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THE OCCURRENCE OF COAL ON BEK RIVER, LOWER
KUSKOKWIM REGION, ALASKA

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By

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THE OCCURRENCE OF COAL ON EEK RIVER,
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INTRODUCTION

It is interesting, in an investigation of the resources of a new area, to record a bit of tradition that belongs to the country; a tradition that comes to us from the Eskimos and gives the name to the Iluoktok Mountains near the upper Eek River. The very oldest of the people tell of the existence, in distant times, of a race of people that lived in these mountains whose only history tells that they devoured a whole caribou at a single meal. They are known as the Big Stomach people, or, as the Eskimo calls them, Iluoktok.

Coal on Eek River has the fascination of isolation in that it is located many miles from any habitation. The expense of fuel in the Lower Kuskokwim region and the transportation problems are the incentive to an investigation of any coal discovery. As a result of the trip on Eek River three parties have signified their intention to prospect Eek River coal; the Moravian Missionaries at Bethel, the New York Alaska Gold Dredging Company, and the dredging company now prospecting the Arolic River District near Quinhagak. Intensive prospecting can only determine whether or not the coal is of commercial value. The amount of development work will be controlled by the demand for the coal.

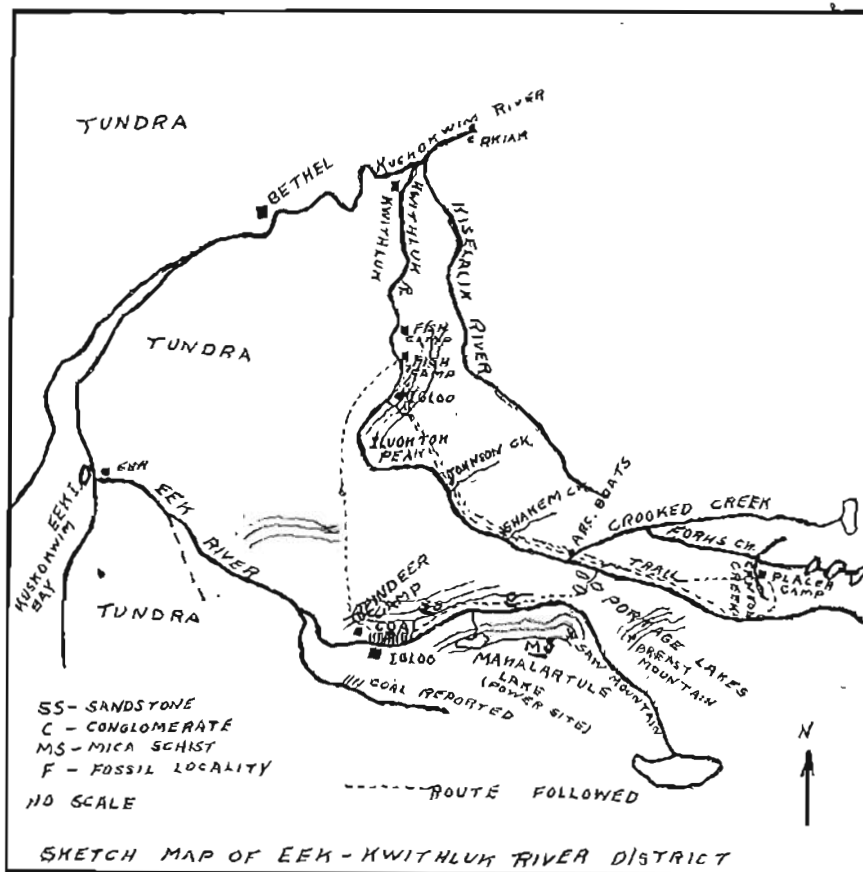
The placer prospecting activity in the lower Kuskokwim in 1912 brought men into the Eek River country. The first known discovery of coal was made on Eek River by Herman Oman, Butch Smith,

Ed McGan, Gil McIntyre, and D. McPherson, in an unsuccessful attempt to establish a placer camp on Eek River. Some coal was brought to Bethel in a poling boat and stakes were placed on the prospect. No work was done and the claims were not recorded; the prospectors staked the claims in the manner of lode prospects. Seven sacks of coal were taken from the outcrops, in 1920, by dog team to Canyon Creek for blacksmith purposes with reported good results. This has been the extent of the work done on the Eek River coal.

