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Evaluation of Alaska's Coal Potential

By

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CLASSIFICATION

I. Quadrangles with areas of overlapping coal potential and State patented and tentatively approved lands:

- | | |
|-------------------|-------------------------|
| 1. Anchorage | 16. Port Alexander |
| 2. Bendelaben | 17. Port Moller |
| 3. Candle | 18. Ruby |
| 4. Charley River | 19. Sagavanirktok |
| 5. Circle | 20. Seldovia |
| 6. Fairbanks | 21. Shungnak |
| 7. Gulkana | 22. Sitka |
| 8. Healy | 23. Talkeetna |
| 9. Iditarod | 24. Talkeetna Mountains |
| 10. Kaguyak | 25. Trinity Islands |
| 11. Kenai | 26. Tyonek |
| 12. McGrath | 27. Ugashik |
| 13. Mt. Hayes | 28. Utukok River |
| 14. Mt. Michelson | 29. Wainwright |
| 15. Point Lay | 30. Wiseman |

II. Quadrangles with overlapping areas of reported coal and patented and tentatively approved State lands:

- | | |
|----------------------|---------------------|
| 1. Ambler River | 16. Mt. Fairweather |
| 2. Bering Glacier | 17. Mt. Katmai |
| 3. Bethel | 18. Mt. McKinley |
| 4. Bettles | 19. Mt. St. Elias |
| 5. Chignik | 20. Noatak |
| 6. Cordova | 21. Nome |
| 7. Craig | 22. Nulato |
| 8. De Long Mountains | 23. Ophir |
| 9. Eagle | 24. Petersburg |
| 10. Holy Cross | 25. Russian Mission |
| 11. Juneau | 26. Sleetmute |
| 12. Lime Hills | 27. Solomon |
| 13. Livengood | 28. Stepovak Bay |
| 14. McCarthy | 29. Tanacross |
| 15. Melozitna | 30. Tanana |
| | 31. Yakutat |

III. Quadrangles with reported coal but no State patented or tentatively approved lands:

- | | |
|--------------------|----------------------------|
| 1. Baird Inlet | 15. Meade River |
| 2. Baird Mountains | 16. Middleton Island |
| 3. Barrow | 17. Misheguk Mountain |
| 4. Beaver | 18. Norton Bay |
| 5. Chandler Lake | 19. Nunivak Island |
| 6. Coleen | 20. Philip Smith Mountains |
| 7. Harrison Bay | 21. Point Hope |
| 8. Howard Pass | 22. St. Lawrence |
| 9. Ikpikpuk River | 23. Selawik |
| 10. Karluk | 24. Sutwik Island |
| 11. Kateel River | 25. Teshakupuk |
| 12. Killik River | 26. Umiat |
| 13. Kotzebue | 27. Unalakleet |
| 14. Lookout Ridge | |

IV. Quadrangles with no known coal occurrences but with patented and tentatively approved State lands:

- | | |
|------------------------|----------------------|
| 1. Afognak | 18. Kantishna River |
| 2. Atlin | 19. Ketchikan |
| 3. Beechey Point | 20. Kodiak |
| 4. Big Delta | 21. Lake Clark |
| 5. Black River | 22. Medfra |
| 6. Blying Sound | 23. Nabesna |
| 7. Bradfield Canal | 24. Naknek |
| 8. Bristol Bay | 25. Nushagak Bay |
| 9. Chandalar | 26. Seward |
| 10. Cold Bay | 27. Skagway |
| 11. Dillingham | 28. Sumdum |
| 12. Flaxman Island | 29. Survey Pass |
| 13. Goodnews | 30. Taku River |
| 14. Hagemeister Island | 31. Taylor Mountains |
| 15. Hughes | 32. Teller |
| 16. Icy Bay | 33. Valdez |
| 17. Iliamna | |

Quadrangle	Coal Locale (Deposit, Field)	Coal Characteristics	Coal Potential	Comments
Anchorage	Matanuska (Wishbone Hill, Chickaloon, and Anthracite Ridge Districts)	Tertiary (Chickaloon Formation) subbituminous to anthracite coals to 25 feet thick; complex structure.	1	Areas are adjacent to Alaska Railroad and Glenn Highway
	Houston (Little Susitna District)	Thin tertiary subbituminous coals	3	Strip mine operated for several years depleting much of the recoverable resource.
	Chicago Creek (Kugruk River)	Steeply dipping lignite coals of local extent; two outcropping beds of approximate 20 feet and 100 feet thicknesses	1	Small mine(s), local use; approximately 15 miles west of Candle. Strong interest.
	Noxapaga	Tertiary lignite	3	Local occurrence
Bendeleben	Death Valley (Tubutulik River)	Tertiary lignite	3	Local occurrence
	Kugruk - Koyuk Rivers	Tertiary lignite	3	Local occurrence
Bering Glacier	Bering River	Tertiary bituminous to anthracite coals within arkosic Kushtaka Formation. Complex structure; beds discontinuous, folded with thrust faults of large displacement.	1	Strong interest; cooperative exploration by Native groups and Koreans.
Candle	Koyuk River	Thin lignitic coals of Late Cretaceous age	3	Local extent
Charley River	Eagle Field, Nation River	Bituminous coking coals within Nation River Formation of Paleozoic (?) age	3	Coal bed reportedly dips at 4 and occurs within major shear zone.
	Eagle Field (Washington Creek, Charley River, Coal Creek, Woodchopper Creek)	Common thin lignitic coal beds of probable early Tertiary age	3	Occur within Tintina fault trench

