

FROM OFFICE.

A BRIEF REPORT

GEOLOGICAL SURVEY OF WYOMING

on

THE SAGE CREEK COAL FIELDS, near CODY, BIG HORN COUNTY, WYOMING,

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The following is a brief and general report on the above fields, stating the conditions noted thereon but does not deal with the questions of exact acreage and title considerations.

SITUATION.

These coal lands locally known as the "Sage Creek" fields, are situated in the northern part of the Big Horn Basin, in the west central part of Big Horn County, Wyoming, and about twelve miles ~~from~~ south of Cody, the present terminus of the Cody-Toluca branch of the B. & M. R. R..

Sage Creek, from which the fields take their name, rises on the north east side of Carter Mountain about 20 miles south west of Cody and flows in a northeasterly direction into the Shoshone River, at a point four miles east of Cody.

The numerous head branches and feeders of Sage Creek rise in the high ground east of Carter Mountain and north of the "Meeteetse Rim", a high, broad, flat plateau which forms the divide ~~between~~ at this point between the Grey Bull River valley on the south and the Shoshone River valley on the north.

Dry Creek drains the basin country east of the Sage Creek valley, the south branch rising east of the Sage Creek branches at the Meeteetse Rim and flowing northeasterly to a point west of the "Jessé Frost" field where it meets the north branch and flows easterly through the above field.

Both creeks drain the area included in these fields, north of the Meeteetse Rim.

LOCATION.

The accompanying plat or map is compiled from surveys of parts of the various lands located and is intended to show the relative position of the different coal croppings, their general direction and dip; also the general relations of the lands located to the land divisions and monuments.

No details of sections are included herein as the lands located are described as portions of

Township 50 North. Range 100 West.

do 50 do , do 101 do .

do 50 do , do 102 do .

do 51 do . do 100 do .

do 51 do . do 101 do .

ACREAGE.

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The acreage is given approximately as about 4100 acres, divided into twenty-six claims.

TITLE.

The lands are held by location under the laws of the United States and the State of Wyoming relating to the location and appropriation of coal lands.

FORMATIONS.

The formation carrying the coal is a series of rather fine grained sandstones, both massive and shaly, with bands of shales and some clays included at intervals. The dip and strike of these formations are discussed with the separate fields.

The most prominent feature of the outcrops is the three massive bands or beds of sandstone at or near the base of these beds and which are considered the same formations as the sandstones at Bridger, Montana which are given as the sandstones of the lower Laramie Cretaceous period.

Several veins of coal are noted at different horizons in this formation, both in and above the massive sandstones but with the exception of the upper vein noted in the Jesse Frost field they appear to be small and shaly and of no present importance, the best coal being found in the lower vein which occurs in the lower edge of the massive sandstones, both here and at the Bridger mines.

This vein is believed to be the most valuable of any of the lower veins and is noted at all three of the exposures but shows best on the Mondell claim in the Sage Creek field.

CHARACTER OF THE COAL.

The coal is a lignite and in general is hard, brittle and splinters under the pick. It is bright and shining in the faces of the openings, with fine lines of silt running horizontally through it and an occas-

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ional band of the same material showing.

A clay band more or less impregnated with carbonaceous matter is noted with about the center of the vein at most of the openings, as will be seen by referring to the sheet of sections attached. In some instances this band resembles a sandstone but is usually a clay.

The upper part of the vein, above the clay band, is usually a softer lighter coal than the part below, which as a rule shows harder and more dense, particularly at the bottom of the drift.

As the openings have not yet advanced beyond the crop conditions and do not show the true character of the coal, it is impossible to state the weathering qualities but from small samples that have been exposed good results may be expected.

DIVISIONS OF THE FIELD.

For convenience in description the fields are divided into three parts, viz;

1. The Sage Creek Field,
2. The Western Exposure of the Sage Creek Field, and
3. The Jesse Frost Field.

These divisions are considered the natural and economic divisions of the one coal field.

THE SAGE CREEK FIELD.

This shows the most regular and best crop of any of the lower crop yet opened and is believed to present the largest unbroken area of coal lands overlaid with a heavy regular cover, in place, of any of the surrounding coal fields.

The coal outcrops on the north side of a series of ridges extending in a south-easterly direction from the Frost Ranch on Sage Creek, as indicated on the map.

These ridges are composed of the sandstone formations described and are the remains of an eroded anticlinal fold that formerly covered the country east of Sage Creek to the line of similar ridges that form the western edge of the Jesse Frost Field.