LOCATION

The upper Eek River region lies in an unmapped area of Alaska. Eek River flows west into Kuskokwim Bay about fifty miles below Bethel at Eek Island. There is a native village at the mouth of the river. The lower Eek River is typical of the streams flowing through the tundra and is navigable by gas boat to the forks, a straight line distance of approximately 30 miles, and by poling boat to the head. It is reported by Herman Oman that the coal outcrops are located about forty five miles from the mouth of Eek River in a straight line or one hundred twenty five miles by river. The Moravians stated that the distance from the forks in Eek River to the coal outcrops is fifteen miles by tundra trail. It is possible to transport coal from the outcrops to the forks or to the mouth of Eek River by reindeer team in winter. It is impossible to obtain correct distances or location without a rough survey. The only information that may be had is from

the people who have traveled in that locality. The accompanying map is compiled from the data thus obtained; it must not be accepted as accurate, but only as showing the general location and relationships in the Eek River district.



The solving of the transportation problem regarding Eek River coal will be preceded by the determination of the commercial value of the depoist. If the expenditure is warranted it is not out of the question to build some sort of a road along the timber line of Eek River to water transportation. There are many gravel bars in the tundra.

In order to combine the trip to Canyon Creek with a visit to the coal on Eek River a start was made from Kwithluk native village by poling boat. The Kwithluk River was readily navigable to the second fish camp, a distance of approximately seventy miles, in eighteen hours. From this point the services of Harry Jackson, Eskimo chief of the Kwithluk village, as guide were obtained. The route indicated on the map was followed cross country to Eek River and returning by way of Canyon Creek. The tundra area between Eek and Kwithluk Rivers had burned this season and gave little trouble hiking. Progress across the tundra would be slow, however, in wet weather. There are no trails on the tundra or along the banks of Eek River. From the reindeer camp on Eek River to Saw Mountain no hiking difficulties are experienced. The best route to follow in making a trip to the Eek River coal is by poling boat to Iluoktok Peak on the Kwithluk. This peak is readily recognized by the great bend in the Kwithluk River above the fish camps. This shortens the cross country journey to about twenty five miles. Other approximate distances are as follows: Second Kwithluk fish camp to Eek reindeer camp, fifty miles; reindeer camp to first outcrop, one mile, first outcrop to east and west outcrops, seven miles.

The coal on Eek River is located on the north fork. Coal is reported by the reindeer herders on the middle fork, but nothing definite is known regarding it. The north fork is the main stream and the longest fork of Eek River. It was impossible to visit the middle fork in the limited time and no guides could be found that knew of the middle fork occurrence. A range of mountains forms the divide between the two forks.



North Fork Eek River
at coal outcrops

It is estimated that the reindeer camp on Eek River is half way from the Kwithluk fish camp to the range of mountains in the vicinity of Goodnews Bay. There are a few natives at the Kwithluk fish camps and at the Eek River reindeer camp in the summer. Great herds of reindeer are found on the Eek and Kwithluk Rivers. These animals are available for packing should a long trip be contemplated in the country. Reindeer may be purchased from the natives from ten

to fifteen dollars each. The services of a herder may be had for seventy five to one hundred dollars a month with expenses. The reindeer as a pack animal is slow and will average a little more than fifteen miles a day. They can carry a load of fifty pounds, and have the habit of ~~Laying~~^{Laying} down on the job. The advantage of the reindeer in this country as a pack animal is their natural environment and assured food supply from the moss and vegetation.

The vegetation, except along the river banks, consists mainly of moss; there is no timber. There is an abundance of edible berries in the mossy areas. Low brush is found along some of the small creeks. Salmon, trout and greyling may be easily caught in the river. The game consists of wildfowl, fox, brown and black bear, mink, muskrat, land otter, squirrel, and wolf. Many large white swan are seen in the tundra lakes. The natives, who are of Eskimo stock, and Laplanders are the herders for the reindeer. The reindeer in this country seem countless.

Cottonwood and willow are abundant along the banks of the river. The cottonwood is large enough to be available for timbering or camp construction.

