855

EXPLORATION PROGRESS REPORT

Hosmer Ridge - Wheeler Ridge

1970

KAISER RESOURCES

COAL RESERVE STUDY

HOSMER-WHEELER RIDGE AREA

CROWSNEST PROPERTY, BRITISH COLUMBIA

EXPLORATION PROGRAM

PROGRESS REPORT

FRONT COVER

View from Hosmer Ridge eastward with Wheeler Ridge in the foreground, the Michel Creek Valley in the middle distance and the Flathead Range forming the skyline. The #9 coal seam has been exposed by bulldozer work and shows as a snow dovered area on Wheeler Ridge. Mt. Ptolemy (elev. 9228 ft.) is the high point of the skyline at a distance of 12 miles.

SUMMARY

The following preliminary progress report is a summary of the results of an exploration program which began in 1968 with reconnaissance mapping in the Hosmer - Wheeler Ridge area, as part of an overall program of coal land evaluation. Little or no previous exploration had been done in this area. During September, 1968 to May, 1969, access was established, 2 adits were completed, and several coal seams trenched and measured. Expenditures during 1968 and 1969 amounted to $35,000.

An intensive program was begun early in 1970 to explore more fully the potential reserves of this area. Some 40 persons were employed to complete 24 adits, complete 9 rotary drill holes, trace out 6 miles of coal outcrop, measure numerous stratigraphic and coal columns, partially complete excavating 3 test pits and complete washability tests on 25 bulk samples.

10 coal seams ranging in thickness from 6 to 55 feet, and varying between 24 and 33% volatile content were extensively sampled. No. 3 seam (adit 26) was found to have a fluidity (DDM) of 2300. Total expenditures during 1970 amounted to $490,000.

Some 3700 acres were explored in detail or 5.7% of the total acreage (65,000 acres) Kaiser will retain of the 108,000 acre Crows Nest Property. About 2500 acres or half of the Dominion Government Block acreage was explored in detail.

Total reserves up to 2500 feet of cover in the Hosmer-Wheeler Ridge area are

SUMMARY (CONT'D)

estimated at 676,958,000 NT of coal in place, and in the Parcel 73 (Dominion Government Block), 253,947,000 NT of coal in place.

An additional exploration expenditure of $250,000 is anticipated during 1971.

TABLE OF CONTENTS

LOCATION

General

The Hosmer-Wheeler Ridge area is situated some 10 miles south of the Michel Mining area and forms the centre of the Crows Nest Coalfield in southeastern British Columbia. The immediate area is served by the Canadian Pacific Railroad.

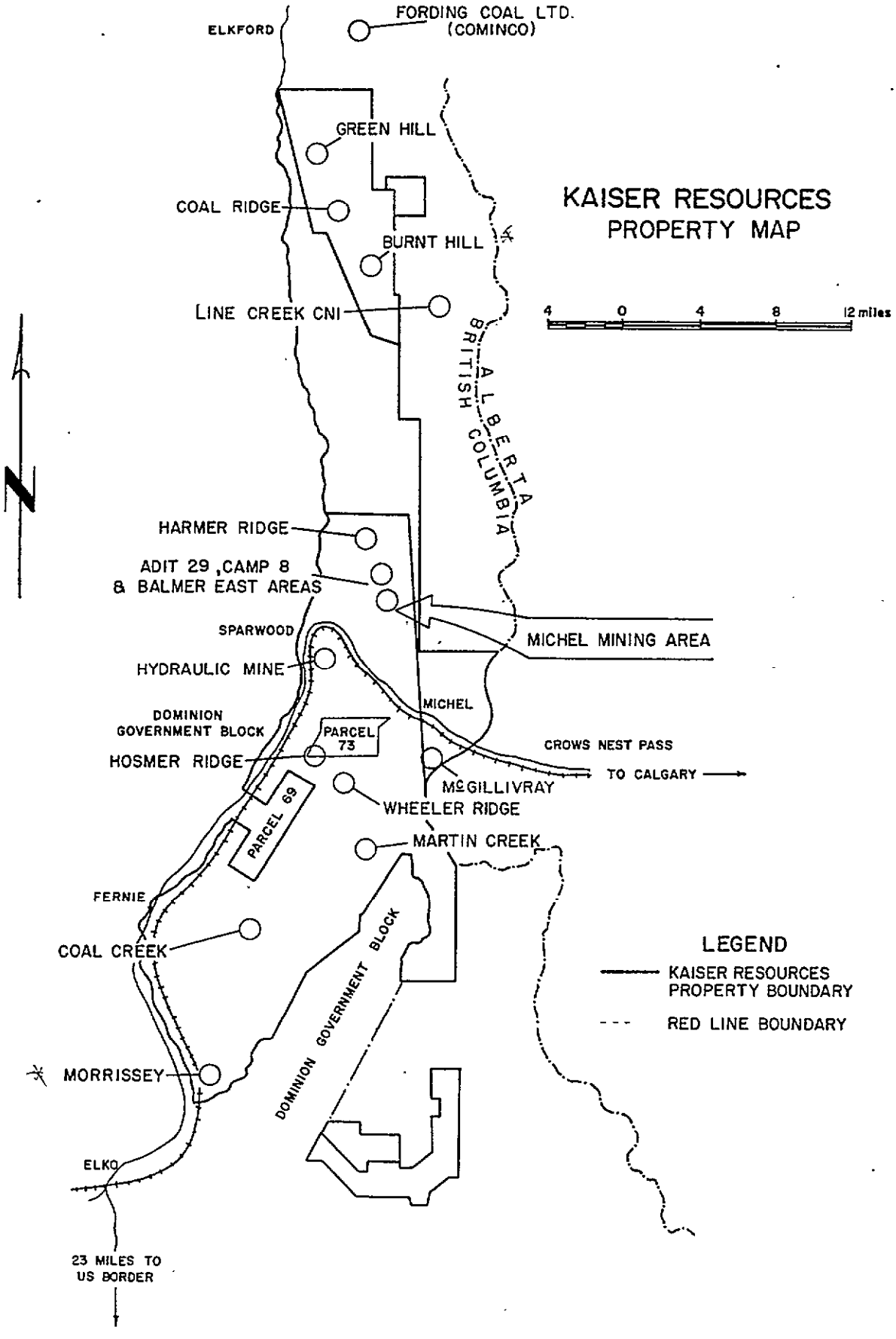
The coal deposits lie in mountainous terrain varying between 6500 and 5000 feet, valley bottom elevations vary between 3300 and 3500 feet. The Kaiser Resources strip mine, on Harmer Ridge, operates between 6900 and 5000 feet, and the underground mines at Michel vary in elevation between 6200 and 4800 feet, valley bottom in Michel is at 3500 feet.

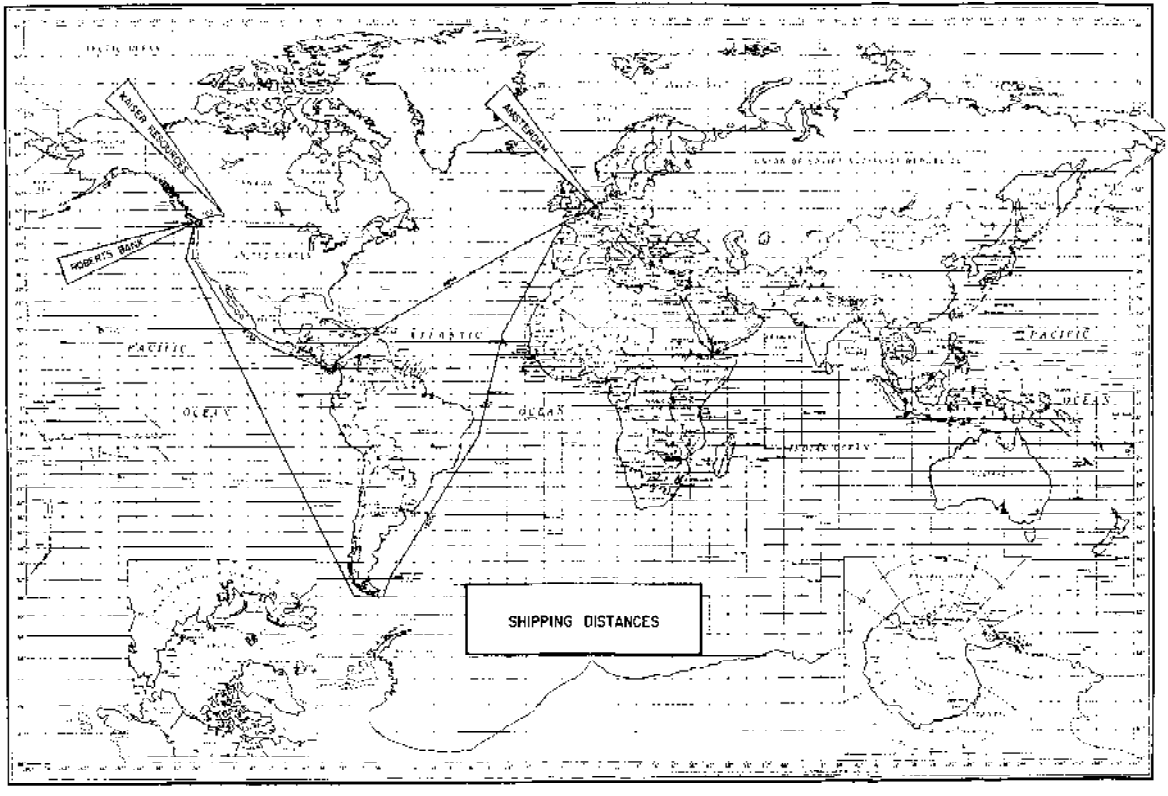
Topography

The general land forms within the area exhibit very rugged relief varying from 7300 feet on the mountain tops to 3400 feet near the valley bottoms. The topography is largely controlled by the resistant sandstones and conglomerates which tend to form cliff forming members. The more easily eroded shales and coal seams tend to erode more easily and form saddles or depressions along the ridge fronts.

Water and Power

The dominant drainage in the area is the Elk River which flows some 2 miles west of Hosmer Ridge, and Michel Creek which flows some 5 miles east. The majority of small streams in the vicinity empty into Michel Creek which is a tributary of the Elk River.


KAISER RESOURCES
PROPERTY MAP
4 0 4 8 12 miles
ELKFORD
FORDING COAL LTD.
(COMINCO)
GREEN HILL
COAL RIDGE
BURNT HILL
LINE CREEK CNI
ALBERTA
BRITISH COLUMBIA
HARMER RIDGE
ADIT 29 ,CAMP 8
& BALMER EAST AREAS
SPARWOOD
MICHEL MINING AREA
HYDRAULIC MINE
MICHEL
DOMINION
GOVERNMENT BLOCK
PARCEL
73
CROWS NEST PASS
HOSMER RIDGE
TO CALGARY
McGILLIVRAY
WHEELER RIDGE
PARCEL 69
MARTIN CREEK
FERNIE
COAL CREEK
DOMINION GOVERNMENT BLOCK
LEGEND
KAISER RESOURCES
PROPERTY BOUNDARY
RED LINE BOUNDARY
MORRISSEY
ELKO
23 MILES TO
US BORDER


KAISER NEUGINEA
AMSTERDAM
HOBBS'S BANK
PACIFIC
OCEAN
ATLANTIC
OCEAN
PACIFIC
OCEAN
SHIPPING DISTANCES

LOCATION (CONT'D)

Water and Power (Cont'd)

Power is supplied by B. C. Hydro which is owned publicly and also by Calgary Power Co. from Alberta.

Weather Conditions

Total annual precipitation in the Hosmer Area averages about 40 inches per year, with some 13 inches of this total being in the form of snow (about 10 feet) annually. Temperature ranges vary from a maximum of -30° F. in winter to 90° F. in summer. The coldest portion of winter generally occurs between late December and January. Snow generally falls between late November and remains until March in the townsites, and until June in the mountains.

The area experiences several chinooks or warm air periods during winter, such that the open-pit mines are able to work the year round, as the average winter temperature is about 22° F. and during summer about 70°F.

Access

A nine mile access road was constructed to Hosmer Ridge early in 1969, starting from the KRL 10-7 strip mine on Sparwood Ridge and lying about 2 miles east of the CPR track. A second access road extending from the southeast portion of Wheeler Ridge was built in 1970 to tie into a previous access road near the CPR station at McGillivray.

The towns of Fernie, situated some 10 miles to the south (population 7000),

LOCATION (CONT'D)

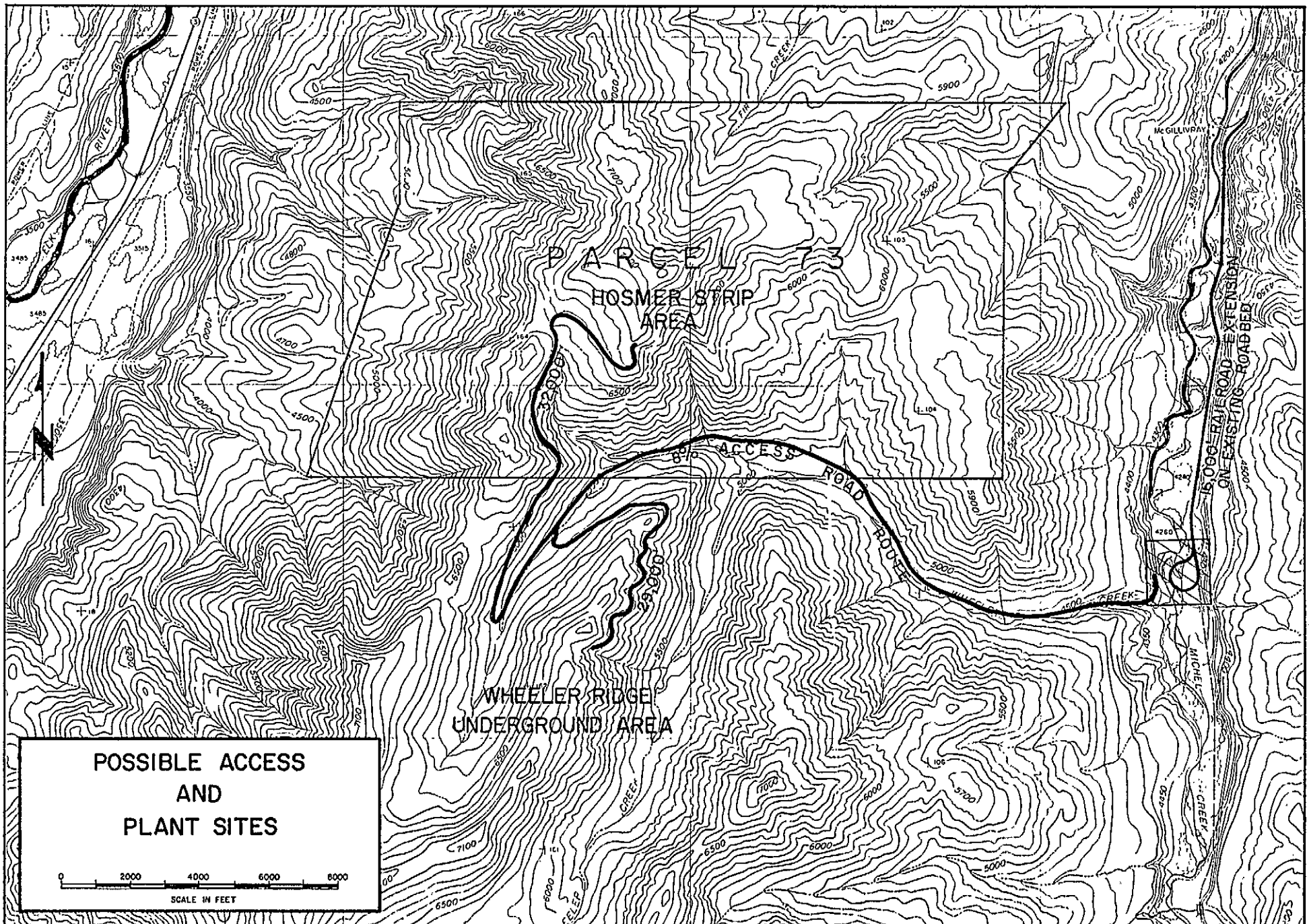
Access (Cont'd)

and Sparwood (population 2000), some ten miles to the north, serve the needs of the immediate area. Number 3 southern transprovincial highway passes through both towns, as does the CPR railway. By highway distance, Vancouver lies some 600 miles to the west, Calgary 200 miles east, and Lethbridge 120 miles southeast. Connection to U.S. highways can be made at Kingsgate and Roosville, B. C.

Airline service is available at Cranbrook, B. C., some 64 miles west of Fernie, where Pacific Western Airlines operates a daily east and west flight, or service is available from Calgary, Alberta.

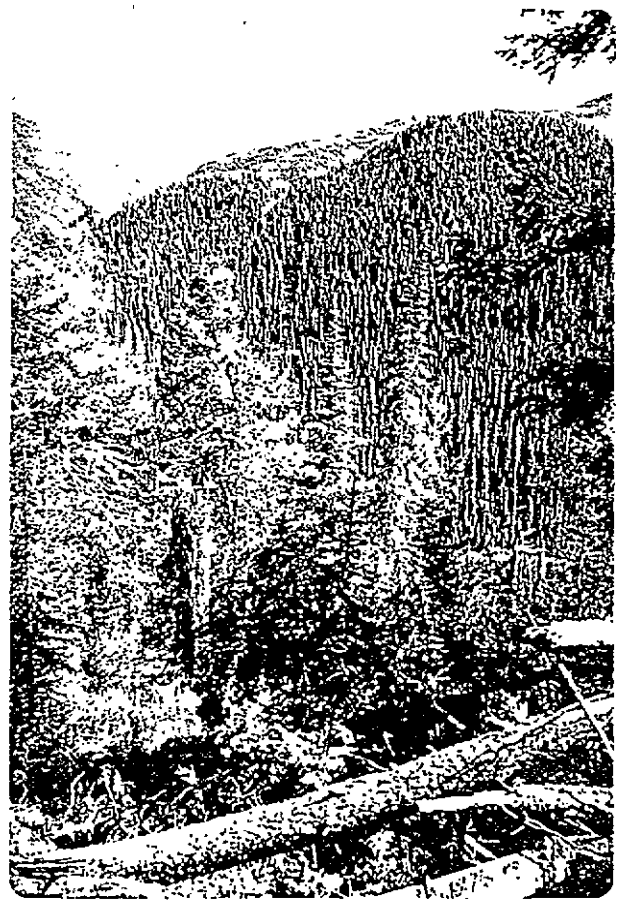
The town of Fernie has recently expanded from a population of 3200 to 7000. About 150 apartments have recently been constructed as well as 150 new homes. Several new stores have recently been completed in Fernie and include a modern supermarket, furniture and appliance outlets. A 40 bed hospital serves the Fernie area with 6 medical doctors and 2 dentists available, a second hospital is located in Michel, near Sparwood, and has 2 resident medical doctors.

At Sparwood about 200 new homes, including duplex and single units, have been completed. Several apartments are also under construction, as well as a shopping centre.


POSSIBLE ACCESS
AND
PLANT SITES
0 2000 4000 6000 8000
SCALE IN FEET
PARCEL 73
HOSMER STRIP
AREA
WHEELER RIDGE
UNDERGROUND AREA
8% ACCESS ROAD ROUTE
32,000
29,000
15,000 RAILROAD EXTENSION
ON EXISTING ROAD BED
McGILLIVRAY
CREEK
RIVER
N

Looking South at Wheeler Ridge (center) and Wheeler Creek (left).
View from #9 seam on Hosmer Ridge.

Looking East across #9 seam exposure in north end of Wheeler Ridge. Access route to plant site would follow canyon to Michel Creek in middle distance. Flathead Range forms the skyline 12 miles away.

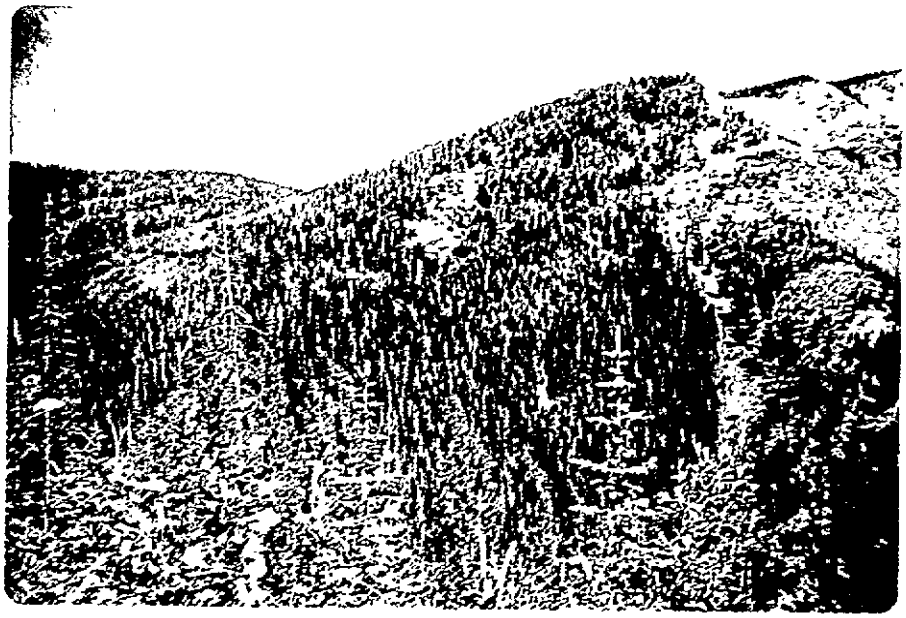


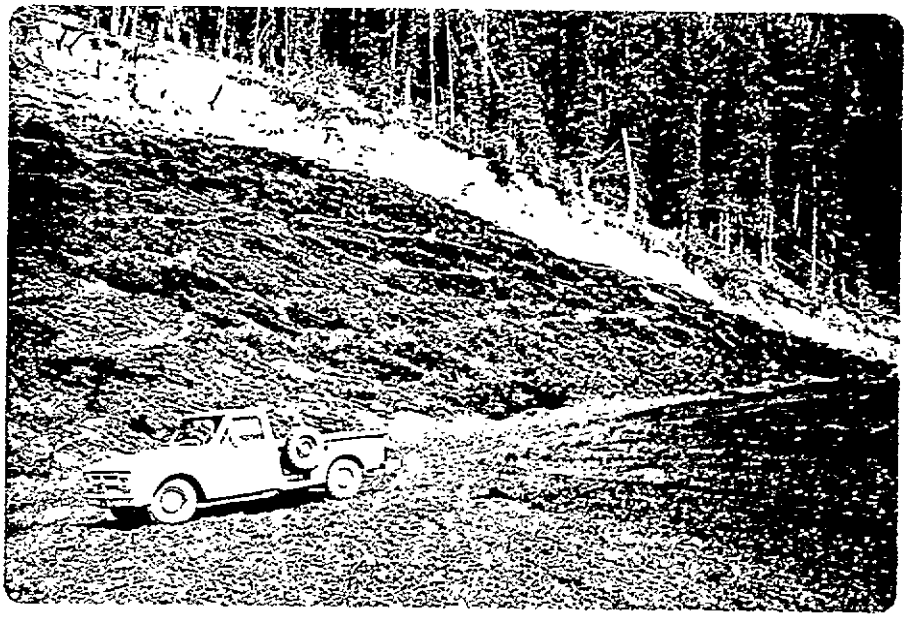
Looking North from test pit in Hosmer Ridge, #9 seam, toward Sparwood and Michel.

Looking East at Hosmer Ridge potential strip area. White line near top of hill in center is outcrop exposure of #9 seam.

Looking West at exposure of #9 seam in potential strip area, Hosmer Ridge.

Adit site #3 on Upper #9 seam, Hosmer Ridge.