This area now exposed is made up of the shales and and gumbo clays that occur below the Sandstones and the whole is more or less covered with wash from the high ground north of the Rim.

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This high ground forms the heavy cover referred to and is composed of the alternating bands of clays, shales and impure sandstones with small coal seams at intervals, of the upper Laramie formation.

These formations lie in an apparently undisturbed condition extending under the Meeteetse Rim with a dip to the southward that increases as one goes north, exposing the lower clays and shales. This continues to the southern base of the above ridges where the dip rapidly increases but no displacement is shown.

It is quite likely that the lower formations are more or less broken but no evidence of displacement is found.

The dip taken at various points on the crop varies from 30 to 40 degrees and is towards the south. The strike of the outcrop is southeasterly while that of the formation is more easterly but no exact direction was obtained.

The best coal was found on the Mondell claim, near the center of the outcrop, in a vein cropping in a small gulch at the mouth of one of the canons leading north between the ridges. This is the vein or exposure shown in Section I, Sage Creek Field, and shows a workable height of 5'11" with 12" of top coal immediately underlying the shaly sandstone of the roof; the floor is sandstone.

The clay band shows here 4" thick with a small mud seam near the bottom of the drift.

The coal at this opening is very hard and for the depth attained (10') is of very good quality.

A general sample taken from top to bottom exclusive of the top coal and clay band gave results as follows;

Moisture,	10.98	per cent.
Volatile Matter,	38.39	do
Fixed Carbon,	39.02	do
Ash,	12.61	do

The other sections were taken at openings on the crop west of the above but no samples were taken there as the work was not through the crop and results would be of no value.

THE WESTERN EXPOSURE OF THE SAGE CREEK FIELDS.

This is the coal found in the ridges at the head branches of Sage Creek that extend in a northerly and southerly direction north of the Metceteese Rim.

The openings have been made here in the crop found between the massive sandstones before described and present the characteristics found in the sections shown in the two sections given on the section sheet.

The coal appears to be of good quality with the same general appearance as the other fields but shows the clay band in the center together with smaller bands at intervals.

No samples were taken here as the holes were only in crop coal and not in a position or condition to be sampled.

It is noted here that the dip is towards the east and varies from 39 to 44 degrees at the openings visited. The formation here has a general north and south strike, extending from a point on Sage Creek south of Frosts Ranch to the Rim, and present the same general characteristics as the Sage Creek field, the elevating and exposing force ^{here} being evidently the Carter Mountain Uplift.

The upper formations are noted east of the coal crops but have been eroded in many instances and show some evidences of further disturbances in some places.

JESSE FROST FIELD.

This field lies north east of the main exposure and is on the eastern side of the basin formed by the fold referred to.

The same sandstones show as in the other exposures but with a dip of about 20 degrees to the east and a general north and south strike. Some distance south of the openings noted on the plat, a faulted condition is observed but this does not seem to extend to the coal noted on the plat.

The sections marked 1 & 2 of this field are from the faces of the openings in the lower veins at a distance of about 30' in. Samples from these faces gave the following results;

Sample No.1, Section No.1, South opening,

Moisture,	15.70	per cent.
Volatile Matter,	37.18	do.
Fixed Carbon,	37.38	do.
Ash,	9.42	do

Sample No.2, Section No.2, North opening,

Moisture,	14.00	per cent.
Volatile Matter,	39.03	do.
Fixed Carbon,	36.50	do.
Ash,	9.42	do.

The se samples are exclusive of the clay band and practically show only crop coal as the croppy condition was not entirely overcome.

The upper vein shows at a point east of the above described crop, a distance, geologically, of about 800' to 900' above the lower vein and less than a half mile east. Several openings have been made in it but the Frost workings were filled with water at the time of examination and inaccessible. A sample from these workings some time ago analysed as follows;

Moisture,	5.82	per cent.
Volatile Matter,	33.34	do.
Fixed Carbon,	45.13	do.
Ash,	16.21	do.

The coal taken from here was as a rule clean and of good quality but aside from being a little lighter in weight presented the same general characteristics as the coal from the lower vein.

The new openings were still in crop and no sample could be obtained for analysis. Section No.3 shows the vein as obtained from the main-hole south of the Frost Claim, but no details could be obtained.

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I consider that these coal fields offer a good opportunity for development and when developed will undoubtedly prove a desirable property.

The accessibility of the field to the railroad facilities with a practically assured market as the other resources of the country are developed, is a strong argument in favor of the early development of this coal.

Respectfully Submitted,

Henry C. Beeler

Date of Examination.

State Geologist of Wyoming.

October 3-7, 1901.