WATER POWER

A short distance above the coal outcrops a high waterfall is seen coming from Makalartule Lake. The literal translation of makalartule is warm, not in the sense of warm water, but in its location in a place that will give the native protection from the storms of

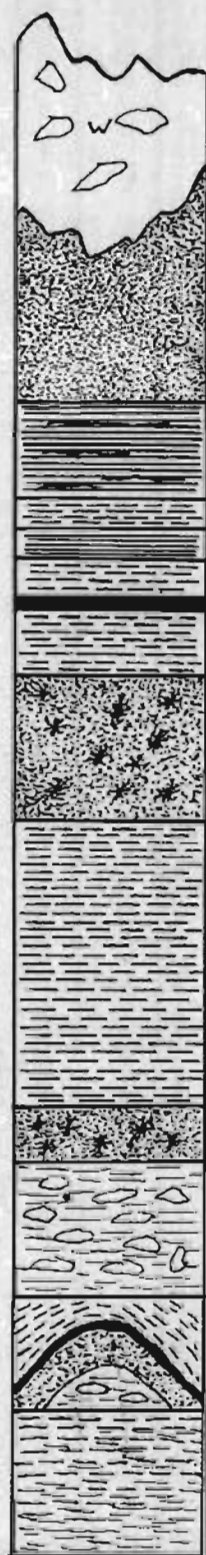
winter. The waterfall was seen from a distance and gave the impression of an ideal power site. The water was plentiful in spite of the dry season.

TOPOGRAPHY

The southern tributaries of the Kuskokwim River from Tatlawiksuk River to Quinhag River have their source in the same general locality. It is reported that there are numerous lakes at the headwaters of these rivers. The Tuluksak, Kiselalik, Kwithluk, Eek, and Quinhag Rivers are separated by divides extending in different directions. In the upper rivers the current is very swift, in the tundra the rivers are winding and the current becomes slow.

The north fork of Eek River at Saw Mountain is separated from the Kwithluk River by a low divide over a distance of four miles. A range of mountains lie between the north fork and the rivers on the south. From this point the Eek and Kwithluk flow different directions and are far distant at their mouths. A high steep bank characterizes the north bank of Eek River. A rolling divide separates Eek and Kwithluk Rivers to the tundra. On the south bank the rise is gradual toward the mountains. The Eek valley is wide and there are many bends in the river.

The Occurrence of Coal on Eek River



25'
medium grained.

10' interstratified
with thin coal
seams.

3' thinly bedded.

3' thicker beds.

4' thinly bedded.

1' coal.

7' thinly bedded.

15'
fossil sample
strike S 42 E
dip 58 E.

30' thinly bedded
dip flattening.

6', strike S 12 E
dip 32 E.

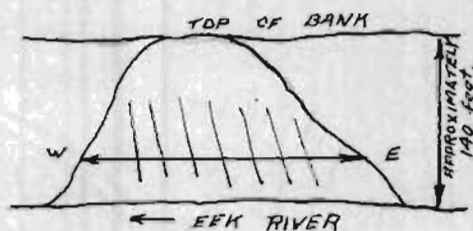
14'

12' disconformity
fold resembling
thrust fault.

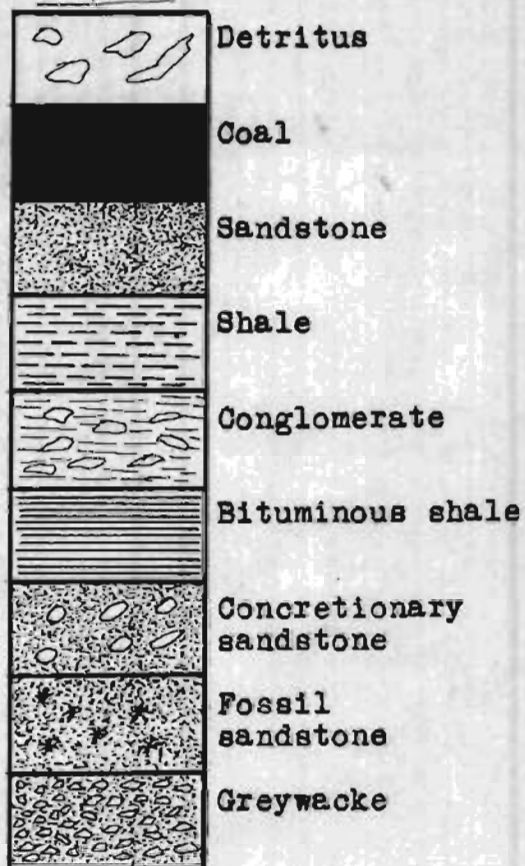
15' very irregular
thinly bedded.