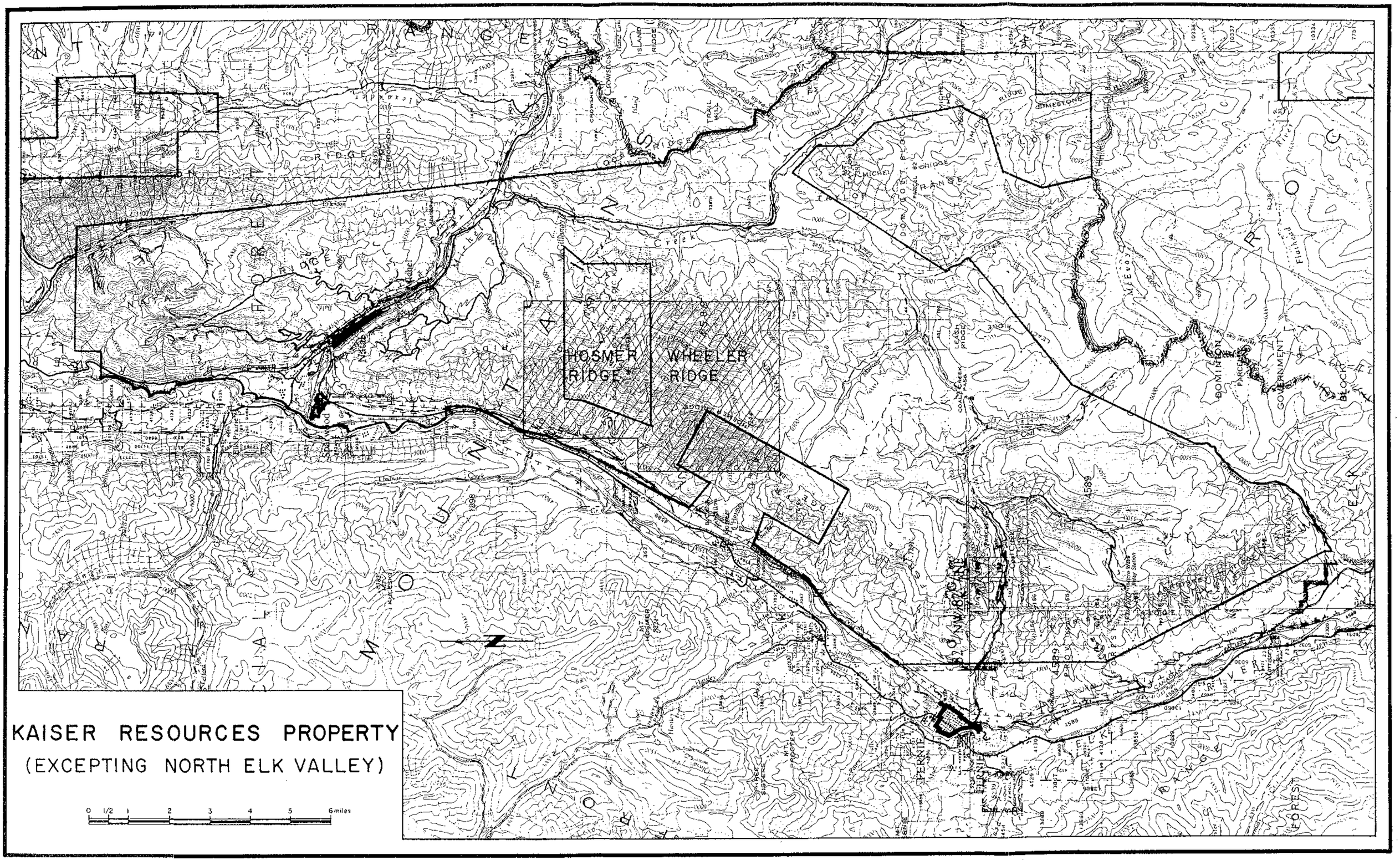


PROPERTY OWNERSHIP

Land Description and Ownership

During February, 1968, Kaiser Resources Ltd., a subsidiary of Kaiser Steel Corporation, acquired the coal rights on the 108,000 acres of coal-bearing land held by Crows Nest Industries. In addition KRL also acquired the prospecting rights on any coal licenses held by CNI on Crown Lands. At the end of 5 years, Kaiser Resources Ltd. is to return to Crows Nest Industries, 43,000 acres of the land held by the agreement.

Kaiser Resources holds a non-exclusive exploration license in the Dominion owned Parcel 73. Exploration licenses are also held on lots 6743, 6744, 6746, 6747 in Parcel 69 and on approximately 3000 acres north of Parcel 81.


HOSMER RIDGE
WHEELER RIDGE
KAISER RESOURCES PROPERTY
(EXCEPTING NORTH ELK VALLEY)
0 1/2 1 2 3 4 5 6 miles

GEOLOGY AND EXPLORATION

The area under investigation on Hosmer and Wheeler Ridge and on the Dominion Coal Block (Parcel 73) comprised about 5000 acres, or about 5% of the total acreage of the Crows Nest property. The Hosmer-Wheeler Ridge area is part of the west limb of a broad syncline. The coal measures dip inward around the rim of the ridges and the axis of the syncline plunges southerly towards the centre of the Crows Nest basin at about 7 degrees.

A geological plan map and several typical cross-sections through the coal measures have been included.

General Stratigraphy

Three principal stratigraphic units occur within the area and from the top down are:

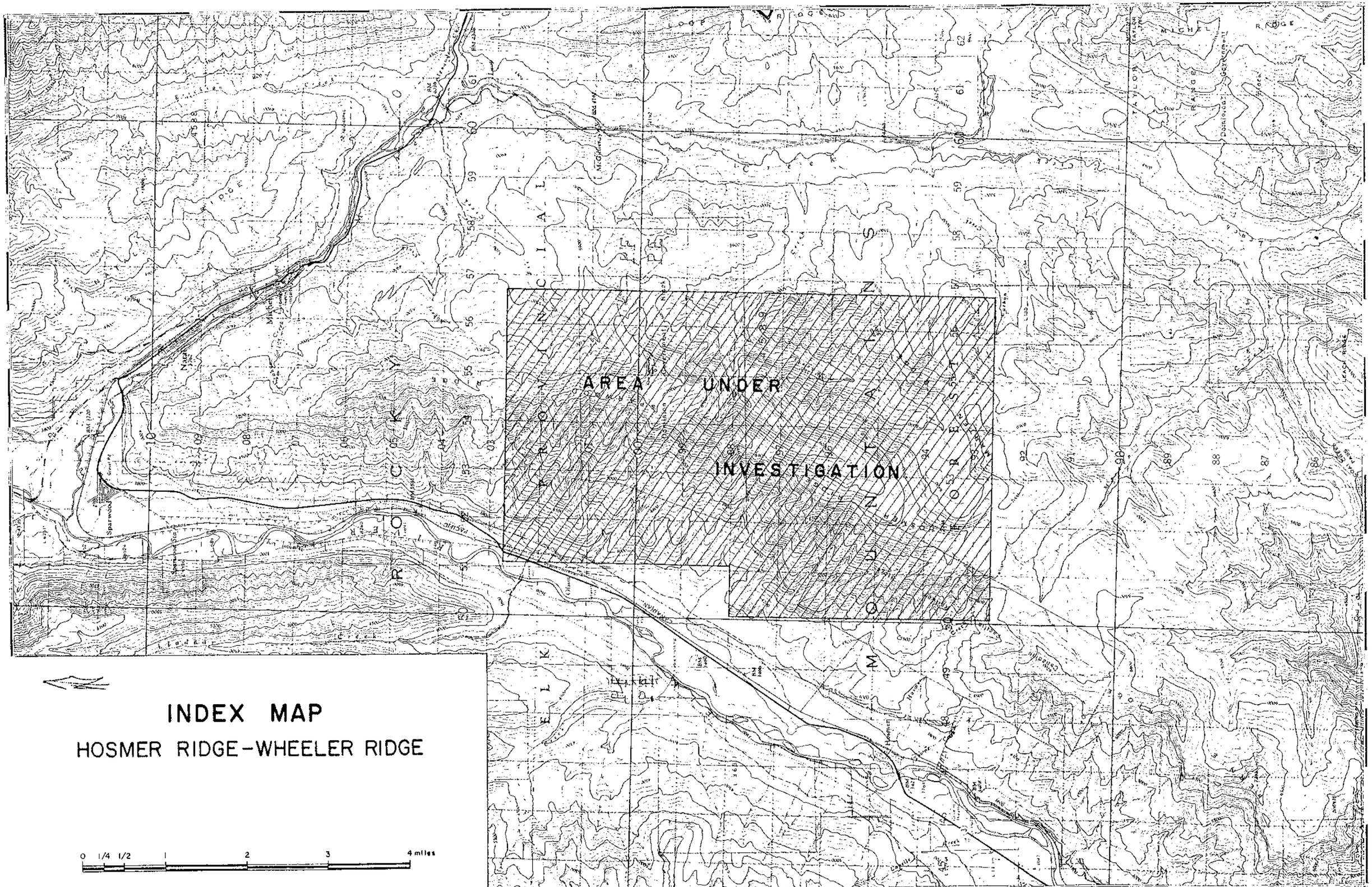
a) the Elk formation which consists of chert conglomerates, coarse grained sandstones and grey to black shales and immediately overlies the coal measures.

b) the Kootenay or coal-bearing formation which consists of grey to black shales, coarse to medium grained sandstones and numerous coal seams.

c) the non coal-bearing Fernie marine shales which underlie the Kootenay formation.

Two complete stratigraphic columns were measured on Hosmer and Wheeler Ridge and are included for reference.

A prominent marker bed (the Basal Kootenay sandstone) forms the base of the coal measures and becomes gradational to a siltstone within the Fernie formation.


AREA UNDER INVESTIGATION
INDEX MAP
HOSMER RIDGE-WHEELER RIDGE
0 1/4 1/2 1 2 3 4 miles

GEOLOGY AND EXPLORATION (CONT'D)

Exploration to Date

Ten coal seams were partially explored by the following:

a) dozers used to trench and trace out the outcrops

b) adits or test pits placed along the outcrops to obtain quality data

c) the use of a reverse circulation rotary drill to obtain bulk samples.

Quality data from bulk washability studies are plotted on the attached seam reserve sheets.

Future Exploration

During 1971, additional exploration should be completed to explore more fully the southwestern portion of Hosmer Ridge, with a view to the following:

a) tracing out and placing additional adits in the No. 3 seam.

b) work from the outcrop of No. 3 seam to locate and sample either by adits or trenches, the complete sequence of seams within the Kootenay formation

c) place several core holes as shown in the preliminary reserve sheets to obtain intercept thicknesses, quality data, and structural information.

A future program might include the following:

5 to 6 core hole - 10,000 ft. @ $14.00/ft.	$140,000
2 D-8 bulldozers @ $1200/mo. ea. x 6 mo.	15,000
6 Adits @ $5,000 each	30,000
Sampling and Testing	15,000

GEOLOGY AND EXPLORATION (CONT'D)

Future Exploration (Cont'd)

Supervision, mapping	25,000
Contingency and miscellaneous	25,000
TOTAL	$250,000

ESTIMATED RESERVES BOWLING, COVERDALE & CLICK (PARTIAL) TRS, HOSMER & WHEELER RIDGE AREA

AREA (SQ MI)	SEAM NO.	ADIT REFERENCE	AVERAGE SEAM THICKNESS	ACRES (X 2500')	RESERVE IN PLACE 000's OF TONS (CATEGORIES) (0-25 AT COVER)	RESERVE POTENTIAL a b c
Dominion Block						
North West Half	Composite coal thickness		164'		328,522,000	x
South West Half	10	4,12	30'	966	43,113,000	1x
	9	1,2,3,5,9 Test Pit 1	60'	850	22,535,000	2x
	6 & 7	6,10, Test Pit 3	37'	312	7,538,000	c
	5	13	30'	41	835,000	c
	4	8, Test Pit 2	25'	18	359,000	x
Sub Total					403,302,000 / 757,547,000	
Hosmer & Wheeler Ridge Area 3170 Acres	1	16	5'	3,813	14,959,000	x
	2	15,24	15'	1,887	66,490,000	x
	3	11,14,20,26	35'	2,094	135,975,000	x
	4	25	6'	2,193	26,800,000	x
	5	17	7'	2,260	29,357,000	x
	7 & 8	22,17	38'	2,313	163,045,000	x
	9	23 Sample A (65)	19'	2,260	159,335,000	x
		23 LB	18'			
	10	2k	29'	2,171	80,597,000 / 676,958,000	
Sub Total						
Grand Total					930,505,000	

Reserve Potential Footnotes

a Strip mining

b Underground mining

c Both strip and underground

1x 9 seam probably strippable 5 yds. over 70% coal in place. See typical section 23,000 Geologic Plan Map in Geological Drawings.

2x 10 seam ratio probably <5:1

QUALITY CHARACTERISTICS (STAT COAL ANALYSIS)

SEAM NO.	ADIT NO.	SEAM THICK.	RAW ASH	FSI	YIELD @ 5.6.	V.M.	F.C.	ASP	FSE	S	DOM	MOIST.	REMARKS
													Composite thickness of coal based on similar coal structure measured on Sparrow Ridge No 5-2
													RESERVE AREA
10	4	33'	39.2	6 1/2	71.0	3.42	26.4	66.2	6.5	8	0.56	108	3.1	Reserve area requires 2 additional adits, adit 32 at 2 to be completed.
10	4	9'	27.5	5 1/2	53.2	3.42	27.9	64.5	4.0	7 1/2	0.49	216	3.4	
09	1	50'	37.0	4	81.8	3.50	25.5	67.8	3.0	5	0.27	46	3.3	
09	1	6'	26.5	3	56.0	3.45	27.1	61.6	4.0	5 1/2	0.33	310	2.0	Reserve area completely delineated, additional drilling required.
09	2	60'	37.4	4	71.7	3.45	27.8	61.4	9.2	5 1/2	0.32	51.5	3.6	
6	6	33	13.0	2 1/2	62.2	3.50	25.8	63.5	8.5	3 1/2	0.33	5	1.2	Reserve area partially explored, Adit 6 to be deepened, also Adit 27 to be comple
7	10	14	25.2	2	59.1	3.42	24.3	60.9	6.2	6	0.59	20.9	1.8	
5	13	8	15.7	2 1/2	79.4	3.44	28.6	61.4	8.8	5	0.47	7.5	1.6	
4	8	14	25.6	2 1/2	72.5	3.50	28.8	60.6	8.8	3 1/2	0.39	3.2	1.6	Reserve area complete, several shallow holes required.
													RESERVE AREA
1	16	5	25.5	1	85.0	3.70	32.3	56.9	6.4	1	0.48	1.0	2.5	Partially explored, 2 adits required, several exploreds.
2	15	19	33.5	3	56.3	3.57	32.2	57.4	7.6	6 1/2		159	2.8	Partially explored, 4 adits to be complet
3	14	27.2	8.4	7 1/2	91.4	3.50	32.4	57.3	3.3	7 1/2	0.64	352	1.9	Outcrop traced in detail, excellent quality coal, 2 new adits required. Additional investigation to south of Hosmer Ridge could increase reserve potential.
4	25	33.2	23.4	2 1/2	72.4	3.50	28.7	61.0	8.4	5 1/2	0.45	5.0	1.8	On Wheeler Ridge coal only 6' thick, 2 additional adits required.
5	17	21	22.0	1 1/2	66.3	3.45	27.6	63.5	7.2	2 1/2	0.37	0.8	1.7	Outcrop partially explored on Wheeler Ridge, 2 new adits required.
7	22	14.4	31.6	2 1/2	41.4	3.46	28.5	59.7	10.7	5	0.42	89+	1.5	More outcrop tracing required, 1 additional adit on Wheeler Ridge. Adit 27 to be completed on Hosmer Ridge.
8	19	24	14.5	2	82.3	3.48	27.0	63.3	8.5	3	0.40	10	1.7	
09	23	21.7	23.6	4 1/2	57.1	3.52	29.5	58.3	10.2	6 1/2	0.14	246	1.0	Out crop data complete on Wheeler Ridge, more exposure and holes required on west side of Hosmer Ridge.
09	23	19.4	18.7	5 1/2	81.1	3.60	29.2	60.6	3.4	6	0.16	30	1.8	
10	21	16.5	15.8	2 1/2	68.2	3.42	29.4	62.4	7.5	7	0.32	45	1.2	Same as above for 3 seams.

ESTIMATED RESERVES DOMINION GOVERNMENT BLOCK (PARCEL 233), HOSMER - WHEELER RIDGE AREA

AREA (5086)	SEAM NO.	ADIT REFERENCE	AVERAGE SEAM INTERCEPT	ACRES (TO 2500')	RESERVE IN PLACE 000's NT (ALL CATEGORIES) (0-2500' COVER)	RESERVE POTENTIAL a	b	a & b
Dominion Block								
North West Half	Composite coal thickness		164'		129,527,000		x	
South West Half	10	4,12	30'	796	43,113,000	1x		
	9	1,2,3,7,5,9 Test Pit 1	60'	650	72,005,000	2x		
	8 & 7	6,10, Test Pit 3	37'	112	7,938,000			x
	5	13	10'	41	875,000			x
	4	8, Test Pit 2	15'	18	583,000			x
Sub Total					253,947,000			
Hosmer - Wheeler Ridge Area 3170 Acres								
	1	16	5'	1,613	14,959,000		x	
	2	15,24	19'	1,897	66,890,000		x	
	3	11,14,20,26	35'	2,094	135,975,000		x	
	4	25	6'	2,191	26,800,000		x	
	5	17	7'	2,260	29,357,000		x	
	7 & 8	22,19	38'	2,313	163,085,000		x	
	9	23 Sample A (49)	19'	2,260	159,335,000		x	
		23 L9	19'					
	10	2k	20'	2,171	60,557,000			
Sub Total					676,958,000			
Grand Total					930,905,000			

Reserve Potential Footnotes

a Strip mining

b Underground mining

c Both strip and underground

1x 9 seam probably strippable 5 yds. rock /Nt coal in place. See typical Section 23,000 Geologic Plan Map in Geological Drawings.

2x 10 seam ratio Probably < 5:1

QUALITY CHARACTERISTICS CLEAN COAL ANALYSIS

SEAM NO.	ADIT NO.	SEAM THICK.	RAW ASH	FSI	YIELD # S.G.	V.M.	F.C.	ASH	FSI	S	DOM	MOIST.	REMARKS
													Composite thickness of coal based on similar coal sequence measured on Sparwood Ridge No S-2
													RESERVE AREA
10	4	23'	19.2	6 1/2	71.0 #.42	26.4	66.2	6.3	8	0.56	108	1.1	Reserve area requires 2 additional
10	4	9'	27.5	5 1/2	58.2 #.42	27.9	64.5	6.0	7 1/2	0.69	710	1.6	adits, adit 12 also to be completed.
U9	1	30'	17.0	4	81.3 #.50	26.9	62.8	9.0	5	0.27	66	1.2	
M9	1	6'	26.5	3	55.0 #.45	27.4	61.6	9.0	5 1/2	0.33	310	2.0	Reserve area completely delineated,
L9	2	60'	17.4	4	71.7 #.45	27.8	61.4	9.2	5 1/2	0.32	51.5	1.6	additional drilling required.
8	6	33	13.0	3 1/2	68.2 #.50	26.8	63.5	8.5	3 1/2	0.33	0	1.2	Reserve does partially explored, Adit 5
7	10	14	25.2	2	59.1 #.42	29.1	60.9	8.2	6	0.59	20.9	1.8	to be deepened, also Adit 27 to be comp
5	13	8	15.7	2 1/2	79.4 #.44	28.4	61.4	8.6	5	0.47	7.5	1.6	
4	8	14	20.6	2 1/2	72.5 #.50	28.6	60.8	8.8	3 1/2	0.39	3.2	1.6	Reserve area complete, several shallow holes required.
													RESERVE AREA
1	16	5	23.3	1	85.0 #.70	32.1	56.9	8.5	1	0.48	1.0	2.5	Partially explored, 2 adits required, several core holes
2	15	19	33.5	5	56.3 #.57	32.2	57.4	7.6	6 1/2		189	2.8	Partially explored, 2 adits to be comple
3	14	27.2	8.4	7 1/2	91.9 #.60	32.4	57.3	3.3	7 1/2	0.44	330	1.9	Outcrop traced in detail, excellent quality coal, 2 new adits required. Additional investigation to south of Hosmer Ridge could increase reserve potential.
4	25	13.2	23.4	2 1/2	72.4 #.50	28.7	61.0	8.4	5 1/2	0.46	5.0	1.9	On Wheeler Ridge coal only 6' thick, 2 additional adits required.
5	17	23	22.0	1 1/2	68.5 #.45	27.6	63.5	7.2	2 1/2	0.37	0.8	1.7	Outcrop partially explored on Wheeler Ridge, 2 new adits required.
7	22	14.4	31.8	2 1/2	46.4 #.46	28.6	59.7	10.2	5	0.42	391	1.5	More outcrop tracing required, 1 addi-
8	19	24	14.5	2	81.1 #.48	27.0	63.3	8.5	3	0.40	10	1.2	tional adit on Wheeler Ridge. Adit 27 to be completed on Hosmer Ridge.
U9	23	21.7	23.6	4 1/2	57.4 #.52	29.5	59.3	10.2	6 1/2	0.44	244	1.0	Out crop data complete on Wheeler Ridge
L9	23	19.4	18.7	5 1/2	81.1 #.60	29.2	60.6	8.4	6	0.41	30	1.8	some exposure and adits required on west side of Hosmer Ridge.
10	21	16.5	15.8	2 1/2	68.7 #.42	29.4	62.4	7.0	7	0.32	45	1.2	Same as above for 9 seam.

WASHABILITY OF DOMINION GOV'T BLOCK

ADIT # 1
SAMPLE B 30' THICK
X CUT @ 240 FT. (HOSMER AREA)

DATE: Nov. 19/69

RAW COAL:

PROXIMATE ANALYSIS

MOIST.%	V.M.%	ASH %	F.C.	F.S.I.
1.2	27.2	17.0	54.6	#4

SCREEN ANALYSIS	WT %	ASH %	CALCULATED ASH
-2" + 1/2"	13.5)		
-1/2" + 1/4"	13.5)	19.0	14.6
-1/4" + 28M	50.0)		
-28M + 0	23.0	12.1	2.8
	100.0		17.4

WASHABILITY OF -2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM WT. % FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
Float 1.30	17.9	2.6	17.9	2.6	100.0	19.1	
1.30 - 1.35	25.2	6.2	43.1	4.7	82.1	22.7	
1.35 - 1.40	20.0	9.6	63.1	6.3	56.9	30.0	68.5 @ 1.40
1.40 - 1.45	9.0	17.0	72.1	7.6	36.9	41.1	
1.45 - 1.50	5.6	18.4	77.7	8.4	27.9	48.8	22.2 @ 1.50
1.50 - 1.55	2.9	28.7	80.6	9.1	22.3	56.5	
1.55 - 1.60	1.9	36.3	82.5	9.7	19.4	60.6	8.9 @ 1.60
1.60 - 1.70)							
1.70 - 1.80)	4.6	37.1	87.1	11.2	17.5	63.3	
Sink 1.80	12.5	72.6	100.0	19.1	12.9	72.6	

WASHABILITY OF -28 M + 0 FRACTION:

		WT. %	ASH %	CALCULATED ASH
Float @	1.50	86.0	6.3	5.4
Sink @	1.50	14.0	48.2	6.7
				12.2

Calculated Yield of -2" + 0 Product:
Yield 81.8 @ 1.50 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.3	26.9	9.0	62.8	#5	66	0.27

WASHABILITY OF DOMINION GOVERNMENT
BLOCK SEAM SPARWOOD RIDGE
SAMPLE 'C' - 6 FT. THICK
ADIT #1 X-CUT @ 240 FT.