Quadrangle	Coal Locale (Deposit, Field)	Coal Characteristics	Coal Potential	Comments
Chignik	Chignik Field	Cretaceous bituminous and subbituminous coals within Coal Valley Member of Chignik Formation; numerous beds less than 6 feet	1	Reserves proven by drilling program during summer 1981. Strong interest due to strategic coastal location. Deposit not large enough to meet export market.
Cordova	Bering River	Tertiary (Kushtaka Formation) bituminous to anthracite coals; structurally complex.	1	Interest intense possible cooperative mining effort by Native groups and Koreans.
Craig	Coal Bay (Kasaan Bay, Prince of Wales Island)	Tertiary lignites	3	Local occurrence
DeLong Mountains	Northern Alaska (Kukpowruk River District)	Cretaceous bituminous and subbituminous coals of Corwin Formation less 15 feet in thickness.	1	All State patented and tentatively approved lands within this quadrangle should be considered to have high potential for future coal development.
Eagle	Eagle Field (Mission Creek, Seventymile River)	Tertiary lignite to bituminous coal beds.	3	
	Chicken	Tertiary subbituminous and bituminous coals; one outcropping bed over 20 feet	3	Local use
Healy	Nenana Field	Tertiary subbituminous coal beds to 60 feet thick within Lignite Creek, Realy Creek, and Suntrana Formations.	1	Areas currently in production other areas leased. Underdeveloped potential

Quadrangle	Coal Locale (Deposit, Field)	Coal Characteristics	Coal Potential	Comments
		Minor deposits within Cantwell Formation.		ial large except for Cantwell Formation.
	Broad Pass (Chulitna River)	Tertiary lignites and subbituminous coals less than ten feet thick within graben structure.	3	Broad Pass Station and Costello Creek.
Iditarod	Flat	Cretaceous (?) anthracitic coal beds of small extent.	3	Potential might be upgraded in future.
Kenai	Kenai Field	Tertiary lignite and subbituminous coals within Kenai Group; numerous beds over two feet thick beneath most of peninsula.	2	Potential greatest near coastal access, probably drops to 3 inland.
Lime Hills	Cheeneetuk River; Kuskokwim District	Tertiary bituminous beds less than 6 feet thick.	3	Farewell fault zone.
Livengood	Rampart Field (eastern portion)	Cretaceous bituminous coals in thin beds.	3	
McGrath	Little Tonzona River	Tertiary subbituminous coal; one bed at least 120 feet thick but steeply dipping.	2	Canadian Superior, Ltd. drilling program summer 1981. Possibly upgrade to 1 with leasing.
	Cheeneetuk River	Thin beds of Tertiary (?) bituminous coal	3	Farewell fault zone
	Windy - Middle Forks	Similar to deposit at Cheeneetuk River.	3	Farewell fault zone
Mt. Hayes	Jarvis Creek, eastern extension of Nenana Field.	Tertiary subbituminous coals; 30 beds reported outcropping to 7 feet thickness.	1	Small mine near transportation route. Reserve proven by drilling (Delta Coal Company) and development planned.

Quadrangle	Coal Locale (Deposit, Field)	Coal Characteristics	Coal Potential	Comments
Sitka	Angoon (Admiralty Island) Murder Cove	Tertiary lignites	3	Localized occurrences
Talkeetna Mountains	Broad Pass	Tertiary lignite coals less 10 feet thick within graben structure	3	
Tanana	Rampart Field	Cretaceous, thin, bituminous coal beds	3	
Utukok River	Northern Alaska	Numerous Cretaceous bituminous and subbit- uminous beds of Corwin Formation.	1	All State paten- ted and tentat- ively approved lands within this quadrangle should be con- sidered to have high potential for future coal development.
Wainwright	Northern Alaska	Numerous Cretaceous bituminous and sub- bituminous beds of Corwin Formation.	1	All State pater ted and tentat- ively approved lands within this quadrangle should be con- sidered to hav high potential for future coa development.
Wiseman	Tramway Bar	Ten foot bed of bituminous coal outcropping of unknown extent	2	Local use, sma mine(s).