Continued

GEOLOGIC STRUCTURE WEST OUTCROP



LEGEND

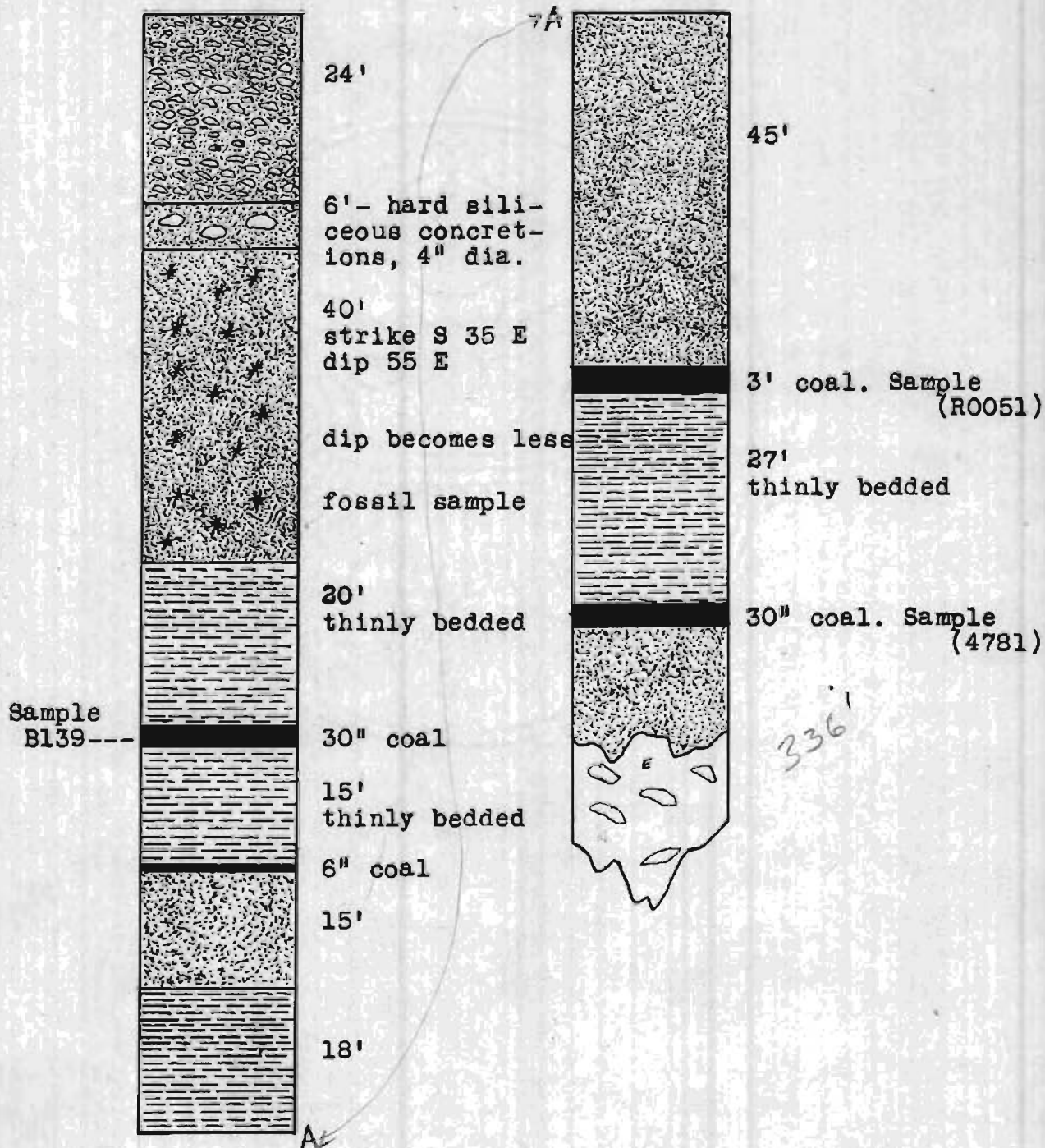


Scale: $\frac{1}{2}$ " = 10'.

(Sample 94524- Coal at Canyon Creek brought in 1920 for
blacksmith use)