DATE: _____

RAW COAL:

PROXIMATE ANALYSIS

MOIST.%	V.M.%	ASH %	F.C.	F.S.I.
1.6	23.8	26.5	48.1	#3

SCREEN ANALYSIS	WT %	ASH %	CALCULATED ASH
-2" x 1/2"	13.9)		
-1/2" + 1/4"	15.9)	28.2	24.2
-1/4" + 28M	56.3)		
-28M + 0	13.9	19.6	2.7
			26.9

WASHABILITY OF -2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM WT. % FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	9.4	2.8	9.4	2.8	100.0	28.2	
1.30-1.35	16.7	6.7	26.1	5.3	90.6	30.9	
1.35-1.40	11.4	10.2	37.5	6.8	73.9	36.4	69.6% @ 1.40
1.40-1.45	14.0	14.2	51.5	8.8	62.5	41.2	
1.45-1.50	10.4	16.2	61.9	10.0	48.5	49.0	42.0% @ 1.50
1.50-1.55	-2.9	25.9	64.8	10.7	38.1	57.9	
1.55-1.60	4.4	28.2	69.2	11.8	35.2	60.5	16.2% @ 1.60
1.60-1.70	4.9	36.9	74.1	13.5	30.8	65.2	
1.70-1.80	1.1	41.8	75.2	13.9	25.9	70.5	
SINK 1.80	24.8	71.8	100.0	28.2	24.8	71.8	

WASHABILITY OF -28 M + 0 FRACTION:

		WT. %	ASH %	CALCULATED ASH
FLOAT @	1.50	77.3	7.8	6.0
SINK @	1.50	22.7	59.8	13.6
				19.6

CALCULATED YIELD OF -2" + 0 Product:
Yield 55.0 @ 1.45 S.B.

COAL ANALYSIS: (RAW COAL FLOATED @1.45) Sp. Gr.

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
2.0	27.4	9.0	61.6	# 5 1/2	310	0.39

WASHABILITY OF #9 SEAM (LOWER)
HOSMER MOUNTAIN
ADIT #2 X-CUT @ 150' SEAM THICKNESS 60' DATE: _____

RAW COAL:

PROXIMATE ANALYSIS

MOIST.%	V.M.%	ASH %	F.C.	F.S.I.
0.9	26.5	17.4	55.2	#4

SCREEN ANALYSIS	WT %	ASH %	CALCULATED ASH
-2" + 7/8"	13.8)		
-7/8" + 3/8"	17.8)	18.8	15.2
-3/8" + 28M	52.5)		
-28M + 0	15.9	13.4	2.2

17.4

WASHABILITY OF -2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM WT. % FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	14.0	2.3	14.0	2.3	100.0	18.8	
1.30-1.35	21.7	5.8	35.7	4.4	86.0	21.5	
1.35-1.40	21.0	9.5	56.7	6.3	64.3	26.8	70.0% @ 1.40
1.40-1.45	13.9	14.7	70.6	8.0	43.3	35.2	
1.45-1.50	5.7	21.0	76.2	8.9	29.4	44.8	29.4% @ 1.50
1.50-1.55	4.3	27.2	80.5	9.9	23.8	50.5	
1.55-1.60	2.3	28.0	82.8	10.4	19.5	55.7	11.8% @ 1.60
1.60-1.70	3.9	36.3	86.7	11.6	17.2	59.3	
1.70-1.80	2.0	42.9	88.7	12.3	13.3	66.1	
SINK 1.80	11.3	70.2	100.0	18.8	11.3	70.2	

WASHABILITY OF -28 M + 0 FRACTION:

		WT. %	ASH %	CALCULATED ASH
FLOAT	@ 1.50	76.6	6.5	5.0
SINK	@ 1.50	23.4	36.1	8.4

13.4

YIELD 71.7 @ 1.45 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @1.45)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.6	27.8	9.2	61.4	#5 1/2	51.5	0.33

WASHABILITY OF #9 SEAM
HOSMER MOUNTAIN

ADIT #3 X-CUT @ 85' SEAM THICKNESS 30'

#9 SEAM

RAW COAL:

PROX. ANALYSIS -	MOIST.%	V.M.%	ASH %	F.C.%	F.S.I.
	2.2	24.5	13.8	59.5	#5

SCREEN ANALYSIS-	WT. %	ASH %	CALCULATED ASH
-2" + 7/8"	20.8		
-7/8" + 3/8"	16.8	15.0	12.8
-3/8" + 28M	45.5		
-28M + 0	16.9	11.8	2.0
			14.8

WASHABILITY OF -2" + 28M FRACTION:

SP. GR.	WT.%	ASH %	CUM WT.% FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	16.5	2.6	16.5	2.6	100.0	15.0	
1.30-1.35	23.8	5.4	40.3	4.3	83.5	17.5	
1.35-1.40	28.5	8.1	68.8	5.8	59.7	22.3	71.6% @ 1.4
1.40-1.45	8.4	13.8	77.2	6.7	31.2	35.2	
1.45-1.50	5.0	18.2	82.2	7.4	22.8	43.1	20.6% @ 1.5
1.50-1.55	4.1	23.0	86.3	8.1	17.8	50.1	
1.55-1.60	1.5	29.4	87.8	8.5	13.7	58.2	9.0% @ 1.6
1.60-1.70	2.7	33.7	90.5	9.2	12.2	61.7	
1.70-1.80	1.1	43.2	91.6	9.7	9.5	69.5	
SINK 1.80	8.4	73.1	100.0	15.0	8.4	73.1	

WASHABILITY OF -28M + 0 FRACTION:

	WT. %	ASH %	CALCULATED ASH
FLOAT @ 1.50	67.0	4.9	3.3
SINK @ 1.50	33.0	25.6	8.5
			11.8

CALCULATED YIELD OF -2" + 0 PRODUCT:

YIELD 83.0 @ 1.55 S.G.

CLEAN COAL ANALYSIS : (RAW COAL FLOATED @ 1.55)

MOIST.%	V.M.%	ASH %	F.C.%	F.S.I.	D.D.M.	SULPHUR
1.2	25.5	7.2	66.1	#5	45.5	0.30

HOSMER MOUNTAIN

ADIT #4 X-CUT @ 170' SEAM THICKNESS 23'

SAMPLE E

RAW COAL:

PROX. ANALYSIS -	MOIST. %	V.M.%	ASH %	F.C. %	F.S.I.
	1.4	24.2	19.2	54.9	#6½

SCREEN ANALYSIS-	WT. %	ASH %	CALCULATED ASH
-2" + 7/8"	8.0)		
-7/8" + 3/8"	13.5)	19.5	15.3
-3/8" + 28M	57.0)		
-28M + 0	21.5	14.3	3.1
			18.4

WASHABILITY OF -2" + 28M FRACTION:

SP. GR.	WT.%	ASH %	CUM WT.% FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	10.1	4.2	10.1	4.2	100.0	19.5	
1.30-1.35	19.9	6.3	30.0	5.6	89.9	21.2	
1.35-1.40	19.5	9.9	49.5	7.3	70.0	25.5	73.5 @ 1.40
1.40-1.45	18.3	14.0	67.8	9.1	50.5	31.5	
1.45-1.50	7.5	20.6	75.3	10.2	32.2	41.5	39.1 @ 1.50
1.50-1.55	5.5	25.5	80.8	11.3	24.7	47.8	
1.55-1.60	3.4	31.3	84.2	12.1	19.2	54.1	13.5 @ 1.60
1.60-1.70	3.1	37.4	87.3	13.0	15.8	59.1	
1.70-1.80	1.4	44.7	88.7	13.5	12.7	64.4	
SINK 1.80	11.3	66.8	100.0	19.5	11.3	66.8	

WASHABILITY OF -28M + 0 FRACTION:

	WT. %	ASH %	CALCULATED ASH
FLOAT @ 1.50	82.8	8.1	6.7
SINK @ 1.50	17.2	44.1	7.6
			14.3

CALCULATED YIELD OF -2" + 0 PRODUCT:

YIELD 71.0 @ 1.42 S.G.

CLEAN COAL ANALYSIS : (RAW COAL FLOATED @ 1.42)

MOIST.%	V.M.%	ASH %	F.C.%	F.S.I.	D.D.M.	SULPHUR
1.1	26.4	6.3	66.2	#8	108	0.56

WASHABILITY OF #10 SEAM
HOSMER MOUNTAIN
ADIT #4 X-CUT @ 170' SEAM THICKNESS 9'
SAMPLE F

DATE: _____

RAW COAL:

PROXIMATE ANALYSIS

MOIST.%	V.M.%	ASH %	F.C.	F.S.I.
1.6	21.8	27.5	49.1	# 5 1/2

SCREEN ANALYSIS	WT %	ASH %	CALCULATED ASH
-2" + 7/8"	7.0)		
-7/8" + 3/8"	10.8)	28.7	21.3
-3/8" + 28M	56.6)		
-28M + 0	25.6	21.3	5.5
			26.8

WASHABILITY OF -2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM WT. % FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	5.2	2.5	5.2	2.5	100.0	28.7	
1.30-1.35	12.9	4.8	18.1	4.1	94.8	30.2	
1.35-1.40	14.2	10.5	32.3	6.9	81.9	34.2	75.1 @ 1.40
1.40-1.45	23.1	14.6	55.5	10.1	67.7	39.2	
1.45-1.50	7.3	19.8	62.8	11.3	44.5	51.9	50.6 @ 1.50
1.50-1.55	4.9	23.7	67.6	12.1	37.2	58.2	
1.55-1.60	3.4	26.0	71.1	12.8	32.4	63.4	14.5 @ 1.60
1.60-1.70	2.9	34.2	73.9	13.7	28.9	67.9	
1.70-1.80	2.8	44.7	76.7	14.8	26.1	71.6	
SINK 1.80	23.3	74.8	100.0	28.7	23.3	74.8	

WASHABILITY OF -28 M + 0 FRACTION:

		WT. %	ASH %	CALCULATED ASH
FLOAT	@ 1.50	66.0	8.6	5.7
SINK	@ 1.50	34.0	46.0	15.6
				21.3

CALCULATED YIELD OF -2" + 0 PRODUCT:

YIELD 58.2 @ 1.42 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @ 1.42)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.6	27.9	6.0	64.5	# 7 1/2	710	0.69

WASHABILITY OF LOWER #9 SEAM
HOSMER MOUNTAIN
ADIT #5 LOWER BENCH X-CUT @ 150'
SEAM THICKNESS - 47'

DATE: May 6, 1970

RAW COAL:

PROXIMATE ANALYSIS

MOIST.%	V.M.%	ASH %	F.C.	F.S.I.
1.1	24.7	24.5	49.7	# 3 1/2

SCREEN ANALYSIS	WT %	ASH %	CALCULATED ASH
-2 + 7/8"	7.8		
-7/8" + 3/8"	10.1	24.7	18.4
-3/8" + 28M	56.7		
28M + 0	25.4	20.7	5.4
	100.0		23.8

WASHABILITY OF -2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM WT. % FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	20.9	3.4	20.9	3.4	100	24.7	
1.30-1.35	16.1	5.9	37.0	4.5	79.1	30.3	
1.35-1.40	14.7	7.6	51.6	5.4	63.0	36.5	64.0% @ 1.40
1.40-1.45	14.3	12.9	65.9	7.0	48.4	45.2	
1.45-1.50	4.1	18.8	70.0	7.7	34.1	58.8	28.8% @ 1.50
1.50-1.55	2.4	23.5	72.3	8.2	30.0	64.2	
1.55-1.60	1.4	27.3	73.7	8.6	27.7	67.6	6.6% @ 1.60
1.60-1.70	1.4	35.8	75.1	9.1	26.3	69.7	
1.70-1.80	1.7	43.9	76.8	9.8	24.9	71.7	
SINK 1.80	23.2	73.7	100.0	24.7	23.2	73.7	

WASHABILITY OF -28 M + 0 FRACTION:

		WT. %	ASH %	CALCULATED ASH
FLOAT	@ 1.50	64.5	8.3	5.4
SINK	@ 1.50	35.5	43.1	15.3
		100.0		20.7

CALCULATED YIELD OF -2" + 0 PRODUCT:

YIELD 71.4 @ 1.6 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @ 1.60)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.6	28.0	11.9	58.5	#5	0.7	

WASHABILITY OF LOWER #9 SEAM
HOSMER MOUNTAIN
ADIT #5 UPPER BENCH X-CUT @ 150'
SEAM THICKNESS - 41'

DATE: MAY 4, 1970

RAW COAL:

PROXIMATE ANALYSIS

MOIST.%	V.M.%	ASH %	F.C.	F.S.I.
1.0	26.5	16.0	56.5	#4 1/2

SCREEN ANALYSIS	WT %	ASH %	CALCULATED ASH
-2" + 7/8"	12.9		
-7/8" + 3/8"	20.5	16.0	13.4
-3/8" + 28M	50.4		
28M + 0	16.2	14.2	2.3
	100.0		15.7

WASHABILITY OF -2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM WT. % FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	3.1	2.8	3.1	2.8	100.0	16.0	
1.30-1.35	12.9	6.5	15.9	5.8	96.9	16.4	
1.35-1.40	38.4	10.7	54.3	9.3	94.1	17.9	80.0% @ 1.40
1.40-1.45	16.0	13.6	70.4	10.7	45.7	24.0	
1.45-1.50	10.1	19.3	80.5	11.8	29.6	28.5	38.6% @ 1.50
1.50-1.55	7.4	23.0	87.9	12.7	19.5	33.3	
1.55-1.60	3.7	27.8	91.7	13.3	12.1	39.7	15.7% @ 1.60
1.60-1.70	4.1	33.0	95.7	14.2	8.3	45.0	
1.70-1.80	1.3	36.4	97.0	14.5	4.3	56.4	
SINK 1.80	3.0	65.2	100.0	16.0	3.0	65.2	

WASHABILITY OF -28 M + 0 FRACTION:

		WT. %	ASH %	CALCULATED ASH
FLOAT	@ 1.50	80.0	8.0	6.4
SINK	@ 1.50	20.0	39.1	7.8
		100.0		14.2

YIELD 58.4 @ 1.40 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.4	28.8	8.2	61.6	#6	50.7	

WASHABILITY OF #8 SEAM
HOSMER MOUNTAIN
ADIT #6 UPPER SEAM X-CUT @ 230' SEAM THICKNESS 33'

DATE: MAY 7, 1970

RAW COAL:

PROXIMATE ANALYSIS

MOIST.%	V.M.%	ASH %	F.C.	F.S.I.
1.4	25.7	13.0	59.9	#3 1/2

SCREEN ANALYSIS	WT %	ASH %	CALCULATED ASH
-2" + 7/8"	22.8		
-7/8" + 3/8"	18.2	12.6	10.8
-3/8" + 28M	44.8		
-28M + 0	14.2	8.7	1.3
			12.1

WASHABILITY OF -2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM WT. % FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	8.8	4.4	8.8	4.4	100.0	12.6	
1.30-1.35	25.5	6.8	34.3	6.2	91.2	13.4	
1.35-1.40	19.4	7.2	53.7	6.6	65.7	16.0	79.8% @ 1.40
1.40-1.45	23.7	11.0	77.4	7.9	46.3	19.7	
1.45-1.50	8.5	17.2	86.0	8.8	22.6	28.8	42.4% @ 1.50
1.50-1.55	7.4	21.0	93.3	9.8	14.0	35.9	
1.55-1.60	1.5	31.0	94.8	10.1	6.7	52.3	10.5% @ 1.60
1.60-1.70	1.4	33.6	96.2	10.5	5.2	58.3	
1.70-1.80	0.6	43.6	96.8	10.7	3.9	67.0	
SINK 1.80	3.2	71.7	100.0	12.6	3.2	71.7	

WASHABILITY OF -28 M + 0 FRACTION:

		WT. %	ASH %	CALCULATED ASH
FLOAT	@ 1.50	89.2	4.5	4.0
SINK	@ 1.50	10.8	43.9	4.7
				8.7

YIELD 88.2 @ 1.50 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.2	26.8	8.5	63.5	#3 1/2	0	

WASHABILITY OF ADIT #7
HOSMER SAMPLE "A"
L9 SEAM, SEAM THICKNESS 35 Ft.

RAW COAL:

PROX. ANALYSIS -	MOIST.%	V.M.%	ASH %	F.C.%	F.S.I.
	1.6	24.3	22.4	52.3	#6

SCREEN ANALYSIS -	WT. %	ASH %	CALCULATED ASH
-2" + 7/8"	13.2)		
-7/8 + 3/8"	17.9)	24.8	20.8
-3/8" + 28M	52.8)		
28M + 0	16.1	13.2	2.1
			22.9

WASHABILITY OF -2" + 28M FRACTION:

SP. GR.	WT. %	ASH %	CUM. WT.% FLOAT	CUM. ASH % FLOAT	CUM. WT.% SINK	CUM. ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	16.5	2.9	16.5	2.9	100.0	24.8	
1.30-1.35	11.8	6.6	28.3	4.4	83.5	29.1	
1.35-1.40	18.8	10.0	47.0	6.7	71.7	32.8	59.4% @ 1.4
1.40-1.45	13.4	16.2	60.4	8.8	53.0	40.9	
1.45-1.50	5.1	19.1	65.5	9.6	39.6	49.2	32.4% @ 1.5
1.50-1.55	4.7	25.8	70.3	10.7	34.5	53.7	
1.55-1.60	3.5	31.2	73.7	11.6	29.7	58.1	16.5% @ 1.6
1.60-1.70	5.3	38.2	79.1	13.4	26.3	61.7	
1.70-1.80	3.4	49.6	82.5	14.9	20.9	67.7	
SINK 1.80	17.5	71.2	100.0	24.8	17.5	71.2	

WASHABILITY OF -28M + 0 FRACTION:

	WT.%	ASH %	CALCULATED ASH
FLOAT @ 1.50	82.2	5.8	4.8
SINK @ 1.50	17.8	47.2	8.4
			13.2

CALCULATED YIELD OF _2" + 0 PRODUCT:

YIELD 63.7 @ 1.45 S.G.

CLEAN COAL ANALYSIS : (RAW COAL FLOATED @ 1.44)

MOIST. %	V.M.%	ASH %	F.C.%	F.S.I.	D.D.M.	SULPHUR %
1.1	27.1	7.7	64.1	#6	391.1	0.39

WASHABILITY OF ADIT # 8 - HOSMER
X-CUT @ 150 FT.
NO. 4 SEAM
SEAM THICKNESS 14 FT.

RAW COAL:

PROX. ANALYSIS -	MOIST. %	V.M.%	ASH %	F.C.%	F.S.I.
	2.7	26.0	20.6	50.7	#2½

SCREEN ANALYSIS -	WT.%	ASH %	CALCULATED ASH
-2" + 7/8"	16.6		
-7/8" + 3/8"	16.1	22.0	18.3
-3/8" + 28M	50.7		
28M + 0	16.6	20.2	3.3
	100.0		21.6

WASHABILITY OF -2" + 28M FRACTION:

SP. GR.	WT. %	ASH%	CUM. WT.% FLOAT	CUM. ASH % FLOAT	CUM. WT. % SINK	CUM. ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	6.4	2.6	6.4	2.6	100.0	22.0	
1.30-1.35	34.1	5.9	40.5	5.4	93.6	23.3	
1.35-1.40	16.1	10.5	56.6	6.8	59.5	33.2	79.3% @ 1.4
1.40-1.45	12.0	14.4	68.6	8.2	43.4	41.7	
1.45-1.50	4.4	19.5	73.0	8.8	31.4	52.2	25.8% @ 1.5
1.50-1.55	3.2	25.6	76.2	9.5	27.0	57.4	
1.55-1.60	2.1	30.1	78.3	10.1	23.8	61.7	10.4% @ 1.6
1.60-1.70	3.4	39.8	81.7	11.4	21.7	64.8	
1.70-1.80	2.3	47.3	84.0	12.3	18.2	69.6	
SINK 1.80	16.0	72.7	100.0	22.0	16.0	72.7	

WASHABILITY OF -28M + 0 FRACTION:

	WT.%	ASH%	CALCULATED ASH
FLOAT @ 1.50	71.9	9.7	7.0
SINK @ 1.50	28.1	47.2	13.2
			20.2

CALCULATED YIELD OF -2" + 0 PRODUCT:

YIELD 72.5 @ 1.50 S.G.

CLEAN COAL ANALYSIS: (RAW COAL FLOATED @ 1.49)

MOIST. %	V.M.%	ASH%	F.C.%	F.S.I.	D.D.M.	SULPHUR
1.6	28.8	8.8	60.8	#3½	3.2	0.39

WASHABILITY OF UPPER #9 SEAM
HOSMER MOUNTAIN
ADIT #9 X-CUT 100' SEAM THICKNESS 17'

DATE: APRIL 30, 1970

RAW COAL:

PROXIMATE ANALYSIS

MOIST.%	V.M.%	ASH %	F.C.	F.S.I.
1.1	26.1	17.8	55.0	#4

SCREEN ANALYSIS	WT %	ASH %	CALCULATED ASH
-2" + 7/8"	10.5		
-7/8" + 3/8"	14.7	16.4	13.3
-3/8" + 28M	55.8		
28 M + 0	19.0	16.1	3.6
			16.9

WASHABILITY OF -2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM WT. % FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	20.8	2.9	20.8	2.9	100.0	16.4	
1.30-1.35	23.7	6.1	44.6	4.6	79.2	19.9	
1.35-1.40	19.5	9.1	64.1	6.0	55.4	25.8	67.0% @ 1.40
1.40-1.45	12.0	15.0	76.1	7.4	35.9	34.9	
1.45-1.50	5.1	19.2	81.2	8.1	23.9	44.9	24.8% @ 1.50
1.50-1.55	3.1	23.5	84.3	8.7	18.8	51.9	
1.55-1.60	2.2	29.8	86.5	9.2	15.7	57.5	7.6% @ 1.60
1.60-1.70	2.6	35.6	89.1	10.0	13.5	62.1	
1.70-1.80	1.1	45.5	90.1	10.4	10.9	68.3	
SINK 1.80	9.9	70.7	100.0	16.4	9.9	70.7	

WASHABILITY OF -28 M + 0 FRACTION:

		WT. %	ASH %	CALCULATED ASH
FLOAT	@ 1.50	64.3	5.6	3.6
SINK	@ 1.50	35.7	34.8	12.5
				16.1

YIELD 82.2 @ 1.60 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.2	28.6	9.2	61.0	#5 1/2	51.5	

WASHABILITY OF #7 SEAM
HOSMER MOUNTAIN
ADIT #10 X-CUT @ 150', SEAM THICKNESS 14'

DATE:

RAW COAL:

PROXIMATE ANALYSIS

MOIST.%	V.M.%	ASH %	F.C.	F.S.I.
1.6	25.1	25.2	48.1	#2

SCREEN ANALYSIS	WT %	ASH %	CALCULATED ASH
-2" + 7/8"	9.0		
-7/8" + 3/8"	13.0	27.8	20.3
-3/8" + 28M	51.0		
28M + 0	27.0	17.9	4.8
			25.1

WASHABILITY OF -2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM WT. % FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	11.5	3.6	11.5	3.6	100.0	27.8	
1.30-1.35	17.0	5.8	28.5	4.9	88.5	30.9	
1.35-1.40	13.6	10.5	42.1	6.7	71.5	36.9	62.9% @1.40
1.40-1.45	12.9	16.9	55.0	9.1	57.9	43.1	
1.45-1.50	5.6	19.7	60.6	10.1	45.0	50.7	32.8% @1.50
1.50-1.55	4.1	23.3	64.7	10.9	39.4	55.0	
1.55-1.60	3.0	29.7	67.7	11.8	35.3	58.7	16.4% @1.60
1.60-1.70	5.7	36.9	73.4	13.7	32.3	61.4	
1.70-1.80	4.8	44.2	78.2	15.6	26.6	66.7	
SINK 1.80	21.8	71.7	100.0	27.8	21.8	71.7	

WASHABILITY OF -28 M + 0 FRACTION:

		WT. %	ASH %	CALCULATED ASH
FLOAT	@ 1.50	70.4	6.1	4.3
SINK	@ 1.50	29.6	46.0	13.6
				17.9

CALCULATED YIELD OF -2" + 0 PRODUCT:

YIELD 59.1 @ 1.42 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @ 1.42)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.8	29.1	8.2	60.9	#6		

WASHABILITY OF #3 SEAM

HOSMER MOUNTAIN

ADIT 11 X-CUT 150' SEAM THICKNESS 20'2" FT.