Quadrangle	Coal Locale (Deposit, Field)	Coal Characteristics	Coal Potential	Comments
Mt. Michelson	Kavik River and Akutoktak River	Subbituminous coal beds.	3	Local occurrences
Mt. St. Elias	Southwestern portion of quadrangle	Tertiary lignites	3	Local occurrence
Nulato	Ruby-Anvik District; Yukon River deposits.	Late Cretaceous bituminous coals of Kaltag Formation less than 4 feet thick.	3	Of small extent
Petersburg	Port Camden, Kuiu Island Hamilton Bay, Kupreanof Island Snow Passage, Zarembo Island	Tertiary lignites	3	Local occurrences of small extent.
Point Lay	Northern Alaska	Numerous Cretaceous (Corwin Formation) bituminous and subbituminous coal beds typically between 20 and 40 feet in thickness	1	All State patented and tentatively approved lands within this quadrangle should be considered to have high potential for future coal development.
Port Alexander	Port Camden, Kuiu Island	Tertiary lignite	3	Localized occurrence.
Port Moller	Herendeen Bay Unga Island	Late Cretaceous and Tertiary coal beds, most less than 2 feet thick, subbituminous and bituminous; up to 17 beds outcropping; folded and faulted.	1	Reserves proved by drilling but probably do not constitute a major export base.
Ruby	Poorman	Cretaceous (?) subbituminous thin coals probably of small extent.	3	
Sagavanirktok	Several areas	Subbituminous coal beds.	3	
Seldovia	Romer District (southern part of Kenai peninsula)	Tertiary subbituminous and lignite coals less than 10 feet, flat-lying to slightly dipping.	2	Potential greatest near coastal access, probably drops to more inland.

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MEMORANDUM

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGICAL AND GEOPHYSICAL SURVEYS

707 83-72
State of Alaska

TO: Laurel Murphy
Minerals Adjudicator Manager
Div. of Minerals & Energy Mgt.

DATE: March 31, 1982

FILE NO:

TELEPHONE NO: (907) 474-7147

FROM: Roy D. Merritt
Coal Geologist *RDM*

SUBJECT: Evaluation of Alaska's
Coal Potential

As per your request, we have completed a preliminary evaluation of the coal potential of Alaska's patented and tentatively approved lands. However, this evaluation is very generalized; if you require a more detailed study of specific blocks (i.e., certain townships), please let us know.

A modification of the coal-potential-rating system developed by Eakins and Clough for evaluating applications for coal prospecting permits was used for this assessment. As you know, this method ranks four grades of relative coal potential:

1. Indicates a high potential for coal development and includes areas where reserves have been proven by drilling or detailed field investigations.
2. Indicates areas of moderate potential for coal development and probably warrants exploration. This classification may refer to areas that are reasonable distances from coal outcrops or drill holes so that significant reserves can be projected and inferred to be present; or the area is rated as such due to remoteness, complex geology (structure), or other constraints.
3. Indicates areas where available evidence for the presence of significant coal at mineable depths is either lacking or suggests that the area has a low potential.
4. Indicates areas where coal-bearing formations are absent and hence, there exists no possibility for coal production.

The coal resources for areas of state patented and tentatively approved land have been classified by quadrangle (see appended generalized state-land-activity map). The coal potential has been evaluated for those areas with reported coal occurrences or known fields and overlapping state patented or tentatively approved lands.

Detailed reserve figures and resource evaluations, in the manner of the U.S. Geological Survey and U.S. Bureau of Mines, cannot be compared at this time for Alaskan coal deposits. A data base must be

Laurel Murphy
Minerals Adjudicator
Manager, DMEM

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March 31, 1982

developed in these regions, and this will require a long-term commitment by the State of Alaska for coal-field investigations.

This obviously is a hasty assessment of the overall coal-development potential in Alaska, and we must emphasize the preliminary nature of this work. It is definitely open to question, and refinements in rankings can be made as further information becomes available. Because of the lack of subsurface data in most areas of Alaska, significant undetected coal resources may exist.

The coal-potential lines shown on the quadrangle maps only broadly outline coal basins or known coal occurrences. These boundaries do not infer that all areas within the encircled regions are of high, moderate, or low potential, but that one or typically several land blocks within the outlined area can be classed as such on the basis of known coal occurrences, extent, and character.

The potential rankings have also been tabulated along with pertinent comments about the character of the coals, and an appended listing of key references is included for each quadrangle. It is interesting to note (but frustrating when faced with this type of evaluation) that detailed geologic mapping has not been completed for most of these quadrangles. However, the available coal-resource studies and geologic maps are listed.

We hope that this work will be of benefit. If you have further questions or require assessment of specific blocks of land, please feel free to call upon us.

Enclosures

cc: Ross Schaff
Bill Barnwell