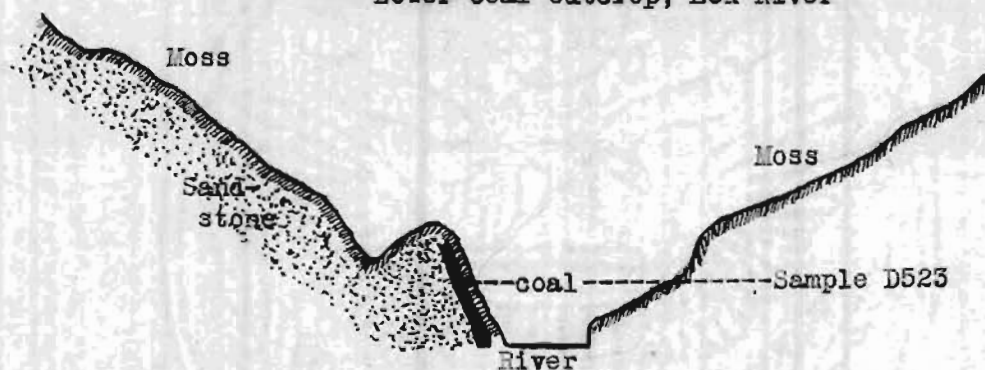
The Occurrence of Coal on Eek River

GEOLOGIC STRUCTURE WEST OUTCROP (CONTINUED)





Lower coal outcrop, Eek River



Sketch of outcrop.

Herders from the reindeer camp discovered the lower coal outcrop on Eek River this summer. They reported a sixteen foot seam not knowing that the coal was exposed along the strike. This error has been made in other reports concerning Eek River coal. The true width of this seam is eighteen inches. It is exposed by stripping the moss for a length of sixteen feet. On the downstream side the coal passes under a heavy growth of moss and vegetation and upstream under gravel. The height of the ridge immediately above the coal is twenty five feet, the height of the coal outcrop is fifteen feet. The strike of the coal is S. 45 W. Dip 45 S.

Sandstone was the only rock observed in the vicinity of the coal. It is of medium grain and siliceous in nature. The bedding is indistinct. The nature of the surrounding country is obscured by the heavy moss cover.