DATE: September 18, 1970

RAW COAL:

PROX. ANALYSIS -	MOIST. %	V.M.%	ASH %	F.C.	F.S.I.
	2.0	31.3	7.0	59.7	7½

SCREEN ANALYSIS -	WT.	WT. %	ASH %	CALCULATED ASH
2" + 7/8"	25 lbs	20.5		
7/8" + 3/8"	28 1/4	23.2	6.5	5.8
3/8 + 28M	55 3/4	45.7		
28M + 0	13	10.6	9.3	1.0
				6.8

WASHABILITY OF - 2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM. WT. % FLOAT	CUM. ASH % FLOAT	CUM. WT. % SINK	CUM. ASH % SINK	DIFFICULT CURVE
Flt. 1.30	68.2	2.7	68.2	2.7	100.0	6.5	
1.30 - 1.35	16.1	6.5	84.3	3.4	31.8	14.6	
1.35 - 1.40	6.8	11.3	91.1	4.0	15.7	22.8	28.4% @ 1.
1.40 - 1.45	3.5	15.7	94.6	4.4	8.9	31.6	
1.45 - 1.50	1.5	21.1	96.1	4.7	5.4	41.9	6.3% @ 1.
1.50 - 1.55	0.7	26.0	96.8	4.9	3.9	49.9	
1.55 - 1.60	0.5	30.5	97.3	5.0	3.2	55.2	1.8% @ 1.
1.60 - 1.70	0.6	35.7	97.9	5.2	2.7	59.8	
1.70 - 1.80	0.4	43.8	98.3	5.3	2.1	66.6	
SK 1.80	1.7	72.0	100.0	6.5	1.7	72.0	

WASHABILITY OF - 28 M + 0 FRACTION:

	WT.	WT. %	ASH %	CALCULATED ASH
Float @ 1.50	843	87.0	3.9	3.4
Sink @ 1.50	126	13.0	45.3	5.9
				9.3

CALCULATED YIELD OF - 2" + 0 PRODUCT:

YIELD 95.1 @1.50 S.G.

COAL ANALYSIS: (RAW COAL)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
2.0	31.3	7.0	59.7	7 1/2	72.5	0.38

WASHABILITY OF #5 SEAM
HOSMER MOUNTAIN
ADIT #13 X-CUT @ 150', SEAM THICKNESS 8'

DATE: _____

RAW COAL:

PROXIMATE ANALYSIS

MOIST.%	V.M.%	ASH %	F.C.	F.S.I.
1.0	26.7	15.7	56.6	#2.5

SCREEN ANALYSIS	WT %	ASH %	CALCULATED ASH
-2" + 7/8"	8.8		
-7/8" + 3/8"	12.8	14.9	11.5
-3/8" + 28M	55.7		
28M + 0	22.7	15.9	3.6
			15.1

WASHABILITY OF -2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM WT. % FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	15.5	2.8	15.5	2.8	100.0	14.9	
1.30-1.35	20.3	5.7	35.8	4.4	84.5	17.2	
1.35-1.40	23.5	9.3	59.3	6.4	64.2	20.8	76.6% @1.40
1.40-1.45	21.1	15.5	80.4	8.8	40.7	27.4	
1.45-1.50	7.2	20.7	87.6	9.7	19.6	40.2	33.6% @1.50
1.50-1.55	2.5	24.6	90.1	10.2	12.4	51.5	
1.55-1.60	0.8	27.3	90.9	10.3	9.9	58.4	5.9% @1.60
1.60-1.70	2.3	32.6	93.2	10.9	9.1	61.0	
1.70-1.80	1.0	43.2	94.2	11.2	6.8	70.8	
SINK 1.80	5.8	75.7	100.0	14.9	5.8	75.7	

WASHABILITY OF -28 M + 0 FRACTION:

		WT. %	ASH %	CALCULATED ASH
FLOAT	@ 1.50	76.4	10.0	7.6
SINK	@ 1.50	23.6	35.1	8.3
				15.9

CALCULATED YIELD OF -2" + 0 PRODUCT:
YIELD 79.4 @ 1.44 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @ 1.44)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.6	28.4	8.6	61.4	#5		

WASHABILITY OF 3 SEAM

ADIT # 14 MOSHER RIDGE
SEAM THICKNESS 27.2'
X-CUT @ 90 FT.

DATE: Sept. 14, 1970

RAW COAL:

PROX. ANALYSIS -	MOIST. %	V.M.%	ASH %	F.C.	F.S.I.

SCREEN ANALYSIS -	WT.	WT. %	ASH %	CALCULATED ASH
2" + 7/8"	12	10.5		
7/8" + 3/8"	15	13.2	8.0	6.3
3/8" + 28 M	63	55.3		
28 M + 0	24	21.0	10.6	2.2
				8.5

WASHABILITY OF - 2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM. WT. % FLOAT	CUM. ASH % FLOAT	CUM. WT. % SINK	CUM. ASH % SINK	DIFFICULT CURVE
Flt. 1.30	53.0	2.5	53.0	2.5	100.0	8.0	
1.30 - 1.35	30.0	4.7	83.0	3.3	47.0	14.2	
1.35 - 1.40	6.8	9.2	89.8	3.7	17.0	30.9	2.6@1.40
1.40 - 1.45	2.6	14.9	92.4	4.1	10.2	45.4	
1.45 - 1.50	1.3	19.3	93.7	4.3	7.6	55.8	5.1@1.50
1.50 - 1.55	0.7	25.3	94.4	4.4	6.3	63.3	
1.55 - 1.60	0.3	30.3	94.7	4.5	5.6	68.0	1.6@1.60
1.60 - 1.70	0.5	37.8	95.2	4.7	5.3	70.2	
1.70 - 1.80	0.4	47.7	95.6	4.9	4.8	73.6	
SK. 180	4.4	75.9	100.0	8.0	4.4	75.9	

WASHABILITY OF - 28 M + 0 FRACTION:

	WT.	WT. %	ASH %	CALCULATED ASH
Float @ 1.50	809	85.1	3.3	2.8
Sink @ 1.50	142	14.9	52.2	7.8
				10.6

CALCULATED YIELD OF - 2" + 0 PRODUCT:

YIELD 91.9 @ 1.50 S.G.

COAL ANALYSIS: (RAW COAL)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.9	32.4	8.4	57.3	# 7 1/2	390.0	0.44

WASHABILITY OF 1 SEAM
WHEELER RIDGE
ADIT #16
X-CUT @ 135 FT. SEAM THICKNESS 5 FT.

DATE: September 21, 1970

RAW COAL:

PROXIMATE ANALYSIS

MOIST.%	V.M.%	ASH %	F.C.	F.S.I.
2.2	27.0	23.3	47.5	#1

SCREEN ANALYSIS	WT %	ASH %	CALCULATED ASH
2" + 7/8"	21.9		
7/8" + 3/8"	21.7	24.6	20.9
3/8" + 28M	41.3		
28M + 0	15.1	17.0	2.6
			23.5

WASHABILITY OF -2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM WT. % FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	6.7	3.6	6.7	3.6	100.0	24.6	
1.30-1.35	17.4	4.9	24.1	4.5	93.3	26.2	
1.35-1.40	23.8	8.0	47.9	6.3	75.9	31.0	71.2% @ 1.40
1.40-1.45	13.5	13.3	61.4	7.8	52.1	41.5	
1.45-1.50	4.5	20.7	65.9	8.7	38.6	51.4	25.9% @ 1.50
1.50-1.55	1.9	29.9	67.8	9.3	34.1	55.5	
1.55-1.60	1.6	33.4	69.4	9.8	32.2	57.0	66.0% @ 1.60
1.60-1.70	2.0	40.2	71.4	10.7	30.6	58.2	
1.70-1.80	11.7	49.5	83.1	16.2	28.6	59.5	
SINK 1.80	16.9	66.4	100.0	24.6	16.9	66.4	

WASHABILITY OF -28 M + 0 FRACTION:

		WT. %	ASH %	CALCULATED ASH
FLOAT @	1.50	70.8	6.4	
SINK @	1.50	29.2	42.6	17.0

YIELD 85.0 @ 1.70 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
2.5	32.1	8.5	56.9	#1	1.0	0.48

WASHABILITY OF #2 SEAM

HOSMER RIDGE
ADIT #15 X-CUT @90' SEAM THICKNESS 19'

DATE: _____

RAW COAL:

PROXIMATE ANALYSIS

MOIST.%	V.M.%	ASH %	F.C.	F.S.I.
2.6%	24.0	33.5	39.9	# 3

SCREEN ANALYSIS	WT %	ASH %	CALCULATED ASH
-2" + 7/8"	9.2		
-7/8" + 3/8"	13.4	36.5	24.8
-3/8" + 28M	45.4		
28M + 0	32.0	24.0	7.7
			32.5

WASHABILITY OF -2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM WT. % FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	23.4	2.8	23.4	2.8	100.0	36.5	
1.30-1.35	14.0	8.0	37.4	4.7	76.6	46.8	
1.35-1.40	7.7	12.5	45.1	6.1	62.7	55.4	45.0% @1.40
1.40-1.45	3.1	16.2	48.2	6.7	55.0	61.4	
1.45-1.50	2.4	20.7	50.6	7.4	51.9	64.1	18.2% @1.50
1.50-1.55	1.3	27.1	51.9	7.9	49.5	66.2	
1.55-1.60	4.2	29.6	56.1	9.5	48.1	67.3	7.3% @1.60
1.60-1.70	2.4	39.0	58.5	10.8	43.9	70.9	
1.70-1.80	2.0	48.7	60.5	12.0	41.5	72.8	
SINK 1.80	39.5	74.0	100.0	36.5	39.5	74.0	

WASHABILITY OF -28 M + 0 FRACTION:

		WT. %	ASH %	CALCULATED ASH
FLOAT	@ 1.50	65.6	4.9	3.2
SINK	@ 1.50	34.4	60.6	20.8
				24.0

CALCULATED YIELD OF -2" + 0 PRODUCT:

YIELD 56.3 @ 1.57 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @1.57)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
2.8	32.2	7.6	57.4	#6 1/2	189.0	

WASHABILITY OF #5 SEAM
WHEELER RIDGE
ADIT #17
X-CUT @160' SEAM THICK 23 FT.

DATE: September 1970

RAW COAL:

PROXIMATE ANALYSIS

MOIST.%	V.M.%	ASH %	F.C.	F.S.I.
1.7	24.8	22.0	51.5	#1 1/2

SCREEN ANALYSIS	WT %	ASH %	CALCULATED ASH
2" + 7/8"	16.7		
7/8" + 3/8"	24.5	21.6	18.9
3/8" + 28M	46.5		
28M + 0	12.3	13.0	1.6
			20.5

WASHABILITY OF -2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM WT. % FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	17.6	3.1	17.6	3.1	100.0	21.6	
1.30-1.35	24.0	5.8	41.6	4.7	82.4	25.6	
1.35-1.40	14.5	10.4	56.1	6.1	58.4	33.7	65.4% @1.40
1.40-1.45	8.7	15.2	64.8	7.4	43.9	41.5	
1.45-1.50	7.9	19.0	72.7	8.6	35.2	48.0	28.1% @1.50
1.50-1.55	4.5	24.7	77.2	9.6	27.3	56.3	
1.55-1.60	2.6	29.6	79.8	10.2	22.8	62.0	11.5% @1.60
1.60-1.70	2.6	35.1	82.4	11.0	20.2	66.8	
1.70-1.80	1.9	40.1	84.3	11.7	17.6	71.5	
SINK 180	15.7	75.3	100.0	21.6	15.7	75.3	

WASHABILITY OF -28 M + 0 FRACTION:

		WT. %	ASH %	CALCULATED ASH
FLOAT	@ 1.50	79.0	5.7	4.5
SINK	@ 1.50	21.0	40.4	8.5
		100.0		13.0

CALCULATED YIELD OF -2" + 0 PRODUCT:

YIELD 66.5 @ 1.45 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @ 1.45)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.7	27.6	7.2	63.5	#2 1/2	0.8	0.37

WASHABILITY OF #8 SEAM

DATE: October 1, 1970

Adit # 19

Hosmer

Sample A SEAM THICKNESS 24 FT.

CROSSCUT @ 140 FT.

RAW COAL:

PROX. ANALYSIS -	MOIST. %	V.M.%	ASH %	F.C.	F.S.I.
	1.4	26.0	14.5	58.1	# 2

SCREEN ANALYSIS -	WT.	WT. %	ASH %	CALCULATED ASH
-2" + 1/8"	23	2312		
-1/8" + 3/8"	19	19.2	14.5	12.6
-3/8" + 28M	44	44.4		
28M + 0	13	13.2	11.9	1.6
				4.2

WASHABILITY OF - 2" + 28 M FRACTION:

SP. GR.	WT. %	WT. %	ASH %	CUM. WT. % FLOAT	CUM. ASH % FLOAT	CUM. WT. % SINK	CUM. ASH % SINK	DIFFICU CURV
FLT.-1.30	5117	13.2	2.7	13.2	2.7	100.0	14.5	
1.30-1.35	7835	20.3	5.2	33.5	4.2	86.8	16.3	
1.35-1.40	8266	21.4	8.6	54.9	5.9	66.5	19.7	71.2[illegible]
1.40-1.45	6702	17.3	13.6	72.2	7.8	45.1	24.9	
1.45-1.50	3326	8.6	18.2	80.8	8.9	27.8	32.0	36.0[illegible]
1.50-1.55	2122	5.5	23.0	86.3	9.8	19.2	38.1	
1.55-1.60	1063	2.8	27.8	89.1	10.3	13.7	44.2	13.1[illegible]
1.60-1.70	1586	4.1	32.4	93.2	11.3	10.9	48.4	
1.70-1.80	705	1.8	34.8	95.0	11.8	6.8	58.1	
SK.-1.80	1914	5.0	66.5	100.0	14.5	5.0	66.5	

WASHABILITY OF - 28 M + 0 FRACTION:

	WT.	WT. %	ASH %	CALCULATED ASH
FLOAT @ 1.50	817	83.8	5.8	4.9
SINK @ 1.50	158	16.2	43.2	7.0
	975	100.0		11.9

CALCULATED YIELD OF - 2" + 0 PRODUCT:

YIELD 81.1 @ 1.48 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @ 1.48)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.2	27.0	8.5	63.3	# 3	10.0	0.40

WASHABILITY OF #3 SEAM
HOSMER RIDGE
ADIT #20
X-CUT @ 106' SEAM THICKNESS 15'

DATE: SEPTEMBER 1970

RAW COAL:

PROXIMATE ANALYSIS

MOIST.%	V.M.%	ASH %	F.C.	F.S.I.
1.8	28.8	15.4	54.0	#6

SCREEN ANALYSIS	WT %	ASH %	CALCULATED ASH
2" + 1/2"	0.4		
1/2" + 1/4"	5.1	17.6	10.9
1/4" + 28 M	56.5		
28 M + 0	38.0	9.1	3.5
			14.4

WASHABILITY OF -2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM WT. % FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	51.7	2.1	51.7	2.1	100.0	17.6	
1.30-1.35	9.6	4.3	61.3	2.4	48.3	34.2	
1.35-1.40	7.0	7.0	68.3	2.9	38.7	41.6	31.9% @ 1.40
1.40-1.45	8.3	15.5	76.6	4.3	31.7	49.2	
1.45-1.50	2.0	18.6	78.6	4.6	23.4	61.2	15.3% @ 1.50
1.50-1.55	1.6	25.1	80.2	5.0	21.4	65.1	
1.55-1.60	1.0	30.7	81.2	5.4	19.8	68.4	5.2% @ 1.60
1.60-1.70	1.8	37.8	83.0	6.1	18.8	70.4	
1.70-1.80	1.4	47.5	84.0	6.8	17.0	73.8	
SINK 1.80	15.6	76.2	100.0	17.6	15.6	76.2	

WASHABILITY OF -28 M + 0 FRACTION:

		WT. %	ASH %	CALCULATED ASH
FLOAT @	1.50	88.1	3.6	3.2
SINK @	1.50	11.9	49.5	5.9
				9.1

YIELD 85.0 @ 1.70 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
2.5	32.0	6.0	59.5	#6	55.0	0.66

WASHABILITY OF #10 SEAM
WHEELER RIDGE
ADIT #21 X-CUT @ 120' SEAM THICKNESS 16.5'

DATE: OCTOBER 27, 1970

RAW COAL:

PROXIMATE ANALYSIS

MOIST.%	V.M.%	ASH %	F.C.	F.S.I.
1.4	25.9	15.8	56.9	#2 1/2

SCREEN ANALYSIS	WT %	ASH %	CALCULATED ASH
-2" + 1/8"	5.2		
-1/8" + 3/8"	7.0	16.2	12.9
-3/8" + 28M	67.9		
28M + 0	19.9	17.9	3.6
			16.5

WASHABILITY OF -2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM WT. % FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	11.4	3.0	11.4	3.0	100.0	16.2	
1.30-1.35	19.7	5.5	31.1	4.6	88.6	17.9	
1.35-1.40	22.2	9.1	53.3	6.5	68.9	21.5	70.8% @ 1.40
1.40-1.45	15.4	14.1	68.7	8.2	46.7	27.4	
1.45-1.50	9.5	18.4	78.2	9.4	3.3	33.9	37.4% @ 1.50
1.50-1.55	6.2	24.6	84.4	10.5	21.8	40.6	
1.55-1.60	4.2	29.9	88.6	11.5	15.6	47.0	14.9% @ 1.60
1.60-1.70	3.7	36.6	92.3	12.5	11.4	53.3	
1.70-1.80	2.1	44.5	94.4	13.2	7.7	61.3	
SINK 1.80	5.6	67.6	100.0	16.2	5.6	67.6	

WASHABILITY OF -28 M + 0 FRACTION:

		WT. %	ASH %	CALCULATED ASH
FLOAT	@ 1.50	68.0	7.6	5.2
SINK	@ 1.50	32.0	39.9	12.7
				17.9

YIELD 68.7 @ 1.42 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.2	29.4	7.0	62.4	#7	45.0	0.32

WASHABILITY OF

DATE: October 6, 1970

7 Seam Hosmer Ridge

Adit # 22 X-cut @ 110' Seam Thickness 14.4'.

RAW COAL:

PROX. ANALYSIS -	MOIST. %	V.M.%	ASH %	F.C.	F.S.I.
	1.2	23.8	31.8	43.2	# 2 1/2

SCREEN ANALYSIS -	WT.	WT. %	ASH %	CALCULATED ASH
-2" + 1/8"	6.5	6.0		
-1/8" + 3/8"	12.5	11.6	30.5	2[illegible].9
-3/8" + 28M	69.0	63.9		
28M + 0	20.0	18.5	32.4	6.0
				30.9

WASHABILITY OF - 2" + 28 M FRACTION:

SP. GR.	WT. %	WT. %	ASH %	CUM. WT. % FLOAT	CUM. ASH % FLOAT	CUM. WT. % SINK	CUM. ASH % SINK	DIFFICULTY
FLT.-1.30	6447	17.0	3.9	17.0	3.0	100.0	30.5	
1.30-1.35	5383	14.2	7.1	31.2	5.4	83.0	36.0	
1.35-1.40	3800	10.0	11.9	41.2	6.9	68.8	41.9	48.3[illegible]
1.40-1.45	2584	6.8	16.2	48.0	8.3	58.8	47.0	
1.45-1.50	2211	5.8	19.5	53.8	9.5	52.0	51.1	29.3[illegible]
1.50-1.55	2008	5.3	27.3	59.1	11.1	46.2	55.0	-
1.55-1.60	1673	4.4	31.3	63.5	12.5	40.9	58.6	22.[illegible]
1.60-1.70	2939	7.7	37.6	71.2	15.2	36.5	61.9	
1.70-1.80	1913	5.0	43.8	76.2	17.1	28.8	68.4	
SK.-1.80	9067	23.8	73.6	100.0	30.5	23.8	73.6	

WASHABILITY OF - 28 M + 0 FRACTION:

	WT.	WT. %	ASH %	CALCULATED ASH
FLOAT @ 1.50	396	39.4	10.6	4.2
SINK @ 1.50	604	60.6	46.5	28.2
				32.4

CALCULATED YIELD OF - 2" + 0 PRODUCT:

YIELD-46.4 @ 1.46 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @ 1.46)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.5	28.6	10.2	597	# 5	891.0	0.42

WASHABILITY OF #9 LOWER SEAM DATE: Nov. 5, 1970
HOSMER RIDGE
ADIT #23 X-CUT @ 90' SEAM THICKNESS 19.4 FT.

RAW COAL:

PROX. ANALYSIS -	MOIST. %	V.M.%	ASH %	F.C.	F.S.I.
	1.5	26.4	18.7	46.6	$ 5 1/2

SCREEN ANALYSIS -	WT.	WT. %	ASH %	CALCULATED ASH
-2" + 7/8"		6.0		
-7/8" + 3/8"		11.3	79.0 20.8	16.4
-3/8" + 28M		61.7		
-28M + 0"		21.0	21.0 13.2	2.7

WASHABILITY OF - 2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM. WT. % FLOAT	CUM. ASH % ASH	CUM. WT. % SINK	CUM. ASH % SINK	DIFFICULTY CURVE
Flt. 1.30	23.8	2.9	23.8	2.9	100.0	20.8	
1.30-1.35	16.2	5.7	40.0	4.0	76.2	26.3	
1.35-1.40	19.0	9.0	59.0	5.6	60.0	31.9	60.7 @ 1.40
1.40-1.45	10.7	14.0	69.7	6.9	41.0	42.5	
1.45-1.50	5.4	18.3	75.1	7.7	30.3	52.6	25.0 @ 1.50
1.50-1.55	2.6	24.6	77.7	8.3	24.9	60.0	
1.55-1.60	2.4	29.1	80.1	8.9	22.3	64.1	9.0 @ 1.60
1.60-1.70	2.6	35.6	82.7	9.8	19.9	68.4	
1.70-1.80	1.8	44.0	84.5	10.5	17.3	73.3	
Sk. 1.80	15.5	76.7	100.0	20.8	15.5	76.7	

WASHABILITY OF - 28 M + 0 FRACTION:

	WT.	WT. %	ASH %	CALCULATED ASH
Float @ 1.50	858	84.1	6.4	5.4
Sink @ 1.50	162	15.9	49.4	7.8
				13.2

YIELD 81.1 @ 1.60"

COAL ANALYSIS: (RAW COAL FLOATED @ 1.60)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.8	29.2	8.4	60.6	#6	30.0	0.41

WASHABILITY OF #9 SEAM
WHEELER RIDGE SAMPLE A
ADIT #23 X-CUT @90' SEAM THICKNESS 21.7'

DATE: October 15, 1970

RAW COAL:

PROXIMATE ANALYSIS

MOIST.%	V.M.%	ASH %	F.C.	F.S.I.
1.2	26.2	23.6	49.0	# 4 1/2

SCREEN ANALYSIS	WT %	ASH %	CALCULATED ASH
-2" + 1/8"	7.0		
-1/8" + 3/8"	12.0	25.9	21.4
-3/8" + 28M	63.5		
28M + 0	17.5	17.8	3.1
			24.5

WASHABILITY OF -2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM WT. % FLOAT	CUM ASH % FLOAT	CUM WT.% SINK	CUM ASH % SINK	DIFFICULTY CURVE
FLOAT 1.30	15.7	2.5	15.7	2.5	100.0	25.9	
1.30-1.35	19.0	5.5	34.7	4.1	84.3	30.2	
1.35-1.40	16.9	9.5	51.6	5.9	65.3	37.4	64.4% @1.40
1.40-1.45	9.0		60.0	7.3	48.4	47.2	
1.45-1.50	5.0	17.8	65.6	8.1	39.4	54.5	27.1% @1.50
1.50-1.55	4.3	23.0	69.9	9.0	34.4	59.8	
1.55-1.60	2.7	29.4	72.6	9.7	30.1	65.1	12.9% @1.60
1.60-1.70	3.0	36.4	75.6	10.8	27.4	68.6	
1.70-1.80	1.9	45.7	77.5	11.7	24.4	72.5	
SINK 1.80	22.5	74.8	100.0	25.9	22.5	74.8	

WASHABILITY OF -28 M + 0 FRACTION:

		WT. %	ASH %	CALCULATED ASH
FLOAT	@ 1.50	76.2	7.1	5.4
SINK	@ 1.50	23.8	52.2	12.4
				17.8

YIELD 67.4 @1.52 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @ 1.52)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.0	29.5	10.2	59.3	#6 1/2	244.0	0.44

WASHABILITY OF # 2 SEAM

DATE: Nov. 20, 1970

HOSMER RIDGE

ADIT #24 X-CUT @ 70' SEAM THICKNESS 21.4'

RAW COAL:

PROX. ANALYSIS -	MOIST. %	V.M.%	ASH %	F.C.	F.S.I.
	1.6	17.3	53.6	27.5	# 1 1/2

SCREEN ANALYSIS -	WT.	WT. %	ASH %	CALCULATED ASH
-2" + 7/8"		6.4		
-7/8" + 3/8"		12.4	58.3	43.3
-3/8" + 28M		55.5		
-28M + 0"		25.7	33.6	8.6

WASHABILITY OF - 2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM. WT. % FLOAT	CUM. ASH % ASH	CUM. WT. % SINK	CUM. ASH % SINK	DIFFICULTY CURVE
Flt. 1.30	5.4	3.0	5.4	3.0	100.0	58.3	
1.30-1.35	8.1	6.0	13.5	4.8	94.6	61.5	
1.35-1.40	3.8	10.8	17.3	6.1	86.5	66.7	60.3% @ 1.40
1.40-1.45	6.0	13.1	23.3	7.9	82.7	69.2	
1.45-1.50	3.7	15.8	27.0	9.0	76.7	73.6	37.7% @ 1.50
1.50-1.55	2.2	23.1	29.2	10.1	73.0	76.5	
1.55-1.60	1.6	30.2	30.8	11.1	70.8	78.2	18.1% @ 1.60
1.60-1.70	2.7	40.6	33.5	13.5	69.2	79.3	
1.70-1.80	2.3	49.9	35.8	15.8	66.5	80.9	
Sk. 1.80	64.2	82.0	100.0	58.3	64.2	82.0	

WASHABILITY OF - 28 M + 0 FRACTION:

	WT.	WT. %	ASH %	CALCULATED ASH
Float @ 1.50	531	53.1%	6.3	3.3
Sink @ 1.50	469	46.9%	64.7	30.3

YIELD 33.4 @ 1.48 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @ 1.48)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
3.8	32.7	7.5	56.0	#7	238.0	0.47

WASHABILITY OF #4 Seam

DATE: December, 1970

Hosmer Ridge

Adit #25 X-Cut @ 90' Seam Thickness 13.2Ft.

