains; geological exploration; history; J. W. Powell, F. V. Hayden, and Clarence King; geological expeditions; 40th parallel survey; glaciation; geomorphology.
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 Rich, Morgan, Summit, Grand, San Juan, Uintah, Duchesne, Garfield, and Sanpete Counties.
Descriptors: Utah; economic geology; mineral resources; fuel resources; exploration; Rich, Morgan, Summit, Grand, San Juan, Uinta, Duchesne, Garfield, and Sanpete Counties; production; Uinta Basin; Basin-and-Range Province; Wasatch Plateau; San Rafael Swell; asphalt; bitumens; organic materials; beryl; ring silicates; construction materials; coal; organic residues; metal ores; gems; uranium ores.
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Descriptors: bituminous; subbituminous coal; estimate of reserves; source of estimate; table; classification by characteristics; reserves, original, remaining, recoverable; mining; distribution; coking coal; strippable coal; production; use; uranium; ownership of coal lands; peat; world coal reserves.
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Descriptors: Coal; Utah and Colorado; Cretaceous; Economic geology; Sanpete, Carbon, Emery, Utah, Wasatch, Duchesne, Uintah, and Garfield Counties; Wasatch Plateau and Book Cliffs Coal Fields; deposits; genesis; controls; environment; lagoons; barrier islands; sedimentary rocks.

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Descriptors: coal; geology; Coalville, Henry's Fork, Vernal, Blacktail (Tabby) Mountain, Book Cliffs, Wasatch Plateau, Emery, Henry Mountains, Kaiparowits, Kolob, Kanab, and Harmony Coal Fields; location; occurrence; structure; lithologic descriptions; chemical analyses; coking capabilities; tables.

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Descriptors: coal; mining; history; resources; properties; mining methods; development; market; transportation; coking capability; production; coal field geology; chemical analysis; Coalville, Henry's Fork, Vernal, Blacktail (Tabby) Mountain, Book Cliffs, Wasatch Plateau, Emery, Henry Mountains, Kaiparowits Plateau, and Kolob-Harmony Coal Fields; maps; tables.

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Descriptors: bituminous; subbituminous coal; estimate of reserves; source of estimate; table; classifica-

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Descriptors: Utah, mineral fuels; coal resources; rank; production; market; Henry's Fork, Tabby Mountain, Vernal, Book Cliffs, Wales, Salina Canyon, Henry Mountains, Kolob, Kaiparowits, San Juan, Lost Creek, Coalville, and Harmony Coal Fields; stratigraphy; structure; lithology.

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Descriptors: Kolob-Harmony Coal Field; location; geography; physiography; stratigraphy; lithologic descriptions; coal deposits; mining; exploration; production; chemical analysis; reserves; land control; maps.

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Descriptors: coal; geology; Coalville, Henry's Fork, Vernal, Blacktail (Tabby) Mountain, Book Cliffs, Wasatch Plateau, Emery, Henry Mountains, Kaiparowits, Kolob, and Harmony Coal Fields; location; occurrence; structure; lithologic descriptions; chemical analyses; coking capabilities, tables.

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Descriptors: Utah; ground water; hydrogeology; surveys; maps; Kane, Garfield, Iron, and Washington Counties; Tropic Shale; Carmel Formation; Moenkopi Formation; Chinle Formation; Navajo Sandstone; USGS; Alton; Kolob; coal fields;

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Descriptors: coal; mining; history; resources; properties; mining methods; development; market; transportation; coking capability; production; coal field geology; chemical analysis; Coalville, Henrys Fork, Vernal, Blacktail (Tabby) Mountain, Book Cliffs, Wasatch Plateau, Emery, Henry Mountains, Kaiparowits Plateau, and Kolob-Harmony Coal Fields; maps; tables.
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Descriptors: bituminous; subbituminous coal; estimate of reserves; source of estimate; table; classification by characteristics; reserves, original, remaining, recoverable; mining; distribution; coking coal; strippable coal; production; use; uranium; ownership of coal lands; peat; world coal reserves.
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Descriptors: Utah, mineral fuels; coal resources; rank; production; market; Henry's Fork, Tabby Mountain, Vernal, Book Cliffs, Wales, Salina Canyon, Henry Mountains, Kolob, Kaiparowits, San Juan, Lost Creek, Coalville, and Harmony Coal Fields; stratigraphy; structure; lithology.
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Henry Mountains, Kaiparowits Plateau, and Kolob Harmony Coal Fields.

Descriptors: coal deposits; oil shale deposits; sandstone; uranium; sampling; chemical analysis; exploration; maps; mineralization; Kaiparowits Plateau; Henry Mountains; Kolob Terrace; lithologic descriptions; tables.

UTAH GEOLOGICAL AND MINERAL SURVEY

606 Black Hawk Way
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The Survey publishes bulletins, maps, a quarterly newsletter, and other publications that describe the geology of Utah. Write for the latest list of publications available.

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