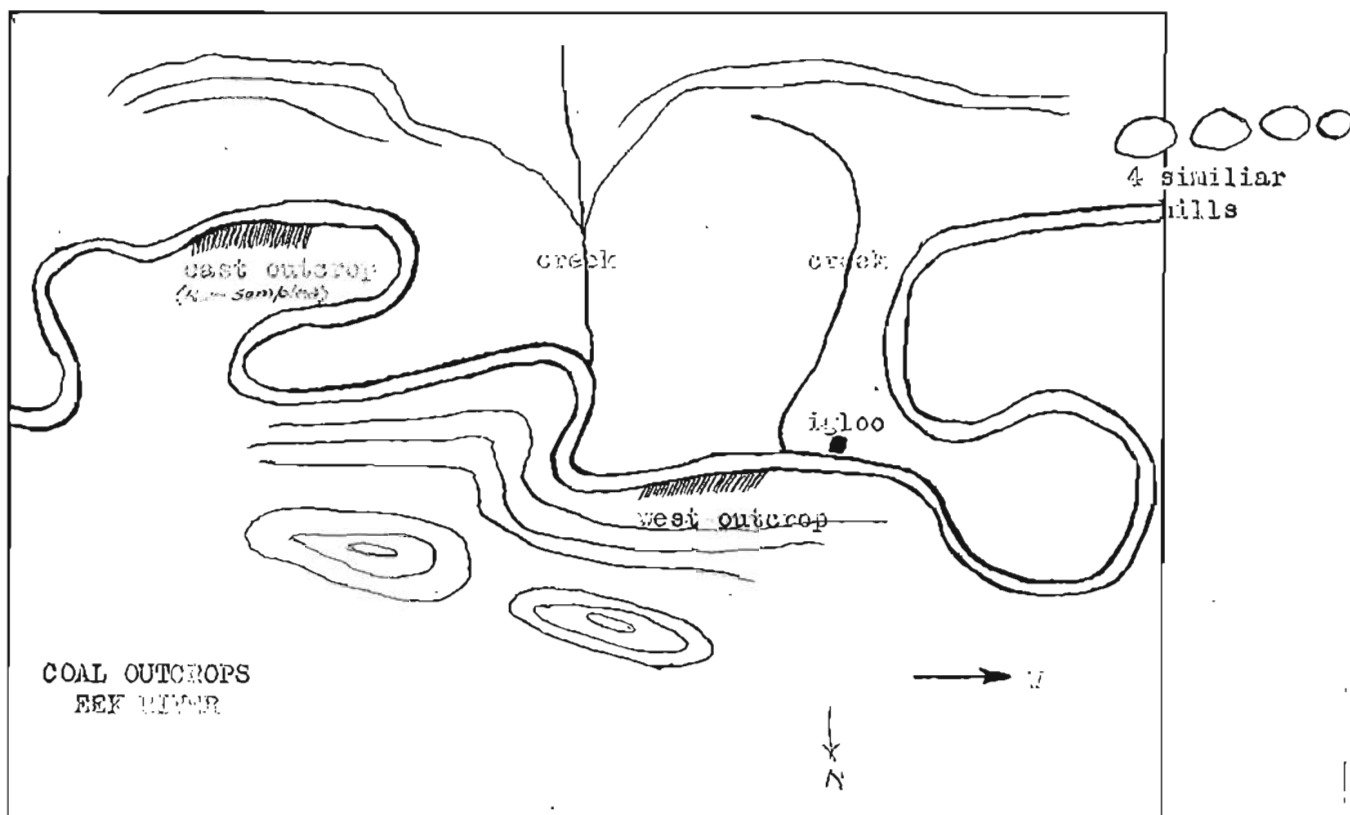
EAST OUTCROP



East coal outcrop, Bek River.

The east and west outcrops have the same topography. The nature of the coal is obscured by a deep covering of erosional material and gravel. The only visible rock is sandstone occurring in ridges. Erosion has been more pronounced between these ridges which, by the coal occurring with the broken material, suggests the probable location of the coal seams.

It would be impossible to secure additional information regarding the east outcrop without clearing away the erosional material to expose the formation. The width of the exposed sediments is three hundred feet. The strike of the sandstone is S 10 W, dip eighty degrees. There are no large boulders in the gravel. Three veins were



Sketch showing relationship of east and west outcrops, Eek River coal.

exposed by digging in the material between the ridges. They measured twelve, twenty, and thirty five inches, respectively. The crushed condition of the coal and the admixture of gravel and muck made sampling impractical. There are eight pronounced sandstone ridges across the three hundred feet of exposure.



Cross section showing nature of east coal outcrop.

COMMERCE
DEPARTMENT OF THE INTERIOR

BUREAU OF MINES
Anchorage, Alaska,
November 5, 1926.

Mr. B. D. Stewart,
Supervising Mining Engineer, USGS.,
Juneau, Alaska.

Dear Mr. Stewart:-

During the month of October 1926, the Coal Testing Laboratory of the Bureau of Mines, Alaska Station, Anchorage, Alaska., completed the following work:-

AMC. Coal, MR.- 73 cars; 17 ash control; 1 proximate analysis;
 . . .do. S.- 8 cars; 3 . . .do . . . 1 . . . do
 Healy, all gd.-11 cars; 6 . . .do . . . 1 . . . do
 P. Kapovich, Moose Creek prospect, . . . 1 . . . do
 Bu. of Ed. . . 1 car, A.M.C. coal . . . 1 . . . do
 Iditarod special samples for U.S.G.S. ash & moisture 5 anal.
 Totals 93 cars 31 ash control 5 proximate analyses.

Results on samples from Iditarod, sampled by F. Holzheimer

Lab. 2418; can 94524; 426 grams; sampled 8/30/26; Eek river

A.D.L. 1.25%; Moisture 1.10%; Ash, 27.1%

Lab. 2419; can R 828; 358 grams; sampled 8/30/26; Eek river

A.D.L. 1.33%; Moisture, 1.14%; Ash, 68.6%

Lab. 2420; can 4781; 530 grams; sampled 8/29/26; Eek river

A.D.L. 1.4 %; moisture, 0.90% ; Ash, 52.8%

Lab. 2421; can D 523; 743 gms; sampled 8/29/26; 1 mi. above camp, Eek river

A.D.L. 5.4%; Moisture, 2.7%; Ash, 20.5%

Lab. 2422; can B 139; 556 gms.; sampled 8/29/26; outcrop Eek river

A.D.L. 3.4%; Moisture, 1.4%; Ash, 78.8%

These samples are very dirty and as per our conversation before you left, no proximate analysis was determined on them.

Tonnage:-

A.M.C. MR. 2375. (approx.)

. do.. S 300. (.do..) 2675.0000 tons

Healy all grades 1234,6900 tons 3909.69 total tons.

The Alaska Railroad is calling for bids on 10,000 tons bituminous coal.

Enclosed please find a shipping bill from the Q.M.C., US Army, covering the transfer of the microscope they loaned to me some time past. This is being transferred gratis and I think that we are very fortunate. Please sign the copies and return them to me, as they wish them before 12/1/26.

Respectfully submitted

Maurice A. Knapp
Coal sampler- Alaska station, Anchorage, Ala.