RAW COAL:

PROX. ANALYSIS -	MOIST. %	V.M.%	ASH %	F.C.	F.S.I.
	2.0	24.6	23.4	50.0	#2½

SCREEN ANALYSIS -	WT.	WT. %	ASH %	CALCULATED ASH
-2" - 7/8"		16.3		
-7/8" - 3/8"		17.8	23.4	19.0
-3/8" - 28m		47.1		
-28m - 0		18.8	19.6	3.7
				22.7

WASHABILITY OF - 2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM. WT. % FLOAT	CUM. ASH % ASH	CUM. WT. % SINK	CUM. ASH % SINK	DIFFICULTY CURVE
Flt. 1.30	12.2	3.3	12.2	3.3	100.0	23.4	
1.30 - 1.35	22.3	5.9	34.5	5.0	87.8	26.2	
1.35 - 1.40	21.3	9.6	55.8	6.7	65.5	33.1	74.291.40
1.40 - 1.45	10.8	14.3	66.6	8.0	44.2	44.4	
1.45 - 1.50	6.1	17.2	72.7	8.7	33.4	54.1	25.091.50
1.50 - 1.55	1.7	26.4	74.4	9.1	27.3	62.4	
1.55 - 1.60	1.8	30.0	76.2	9.6	25.6	64.8	8.191.60
1.60 - 1.70	3.1	37.2	79.3	10.7	23.8	67.4	
1.70 - 1.80	2.2	46.3	81.5	11.7	20.7	71.9	
sk. 1.80	18.5	75.0	100.0	23.4	18.5	75.0	

WASHABILITY OF - 28 M + 0 FRACTION:

	WT.	WT. %	ASH %	CALCULATED ASH
FLOAT @ 1.50		71.5	6.5	4.6
SINK @ 1.50		28.5	52.5	15.0
				19.6

YIELD 72.4 @ 1.50 S.G.

COAL ANALYSIS: (RAW COAL FLOATED @ 1.50)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.9	28.7	8.4	61.0	#5½	3.0	0.45

WASHABILITY OF #3 SEAM

DATE: DECEMBER 15, 1970

WHEELER RIDGE

ADIT #26 X-CUT @ 120' SEAM THICKNESS 55'

RAW COAL:

PROX. ANALYSIS -	MOIST. %	V.M.%	ASH %	F.C.	F.S.I.
	1.7	32.3	13.0	53.0	#7½

SCREEN ANALYSIS -	WT.	WT. %	ASH %	CALCULATED ASH
-2" + 7/8"		9.8		
-7/8" + 3/8"		14.5	13.4	10.6
-3/8" + 28m		54.9		
-28m + 0"		20.8	13.2	2.7
				13.3

WASHABILITY OF - 2" + 28 M FRACTION:

SP. GR.	WT. %	ASH %	CUM. WT. % FLOAT	CUM ASH % FLOAT	CUM WT. % SINK	CUM ASH % SINK	DIFFICULT CURVE
FLT. 1.30	61.4	3.0	61.4	3.0	100.0	13.4	
1.30 - 1.35	11.1	7.3	72.5	3.7	38.6	30.0	
1.35 - 1.40	6.7	11.6	79.2	4.3	27.5	39.1	27.3% @1.4
1.40 - 1.45	5.7	22.0	84.9	5.5	20.8	46.0	
1.45 - 1.50	1.3	24.7	86.2	5.8	15.1	57.8	10.1% @1.5
1.50 - 1.55	1.3	26.3	87.5	6.1	13.8	61.0	
1.55 - 1.60	0.9	31.4	88.4	6.4	12.5	64.6	4.3% @1.[illegible]
1.60 - 1.70	1.7	39.5	90.1	7.0	11.6	67.1	
1.70 - 1.80	0.9	47.6	91.0	7.4	9.9	71.9	
SK. 1.80	9.0	74.3	100.0	13.4	9.0	74.3	

WASHABILITY OF - 28 M + 0 FRACTION:

	WT.	WT. %	ASH %	CALCULATED ASH
FLOAT @ 1.50		82.7	4.7	3.9
SINK @ 1.50		17.3	54.0	9.3
				13.2

YIELD 88.6 @ 1.80 S.G. @ 6.8% ASH

COAL ANALYSIS: (RAW COAL FLOATED @ 1.8)

MOIST. %	V.M. %	ASH %	F.C. %	F.S.I.	D.D.M.	SULPHUR
1.6	32.9	8.6	56.9	#8	2300.0	0.45

HOSMER RIDGE DRILLING, 1970

DRILL HOLE SUMMARY

DRILL HOLE NO.	CONTRACTOR	ROCK DRILLING RATE FT/HR AVERAGE	DEPTH OF HOLE	DEPTH OF COAL	COAL THICKNESS IN HOLE	COAL SEAM NO.	RAW COAL ASH	RAW COAL F.S.I.	CLEAN COAL COMPOSITE MOISTURE	VOLATILES	FIXED CARBON	ASH	SULPHUR	YIELD	F.S.I.	LOCATION LATITUDE	DEPARTURE	ELEVATION
HY-1	BK		940	206	42	9	26.7	2½	1.1	23.6	66.9	8.3	0.23	52.7	6	S23329	E8463	6667
				260	12	M9												
				276	40	L9	35.0	2	1.1	23.5	48.7	10.2	0.26	47.7	5½			
				317	4	L9			TOTAL	COAL	ZONE	95'	RUN AS	COMPOSITE				
				326	29	L9				SAMPLE								
				360	27	L9	20.0	2½	1.0	27.6	36.9	9.7	0.26	70.5	6½			
				526	42	10	23.3	3	1.4	25.8	59.6	13.2	0.34	64.6	4½			
				588	5	M10												
				620	10	L10	23.1	4½	0.9	24.0	63.6	11.3	0.50	58.2	5½			
HY-2	BK		760	408	4											S24173	E9677	6680
				415	5		18.6	3½	1.3	27.7	61.0	10.6	0.29	50.0	5			
				424	15	9	28.3	2	1.0	28.9	59.0	11.0	0.30	63.8	5			
				460	47	L9			TOTAL	COAL	ZONE	65'	RUN AS	COMPOSITE	SAMPLE			
				543	28	10	35.6	1	1.2	27.3	74.0	12.1	0.25	36.6	4			
				590	3													
				618	9	M10	40.5	1	1.0	24.8	60.7	14.1	0.36	50.8	4½			
				632	3		SAMPLE	FROM	618-6	5'								
				692	7	L10												
HY-3	BK		660	220	35	9	29.2	1½	1.1	25.9	58.5	14.6	0.30	64.3	3½	S22058	E8147	6973
				260	20													
				285	22	M9	25.8	4½	0.9	26.7	60.7	11.8	0.34	68.0	5			
				320	59	L9	26.1	2½	1.1	27.3	60.6	9.0	0.28	41.5	5½			
				481	26	10	21.8	4	1.2	26.3	60.0	12.5	0.36	73.2	5			
				560	9	M10	24.2	3	0.8	29.2	62.1	11.9		55.6	4½			

DRILL HOLE SUMMARY

DRILL HOLE NO.	CONTRACTOR	ROCK DRILLING RATE FT/HR AVERAGE	DEPTH OF HOLE	DEPTH OF COAL	COAL THICKNESS IN HOLE	COAL SEAM NO.	RAW COAL		CLEAN COAL COMPOSITE							LOCATION		
							ASH	F.S.I.	MOISTURE	VOLATILES	FIXED CARBON	ASH	SULPHUR	YIELD	F.S.I.	LATITUDE	DEPARTURE	ELEVATION
HM-3				570	6	M10												
				592	1	L10												
HM-4	BK		640	308	7	9	57.3	1	1.1	28.4	53.4	16.6	0.56	12.6	6½	S21133	E8740	7219
				318	4	M9?												
				387	3	?												
				420	6	L9?												
				469	11	10?	25.0	1½	1.0	21.7	63.0	14.2	0.44	73.6	1½			
				582	24	10?	21.3	2½	1.2	28.5	62.0	8.3	0.30	61.2	6½			
HM-5	BK		865	413	29	9	26.9	3	1.0	26.8	60.8	12.2	0.36	56.6	5½	S29,913	E8463	6322
				547	66	L9	21.2	4	0.9	28.6	62.6	7.9	0.32	46.3	5½			
				687	22	10	15.9	4	1.0	28.4	63.5	7.2	0.37	48.5	6			
				737	45		24.5	2	1.0	27.3	60.1	11.6	0.34	65.3	3½			
				819	6		24.7	3½	0.8	28.0	60.9	10.0	0.47	55.0	6			
				848	7		17.1	2½	1.7	28.7	61.4	8.3	0.45	61.2	6			
HM-6	BK		900	158	19.5	9	17.4	2½	1.1	26.0	65.7	7.1	0.24	69.8	3	S25,798	E7807	5168
				203	3													
				376	32	9	25.9	5	1.0	28.1	61.7	9.2		57.9	5			
				416	13	L9												
				520	27	10	25.8	4½	1.0	28.1	61.9	9.0		47.2	6			
				602	12	L10	25.3	3½	1.0	26.6	61.4	11.0		51.4	6			
				733	32	10	36.0	2	1.0	25.5	58.6	13.9		45.2	4			
				774	2													
				809	9	L10	40.4	1½	1.0	26.9	58.5	13.6		29.8	4½			

DRILL HOLE SUMMARY

DRILL HOLE NO.	CONTRACTOR	ROCK DRILLING RATE FT/HR AVERAGE	DEPTH OF HOLE	DEPTH OF COAL	COAL THICKNESS IN HOLE	COAL SEAM NO.	RAW COAL ASH	RAW COAL F.S.I.	CLEAN COAL COMPOSITE MOISTURE	CLEAN COAL COMPOSITE VOLATILES	CLEAN COAL COMPOSITE FIXED CARBON	CLEAN COAL COMPOSITE ASH	CLEAN COAL COMPOSITE SULPHUR	CLEAN COAL COMPOSITE YIELD	CLEAN COAL COMPOSITE F.S.I.	LOCATION LATITUDE	LOCATION DEPARTURE	LOCATION ELEVATION
HM-7	BK		1000	76	13	3	17.5	7	1.7	32.0	62.2	4.1		69.4	7	S29,709	E7523	6328
				142	3													
				168	11	4	21.8	5	1.4	29.8	62.4	6.5		48.2	7			
				320	10	5												
				337	5													
				344	2													
				379	5	6	26.3	3	1.1	27.0	59.6	12.3		58.5	5½			
				550	3	7?	29.5	3	1.0	28.1	56.2	14.7	0.66	61.6	5½			
				646	9													
				668	28	8	27.1	2½	1.1	27.4	62.8	8.7	0.33	58.4	5½			
				702	5													
HM-8	BK		1050	85	19	4	22.8	3	1.4	28.9	59.1	10.6	0.42	72.2	5	S28422	E7629	6593
				242	7													
				252	6	5	24.7	3	1.2	29.6	62.6	6.6	0.39	45.9	6			
				259	3													
				331	7	6	40.9	1½	1.1	28.0	55.4	15.5	0.60	43.1	7			
				503	4	7	33.5	1½	0.9	29.0	60.0	10.1			6			
				598	9	8	16.5	4½	1.2	28.6	62.6	7.6	0.36	65.3	6½			
				646	3													
HM-9			905	197	5	1	22.5	5	1.5	32.9	55.3	10.3		72.4	7	S31201	E7453	6463
						2	SAMPLE NOT COLLECTED											
				483	20	3	19.6	7	1.5	31.4	61.7	5.4		64.4	8			
				595	18	4	26.3	3½	1.5	28.5	59.6	10.4		56.6	4½			
				735	10	5	24.2	2½	1.3	28.0	61.1	9.6	0.44	62.6	5			
				807	7	6	19.3	2	1.3	26.1	63.5	9.1	0.39	62.3	3½			

"[illegible] 21"

Sheet 1
Table

SERIES NO.	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F
Coal Components																
#10 Seam Adit 69	100%															
#7 Seam Adit 71		100%														
#7 Seam Adit 21			100%													
#7 Seam Adit 46				100%												
Hosmer Mtn. Adit 2 Seam #9					100%											
Sparwood Rg. Adit 34 Seam #1						100%										
Hosmer Mtn. Adit 3 Seam #9							100%									
Hosmer Mtn. Adit 4 Seam #10								100%								
Hosmer Mtn. Adit 5 Seam #9									100%							
Hosmer Mtn. Adit 9 Seam #9										100%						
Hosmer Mtn. Adit 7 Seam #9 (lower)											100%					
Hosmer Mtn. Adit 11 Seam #8												100%				
Hosmer Mtn. Adit 8 Seam #4													100%			
Hosmer Mtn. Adit 10 Seam #7														100%		
Hosmer Mtn. Adit 14 Unknown															100%	Adit 13-100%
No/Lab No.	577	578	593	594	595	596	597	631	632	660	661	662	663	664	665	688
Carbonization																
Charge Weight (W)	517.8	517.8	518.2	517.5	516.4	517.0	516.4	514.6	517.3	517.4	515.8	517.5	517.0	517.2	517.5	518.0
Moisture in Cynece %	4.0	3.0	3.5	3.1	3.6	3.0	3.0	3.1	3.1	3.0	2.9	2.5	3.8	3.1	3.7	2.7
ASTM Cone (BD) 16/F3 (W)	48.5	48.8	48.6	48.6	48.5	48.8	48.7	48.7	48.6	48.7	48.7	48.7	48.5	48.6	48.5	48.7
LSS Coal (BD) Ft 3 lbs	50.5	51.0	50.8	51.0	50.6	51.0	50.9	50.7	50.9	51.0	50.9	51.3	50.5	50.9	50.7	51.2
Cooking Time H.M.	10:30	10:05	10:25	10:30	9:35	10:23	9:25	10:15	9:20	9:48	10:13	9:40	9:50	9:55	9:35	9hrs 30 m
KW/Lb Coke	1.1	1.01	1.13	1.06	1.06	1.05	1.01	1.1	0.96	1.01	1.02	0.99	1.02	1.05	1.02	1.02
Coke Yield % Actual	77.6	79.8	80.4	79.1	75.1	78.6	76.7	75.8	76.[illegible]	74.6	76.1	74.5	75.6	74.4	74.5	74.4
Max. Wall Pressure	0.37	0.49	0.16	0.35	0.25	1.49	0.32	0.67	0.28	0.23	0.44	0.96	0.36	0.30	0.40	0.4
Coke Distribution																
3"	8.3	5.3	17.4	17.0	6.7	8.8	10.2	8.2	6.0	8.9	8.6	4.3	7.6	5.4	4.9	6.5
2"	50.9	49.5	54.6	58.3	47.1	64.4	52.9	57.3	51.6	48.9	53.7	38.1	41.0	46.3	41.2	44.2
1 1/2"	76.1	77.3	66.8	73.5	75.6	85.3	78.1	85.0	79.9	77.1	81.1	67.5	67.7	77.4	66.8	72.8
1"	87.9	91.2	72.1	80.8	92.5	93.7	91.0	94.9	94.0	93.2	94.7	91.3	89.4	93.4	86.1	89.5
3/4"	89.1	92.6	73.3	81.9	94.5	95.1	92.4	95.9	95.8	95.6	96.4	95.1	92.1	95.4	92.3	91.6
1/2"	89.6	93.1	74.1	82.4	95.1	95.7	92.8	96.4	96.4	96.1	97.0	96.1	95.6	96.0	95.2	92.2
Coke Parameters																
% Breeze (-1/2")	10.4	6.8	25.9	17.6	4.9	4.3	7.2	3.6	3.6	3.9	3.0	3.9	4.4	4.0	4.8	7.8
Mean Coke Size	1.99	1.98	1.92	2.06	1.99	2.19	2.05	2.14	2.05	2.04	2.11	1.85	1.89	1.98	1.85	2.02
Apparent Spec. Gravity	0.960	0.897	Missing	0.994	0.944	0.922	0.986	0.878	0.945	0.959	0.942	0.882	0.921	0.930	0.873	0.947
Tumbler Test																
ASTM Stability %	52.5	50.6	26.1	34.4	48.2	48.5	44.5	54.4	53.7	45.5	51.8	39.6	49.0	48.2	18.5	45.4
Hardness	65.2	69.3	39.8	48.4	66.2	65.5	62.5	61.0	67.0	64.0	66.3	71.2	68.1	65.3	65.5	65.7
7.1.5 50 mm	22.2	12.0	12.7	6.1	6.3	14.8	10.6	14.4	12.5	15.8	12.0	0.7	15.4	7.8	0.8	11.3
25 mm	86.6	83.1	55.5	66.1	83.3	84.2	81.4	89.7	89.2	81.4	83.6	63.4	85.8	85.1	47.4	81.2
15 mm	92.1	90.5	66.3	75.8	92.1	91.6	89.7	93.6	96.0	94.0	89.0	88.3	93.0	90.5	77.8	92.5
Seam No.	Adit 69 10	7	7	7	Hos 9	Spar 1	Hos 9	Hos 10	Hos 9	Hos 9	Hos 9	Hos 8	Hos 4	Hos 7	Adit 14	Adit 13

KAISER STEEL CORPORATION
Steel Manufacturing Division
Interoffice Memorandum

TO: Glenn C. Soth
Chief Chemist

DATE: 28 May 1970

FROM: Marshall E. Numaw
Supervisor
Coal & Coke Laboratory

cc: R. G. Heers (5) J. G. John
G. E. Balsley M. D. Mittelman
R. L. Wilson C. F. Banninghoff

PROGRESS REPORT NO. 1

LABORATORY OVEN COKING TESTS USING CANADIAN DOMINION GOVERNMENT BLOCK HOSMER MOUNTAIN COALS WITH SUNNYSIDE AND YORK CANYON COALS

KAISER STEEL CORPORATION - STEEL MANUFACTURING DIVISION
FONTANA, CALIFORNIA FEBRUARY - MAY 1970

I. INTRODUCTION:

1. Coking tests using Dominion Government Block Coal were requested by Mr. R. G. Heers, Vice President, Mining and Raw Materials, Oakland.

2. The purpose of these tests was to determine if the Hosmer Mountain coal compares favorably with the Crows Nest Balmer coal for use in coal blends to make metallurgical coke.

II. SUMMARY:

1. Three samples of Hosmer Mountain coal were received at Fontana between February and May 1970. Each sample was tested for coking qualities at 100% and as 30% of a coal blend with 70% high volatile coal consisting of equal portions of Sunnyside and York Canyon coals.

2. Physical properties of cokes produced were compared with coke results in which Crows Nest Balmer coal was carbonized at 100% and as 30% of a coal blend with Sunnyside and York Canyon coals.

III. CONCLUSIONS:

1. Carbonization of Hosmer Mountain coals, both at 100% and as 30% of a coal blend with high volatile coal, have produced cokes with physical properties satisfactory for metallurgical use.

2. Blending of Hosmer Mountain coals with high volatile Sunnyside and York Canyon coals produced a weaker coke than coke produced by blending Balmer coal with the same high volatile coals.

IV. PROCEDURES:

1. Sunnyside and York Canyon coals were obtained from plant stock for blending with the three Hosmer Mountain coals.

2. Standard laboratory procedures were followed for preparing and sampling the test mixtures, and testing the resulting cokes.

V. DISCUSSION:

1. The coals from the Hosmer Mountain area show variations in volatile matter content. Adits 1 and 2 have volatile matter content of 28%; whereas, Adit 3 shows a volatile matter of 25.5%. On a dry mineral matter free basis, Adits 1 and 2 are on the borderline between medium volatile and high volatile bituminous coal. Adit 3 is definitely in the medium volatile range.

2. No signs of weathering were visible in the samples of Hosmer Mountain coal as received at Fontana. However, from the results of the Gieseler Plastometer tests, this coal is subject to oxidation. As may be noted in Table I, Adit 1 coal, when first checked in February, showed a maximum fluidity of 95 DD/min. A second test run in May showed a maximum fluidity of 20 DD/min. Adits 2 and 3 were tested in a much shorter period so no degree of oxidation was noticeable, although Adit 3 gave a maximum of only 6 DD/min.

3. Adit 1 coal retained a free swelling index of 5, Adit 2 showed an FSI of 4, and Adit 3 showed an FSI of 3-1/2. Adit 3 coal, which showed a plastometer maximum of only 6 DD/min, and an FSI of 3-1/2, also gave the poorest coke physical results of the three Hosmer Mountain coals tested.

4. Screen test results, given in Table II, showed that Adit 3 coal produced less large sized coke than Adits 1 and 2 coal, and also produced more -5/8" coke breeze. This condition held true in both the 100% coking tests and in the 30% blends with Sunnyside and York Canyon coals.

5. Adit 1 coal, when carbonized at 100%, produced coke with a tumbler stability of 56.5 and a hardness factor of 69.1. This is slightly better than the 100% Balmer test which gave a tumbler stability factor of 56.5 and a tumbler hardness factor of 66.3. Adit 2 coal, when carbonized at 100%, gave a tumbler stability of 54.5 and a tumbler hardness of 66.4. Adit 3, gave the poorest tumbler results of the three Hosmer Mountain coals with a stability factor of 50.1 and a hardness factor of 63.7.

6. Also shown in Table II are the results of the 30% coal blends. Each of the three Hosmer Mountain coals, when blended at 30% with Sunnyside and York Canyon coals, produced coke with a stability factor of 58

V. DISCUSSION (Continued):

and hardness factors ranging from 65.6 to 68.1. Balmer coal, on the other hand, when blended at the same percent with Sunnyside and York Canyon coals produced a coke tumbler stability of 58.4 and a hardness of 70.1.

7. Blending the Hosmer Mountain coals with Sunnyside and York Canyon coals improved the coke physical results over the 50-50 Sunnyside, York Canyon coke results by increasing the coke size, and generally decreasing the -5/8" coke breeze. Coke shatter test size was also increased and the -1/2" coke breeze decreased. Coke tumbler stability factors were doubled in all three coking tests, but coke tumbler hardness factors were slightly lower.

8. Hosmer Mountain coals produced a heavy dense coke. Apparent specific gravity tests ran 1.00, .97, and .94 respectively for coke produced from 100% tests of Adits 1, 2, and 3. Likewise, the percent cells ran 48.5, 50.0, and 46.7 for the same cokes. Coke produced from Sunnyside and York Canyon coals, with or without Balmer coal, will have approximately 54% cells.

9. Chemical analyses of the individual coals, coal mixes, and cokes produced are given in Table I. Coke physical test results are given in Table II.

MEM:rb

LABORATORY OVEN COKING TESTS USING CANADIAN DOMINION GOVERNMENT BLOCK HOSMER MOUNTAIN COALS WITH SUNNYSIDE AND YORK CANYON COALS

KAISER STEEL CORPORATION - STEEL MANUFACTURING DIVISION
FONTANA, CALIFORNIA FEBRUARY - MAY 1970

TABLE I

PROXIMATE ANALYSIS, SULFUR AND PLASTIC PROPERTIES OF INDIVIDUAL COALS AND COAL BLENDS, AND ANALYSIS OF COKES PRODUCED

SAMPLE	DRY BASIS V.M.	F.C.	ASH	SUL.	GIESELER P. MAX.	FSI
Hosmer Mountain Coals						
Adit #1						
Test 764	28.5	62.2	9.3	.25	95	5
779	28.1	62.9	9.0	.27	19	4-1/2
Adit #2						
Test 776	28.1	63.7	8.2	.34	16	4
778	28.1	63.7	8.2	.34	25	4
Adit #3						
Test 773, 777	25.5	66.8	7.7	.33	8	3-1/2
Sunnyside						
Test 779	40.3	53.9	5.8	.85	55	
778	40.1	53.3	6.6	.89	30	
777	38.7	54.7	6.6	.89	45	
York Canyon						
Test 779	37.0	55.5	7.5	.44	7700	
778, 777	37.3	55.5	7.2	.44	6800	
Coal Blends	% S.S. / % Y.C. / % HOSMER					
Test 779	35 / 35 / 30	36.0	56.5	7.5	.53	180	6
778	35 / 35 / 30	34.7	57.9	7.4	.53	75	6
777	35 / 35 / 30	35.6	58.9	7.5	.56	190	6

TABLE I (Continued):

SAMPLE	DRY BASIS V.M.	P.C.	ASH	SUL.	GIESELER P. MAX	FSI
Cokes Produced						
Test 764	1.0	87.1	11.9	.22		
779	1.0	87.7	11.3	.43		
776	1.1	87.4	11.5	.25		
778	1.1	87.3	11.6	.43		
775	1.3	88.0	10.7	.31		
777	1.5	86.7	11.8	.44		

PROGRESS REPORT NO. 1

LABORATORY OVEN COKING TESTS USING CANADIAN DOMINION GOVERNMENT BLOCK HOSMER MOUNTAIN COALS WITH SUNNYSIDE AND YORK CANYON COALS

KAISER STEEL CORPORATION - STEEL MANUFACTURING DIVISION
FONTANA, CALIFORNIA FEBRUARY - MAY 1970

TABLE II

CARBONIZATION CONDITIONS AND COKE PHYSICAL TEST RESULTS

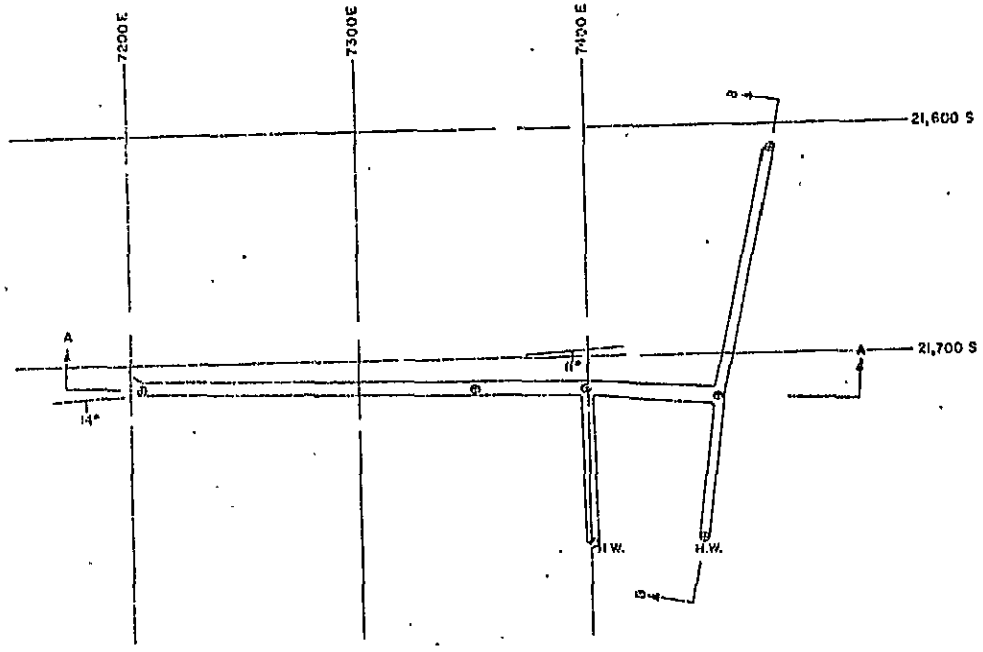
% Sunnyside		35		35		35	50		35
% York Canyon		35		35		35	50		35
% Hosmer Adit #1	100	30							
% Hosmer Adit #2			100	30					
% Hosmer Adit #3					100	30			
% Balmer								100	30
Test No.	764	779	776	778	773	777	746	612	745
Coal Pulv. +1/4"	6.9	12.9	10.1	15.1	10.2	11.0	5.6	10.8	6.0
-1/8"	80.9	67.5	74.2	66.2	72.0	70.0	78.1	75.2	79.8
Coal Moisture %	2.4	3.3	3.1	3.2	3.4	3.1	2.8	6.2	3.7
Bulk Density, Oven PCF	51.9	51.2	51.0	51.6	51.6	51.8	51.8	50.8	51.3
P. Max., Mix DD/min.	95	180	16	75	8	190	350	20	35
Final Coke Temp. °F.	1910	1910	1910	1910	1960	1910	1900	1970	1910
Time to 1600°F., Hrs.	11:00	11:24	10:45	11:19	10:36	11:08	12:30	9:45	11:38
Coke Screen Test +4"	3.6	4.5	1.9	3.6	2.2	2.5	2.6	4.1	7.4
+2"	66.9	72.7	65.1	74.3	67.6	69.2	63.6	73.4	70.6
+1-1/2"	89.0	87.3	87.9	88.7	86.3	85.1	84.3	88.6	90.6
-1"	5.7	7.4	6.2	6.4	9.1	8.9	8.7	7.0	5.7
-5/8"	4.2	4.7	4.7	3.8	7.3	5.6	4.4	5.7	4.0
Coke Shatter Test +2"	60.8	36.7	60.3	66.6	55.2	55.8	42.8	61.2	63.6
+1-1/2"	91.4	82.2	89.1	85.0	86.8	83.9	77.2	87.0	89.4
-1/2"	1.6	3.4	2.2	3.2	3.0	2.6	4.0	2.2	2.0
Coke Tumbler Test Stab.	56.5	38.1	54.5	37.8	50.1	38.0	18.7	55.9	58.4
Hard.	69.1	68.1	65.4	68.2	63.7	65.6	69.2	65.5	70.1
Coke Porosity A.S.G.	1.00	.92	.97	.91	1.05	.94	.86	.98	.90
T.S.G.	1.93	1.91	1.94	1.94	1.95	1.93	1.90	1.94	1.93
% Cells	48.5	51.8	50.0	53.1	46.7	51.3	54.7	49.5	53.4
Physical Fuel Value	57	46	56	48	52	46	31	58	60
Coke Physical Index	89	69	84	74	74	66	45	88	94

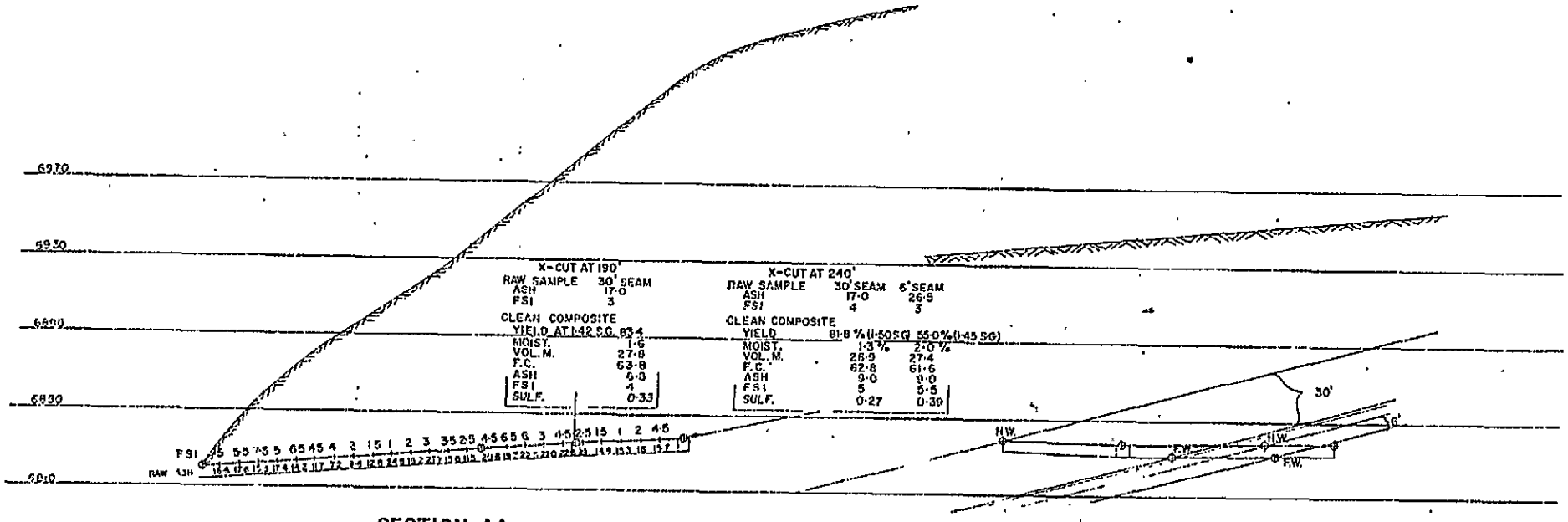
ADIT H-1

HOSMER AREA

SCALE: 1" = 40'

U9 SEAM – 30'
M9 SEAM – 6'





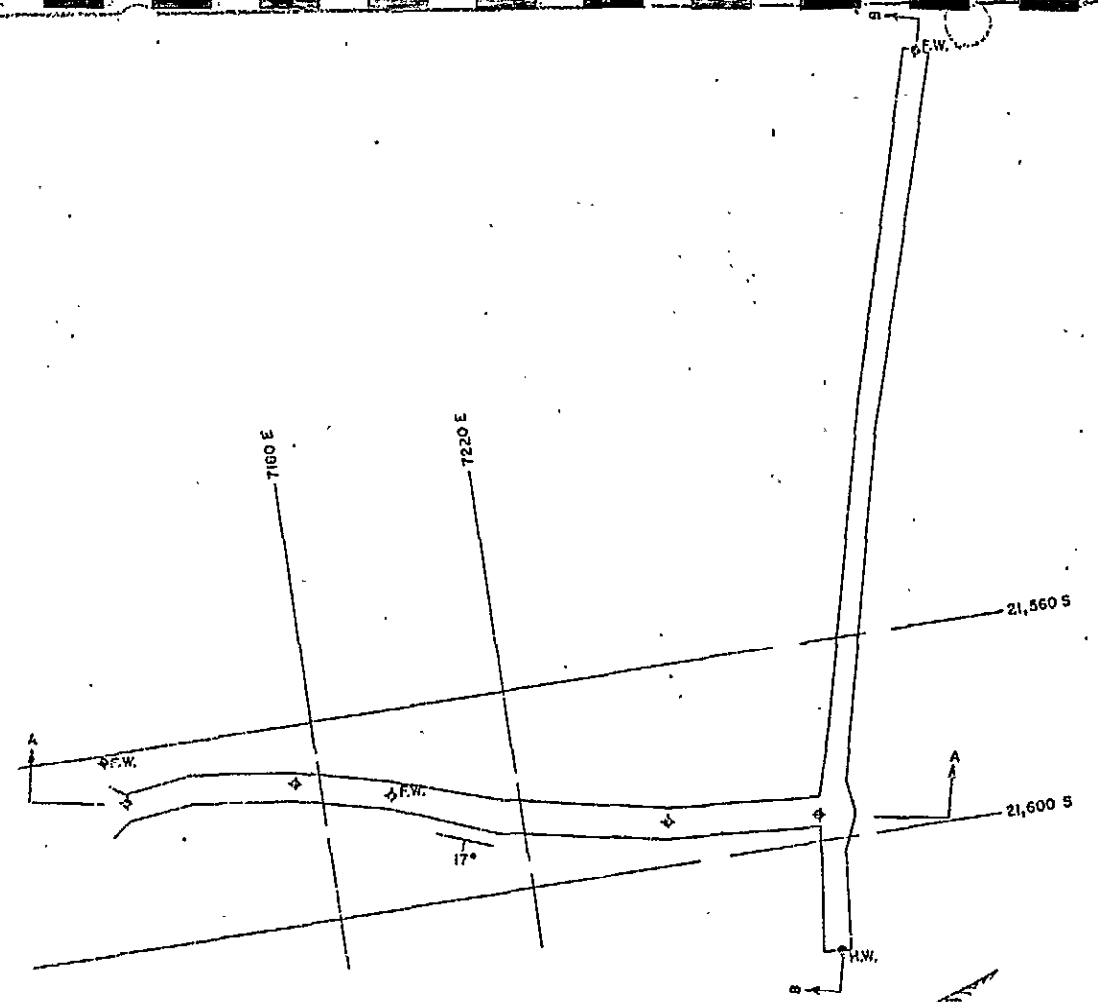
SECTION AA

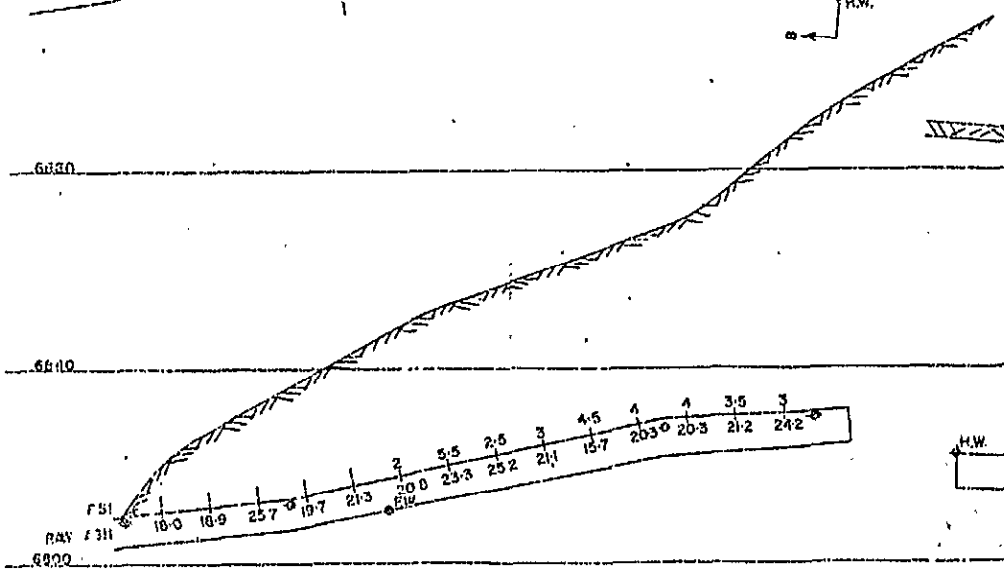
SECTION BB

ADIT H-2

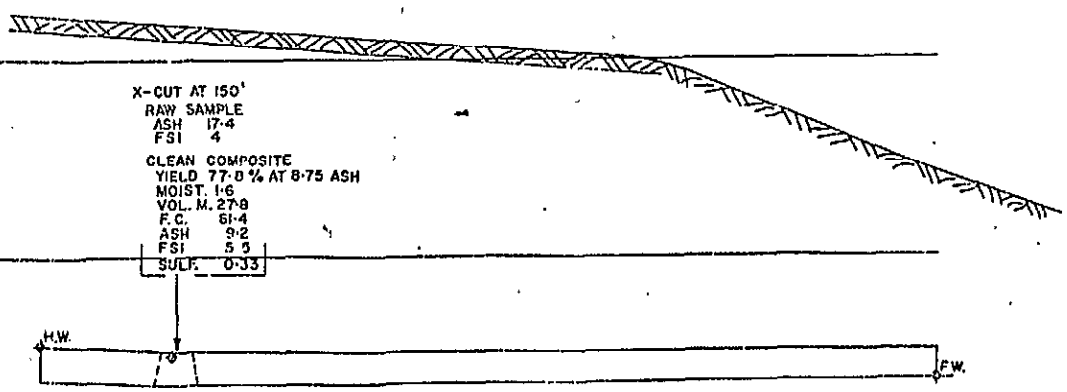
HOSMER AREA (L 9 SEAM-60')

SCALE: 1" = 20'





SECTION AA



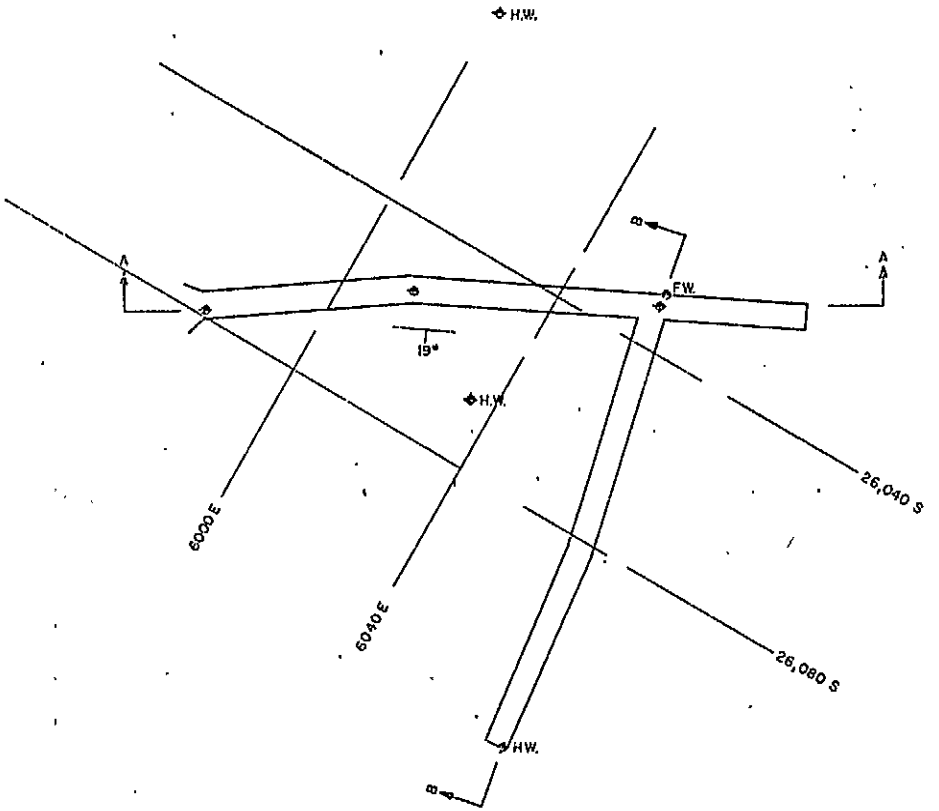
SECTION BB

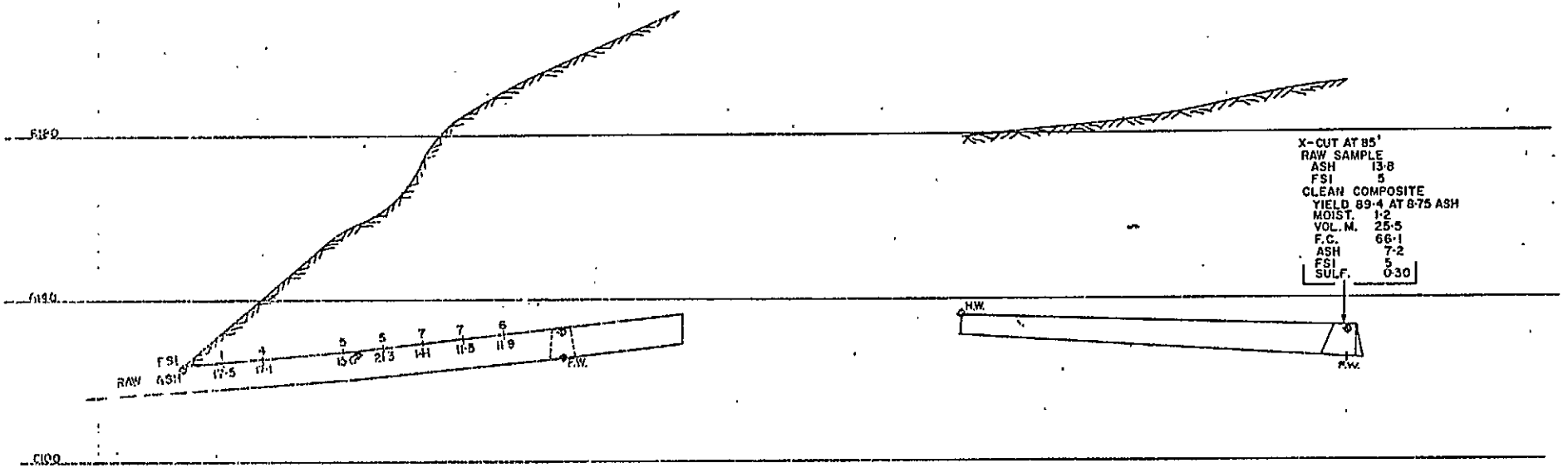
ADIT H-3

HOSMER AREA

SCALE: 1"=20'

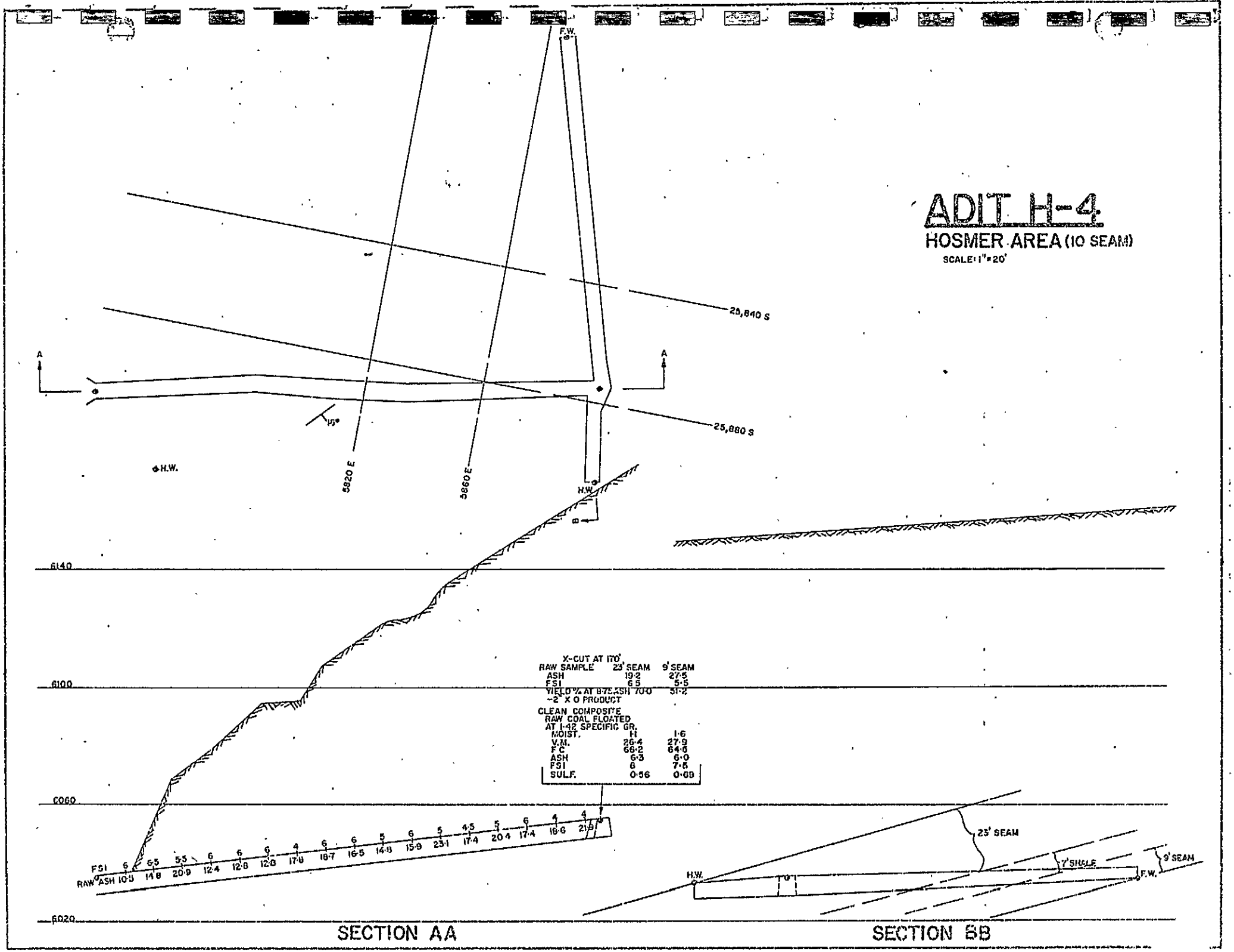
U9 SEAM-30'





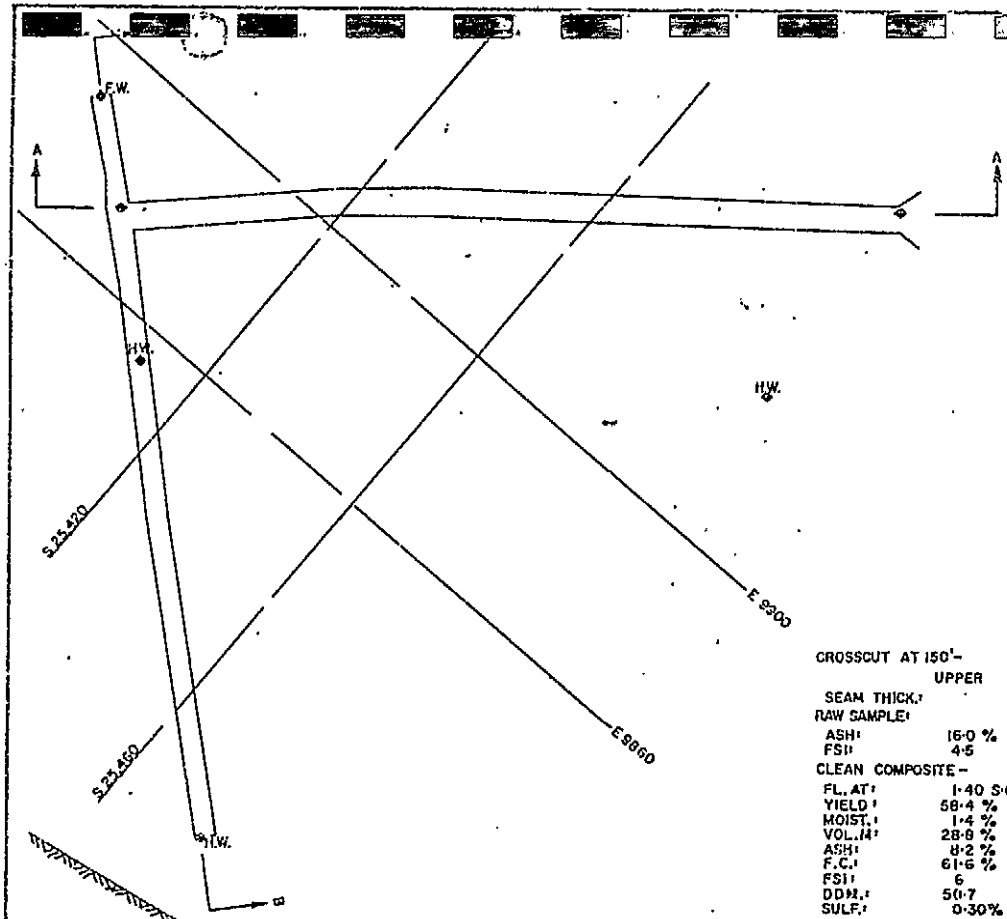
SECTION AA

SECTION BB


ADIT H-4
HOSMER AREA (10 SEAM)
SCALE: 1" = 20'
F.W.
25,840 S
25,880 S
A
A
H.W.
5920 E
5860 E
H.W.
B
6140
6100
6060
6020
X-CUT AT 170'
RAW SAMPLE 23' SEAM 9' SEAM
ASH 19·2 27·5
FSI 6·5 5·5
YIELD % AT 8·75 ASH 70·0 51·2
-2" X 0 PRODUCT
CLEAN COMPOSITE
RAW COAL FLOATED
AT 1·42 SPECIFIC GR.
MOIST. H 1·6
V.M. 26·4 27·9
F.C. 66·2 64·5
ASH 6·3 6·0
FSI 8 7·5
SULF. 0·56 0·69
FSI 6 6·5 5·5 6 6 6 4 6 6 5 6 5 4·5 5 6 4 4
RAW ASH 10·5 14·8 20·9 12·4 12·8 12·8 17·0 18·7 16·5 14·8 15·9 23·1 17·4 20·4 17·4 18·6 21·8
23' SEAM
7' SHALE
9' SEAM
H.W.
F.W.
SECTION AA
SECTION BB

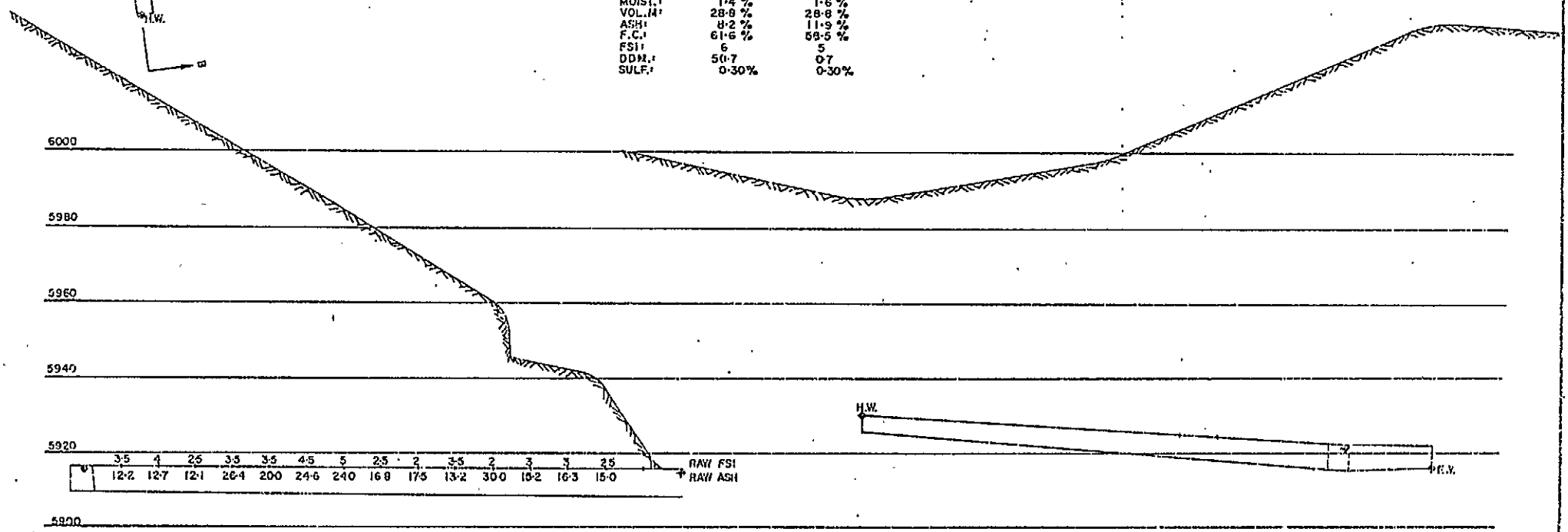
ADIT H-5

HOSMER AREA
9 SEAM



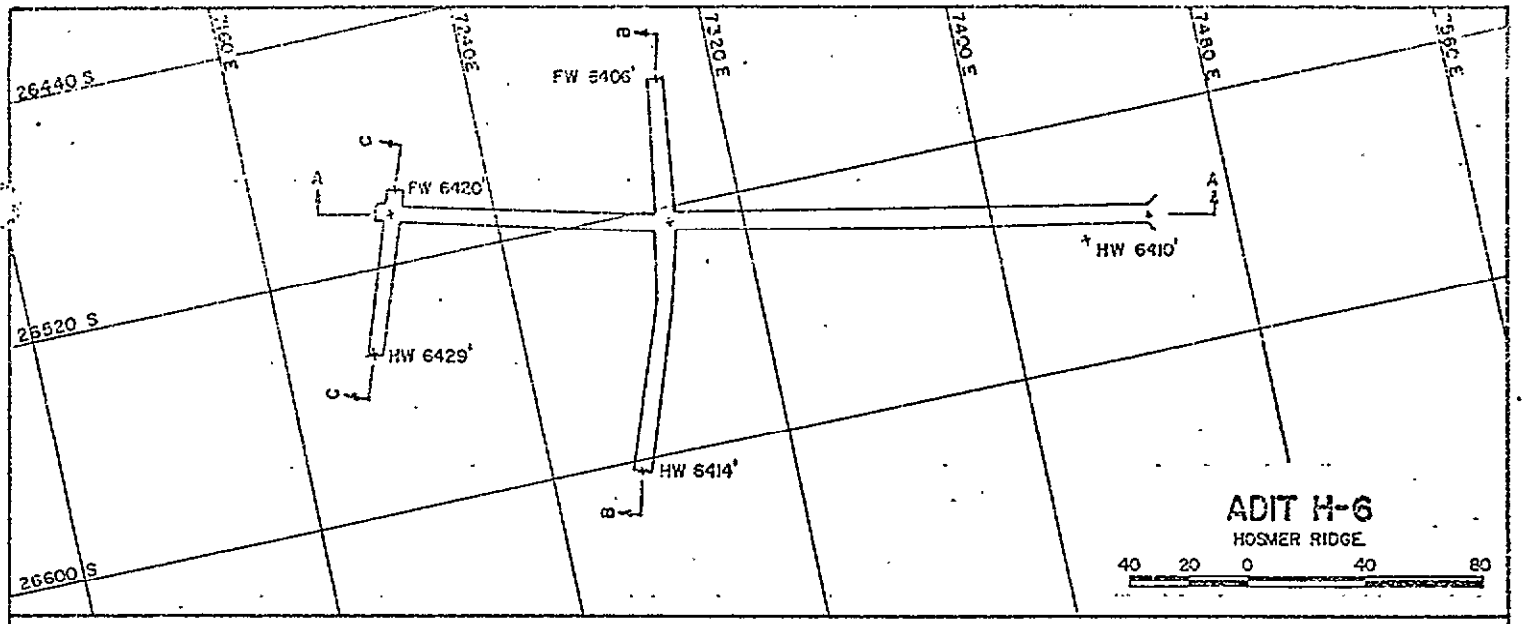
CROSSCUT AT 150'–

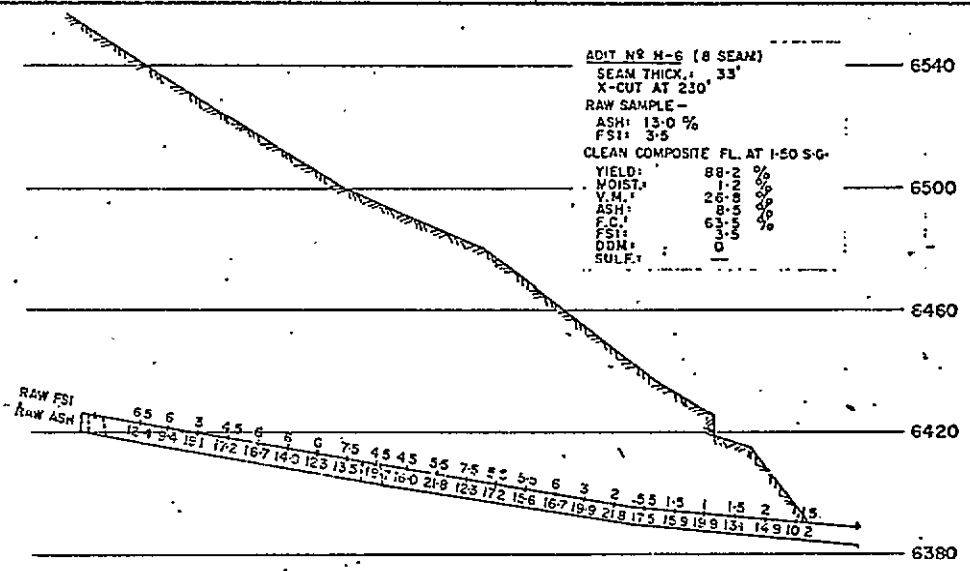
	UPPER	LOWER
SEAM THICK.		
RAW SAMPLE:		
ASH:	16·0 %	24·5 %
FSI:	4·5	3·5
CLEAN COMPOSITE –		
FL. AT:	1·40 S·G·	1·60 S·G·
YIELD:	58·4 %	71·4 %
MOIST.:	1·4 %	1·6 %
VOL.M:	28·8 %	28·8 %
ASH:	8·2 %	11·9 %
F.C.:	61·6 %	58·5 %
FSI:	6	5
DDM.:	50·7	0·7
SULF.:	0·30%	0·30%



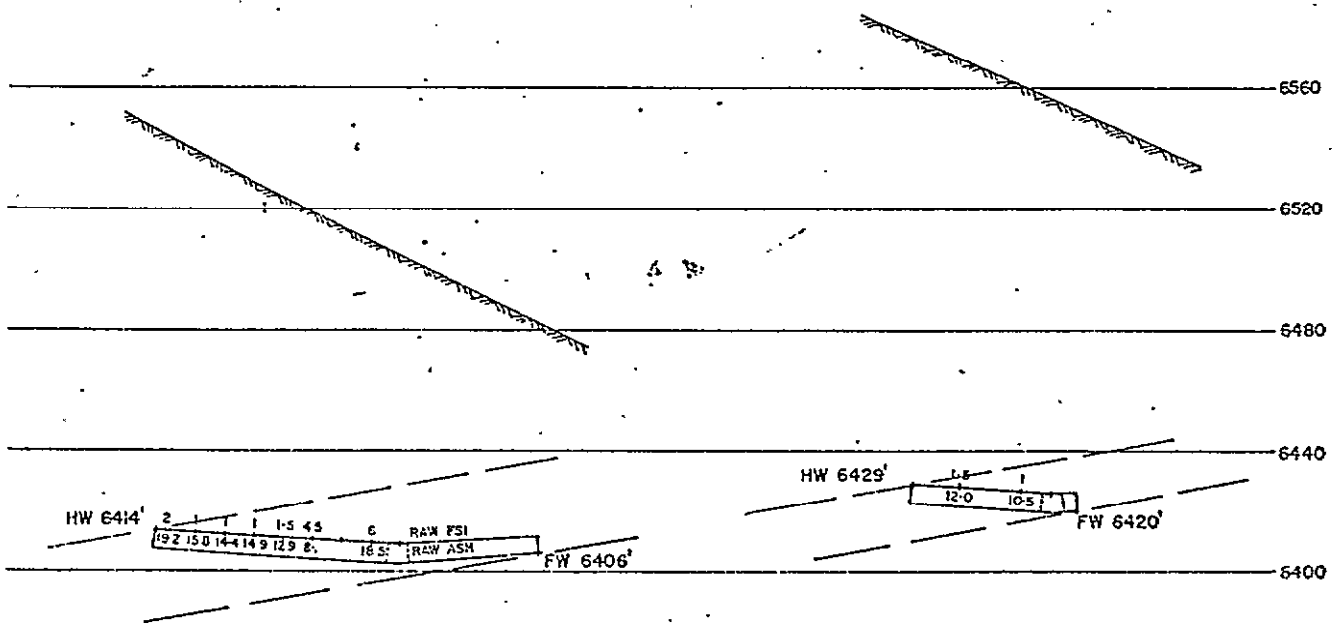
SECTION AA

SECTION BB





SECTION A-A



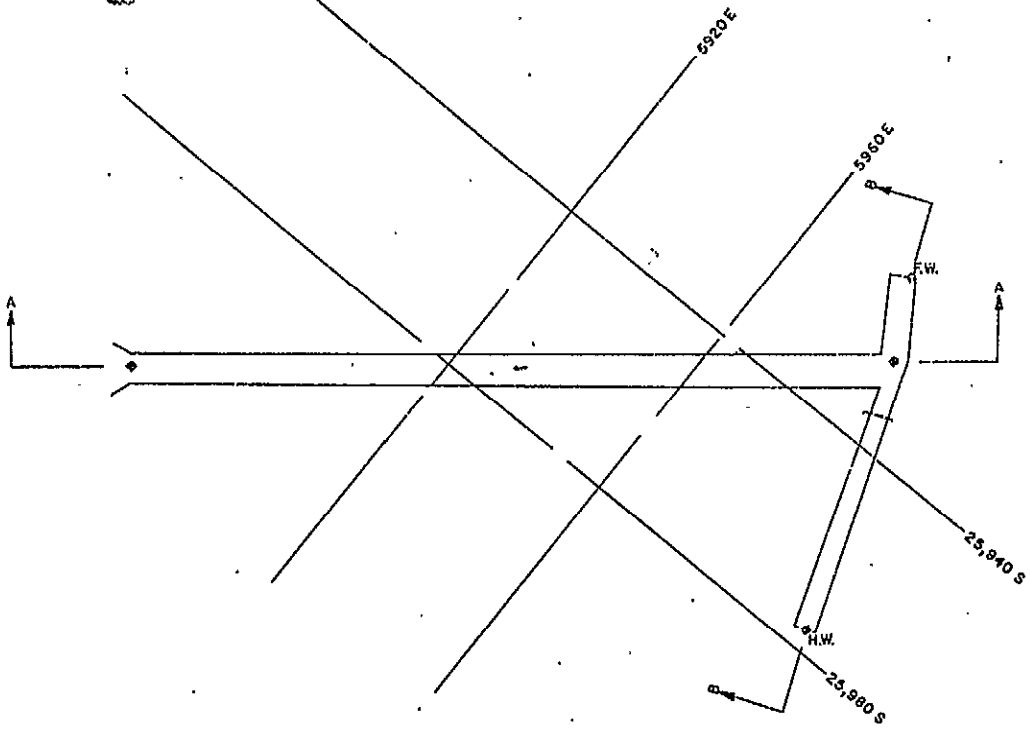
SECTION B-B

SECTION C-C

ADIT H-7

HOSMER AREA

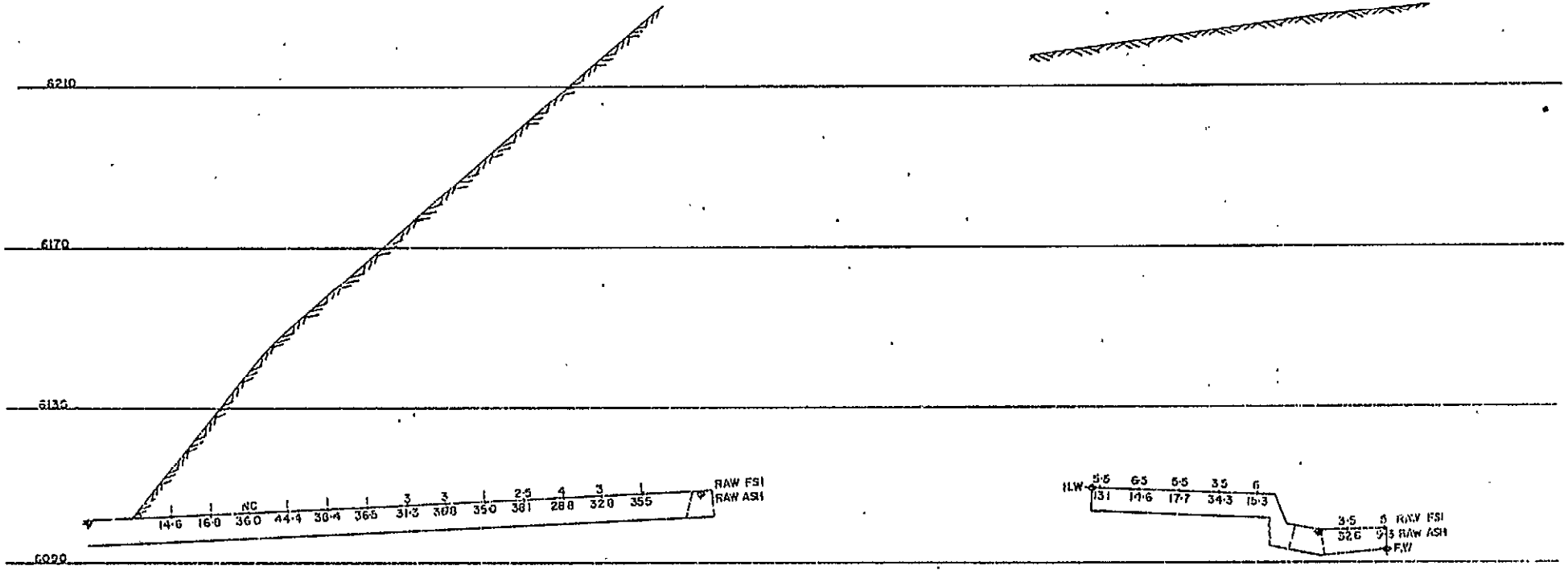
SCALE: 1" = 20'



CROSSCUT AT 150' – SEAM . . ' THICK.

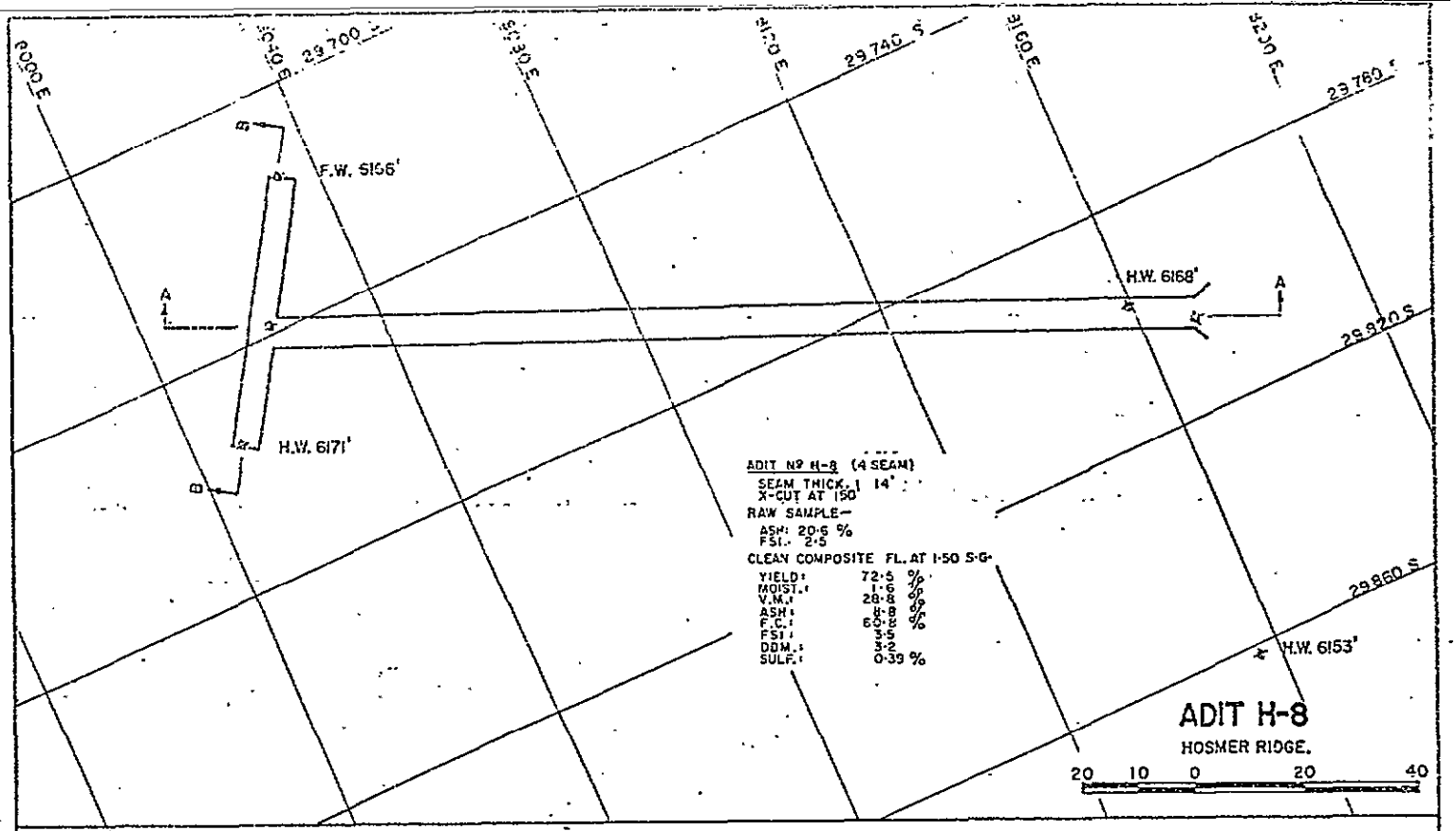
RAW SAMPLE–
ASH: 22·4 %
FSI: 6

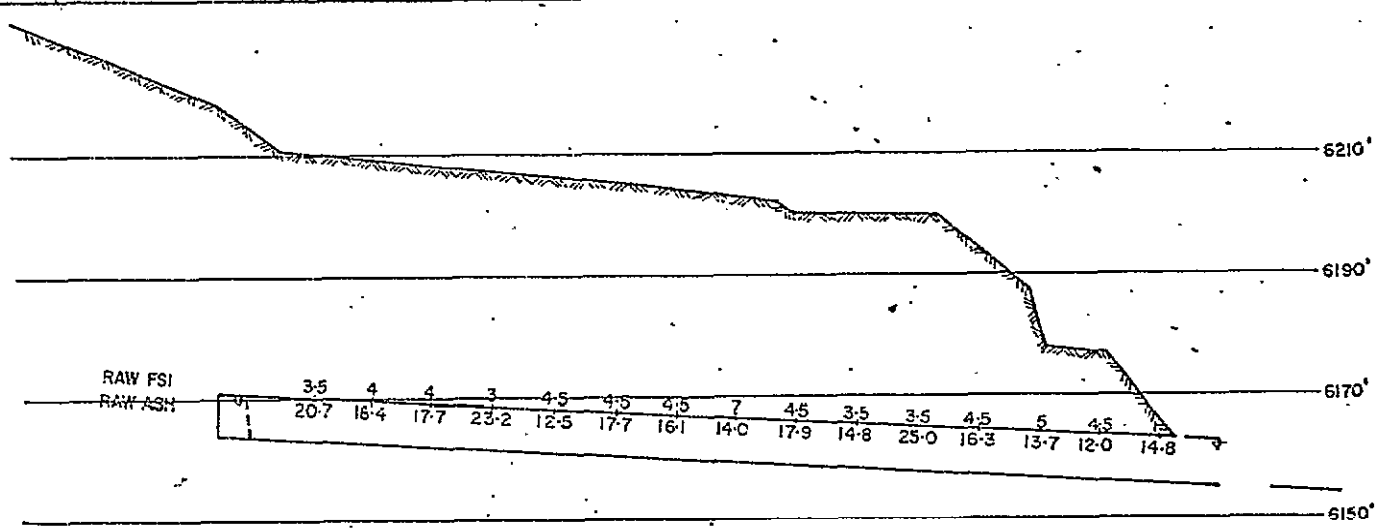
CLEAN COMPOSITE FL. AT 1·45
YIELD: 63·7 %
MOIST.: 1·1 %
VOL.M.: 27·1 %
ASH: 7·7 %
F.C.: 64·1 %
FSI: 6
DDM.: 391
SULF.: 0·39 %



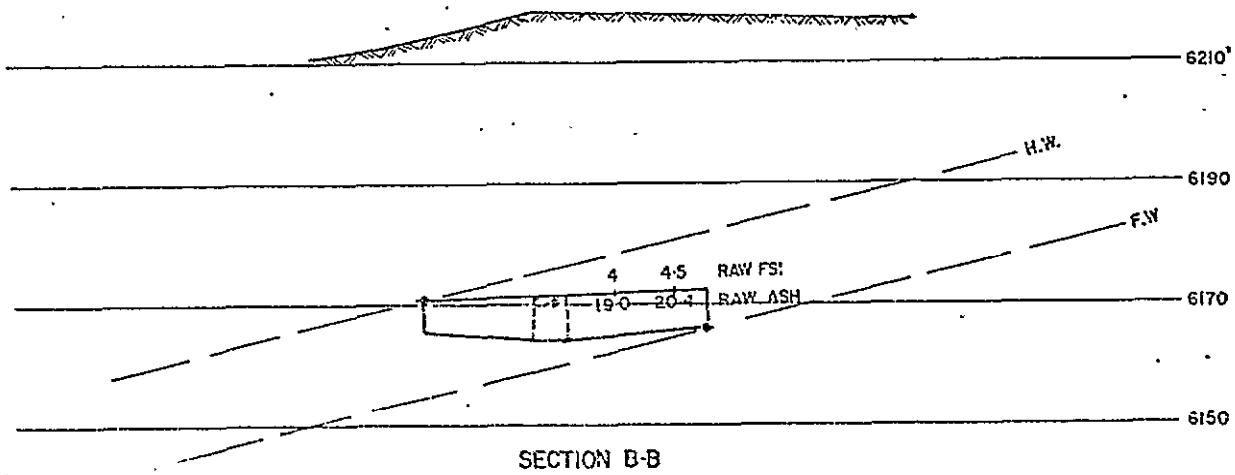
SECTION AA

SECTION BB

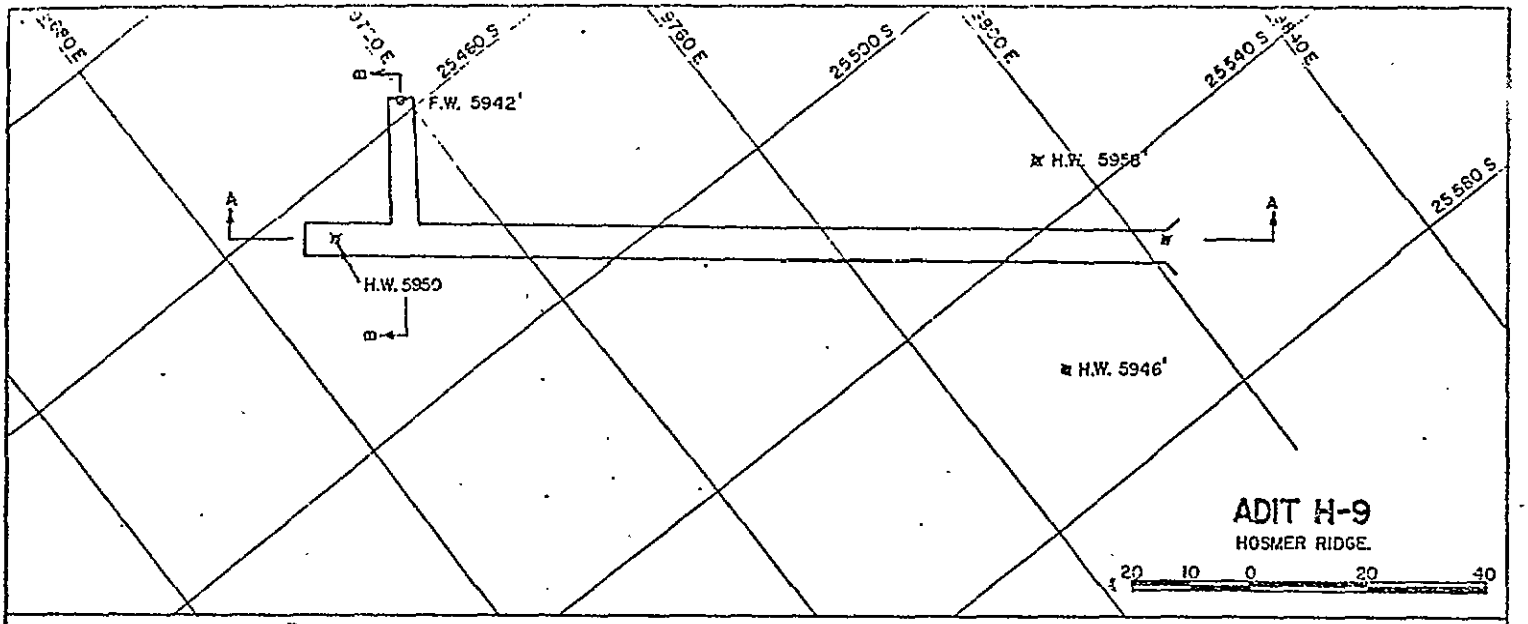


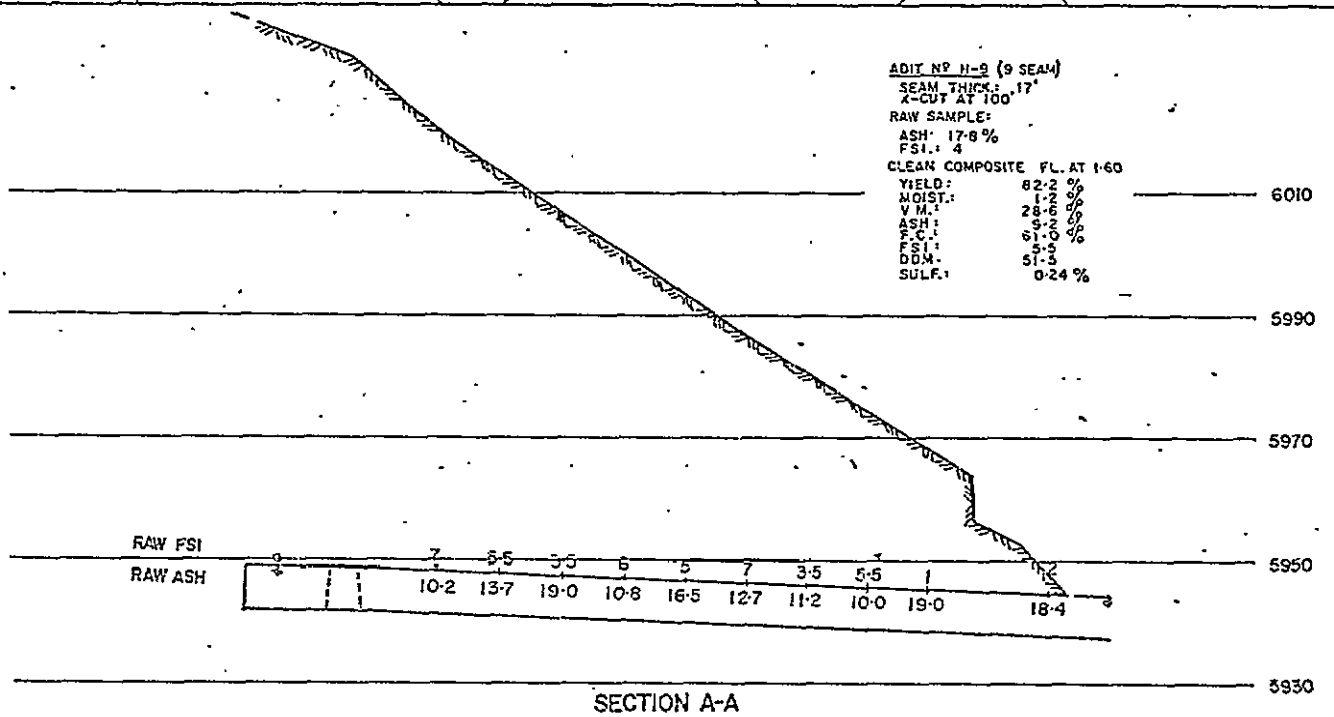


SECTION A-A

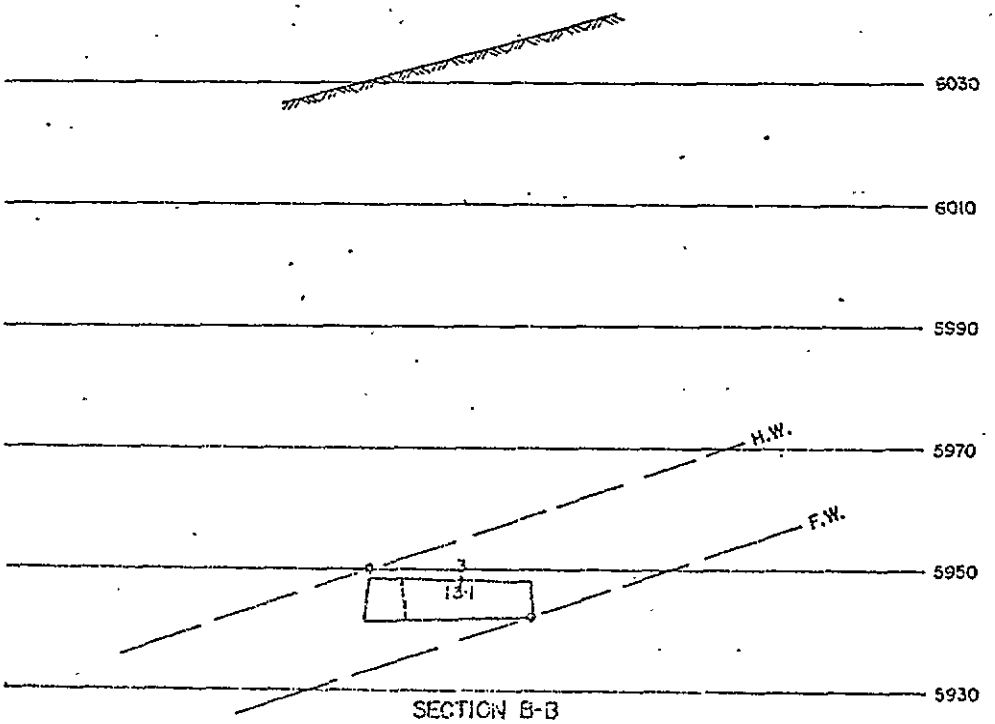


SECTION B-B





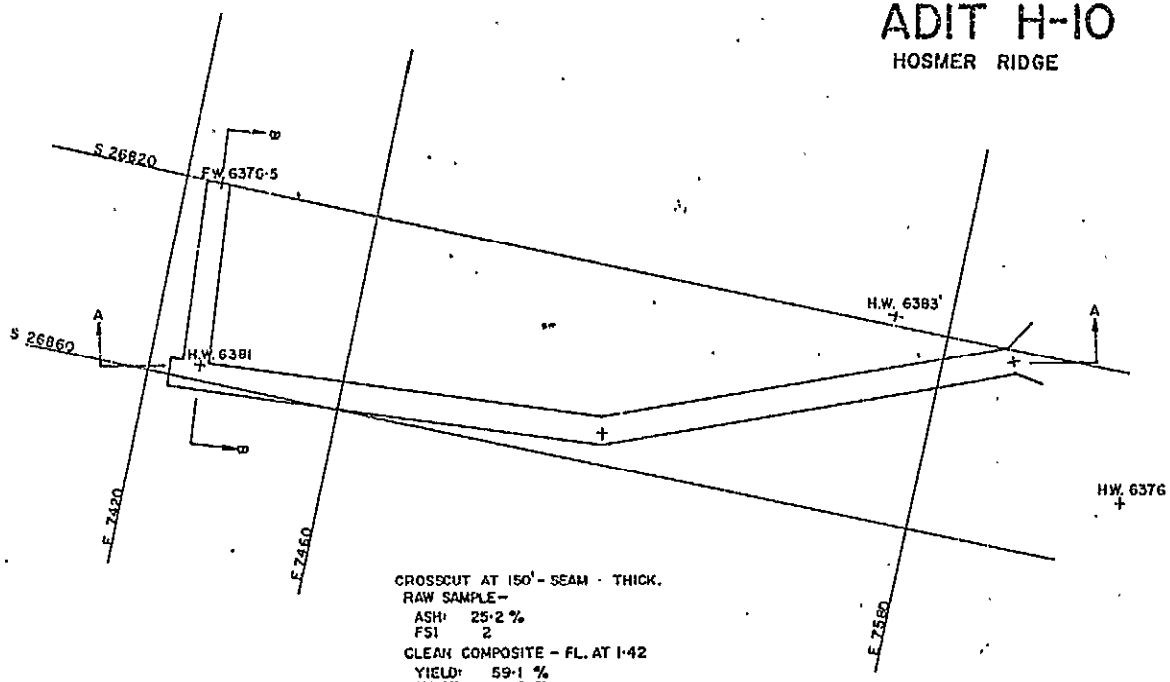
SECTION A-A



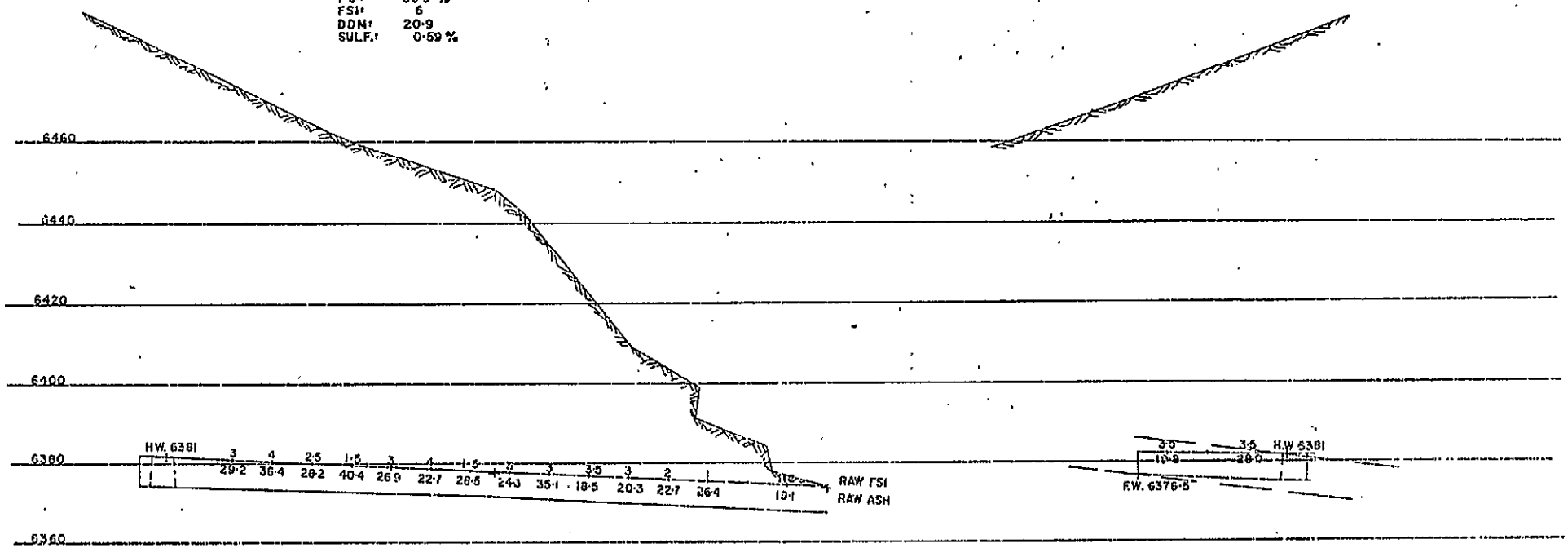
SECTION B-B

ADIT H-10

HOSMER RIDGE

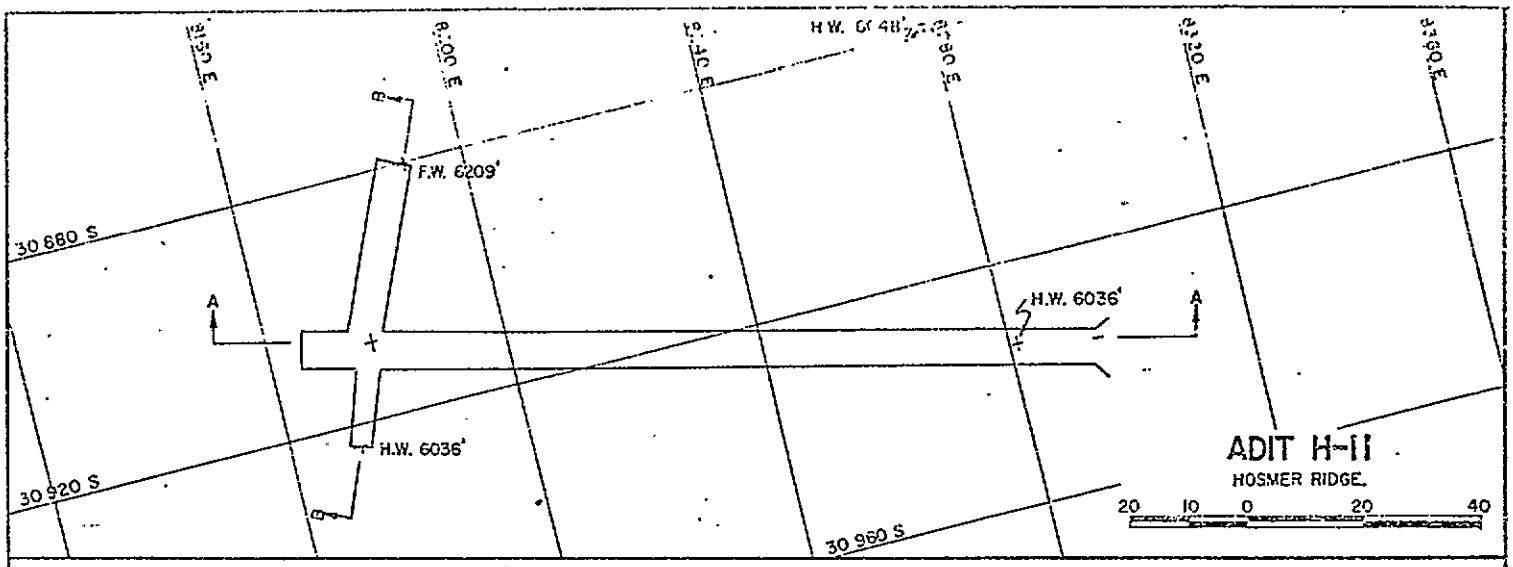


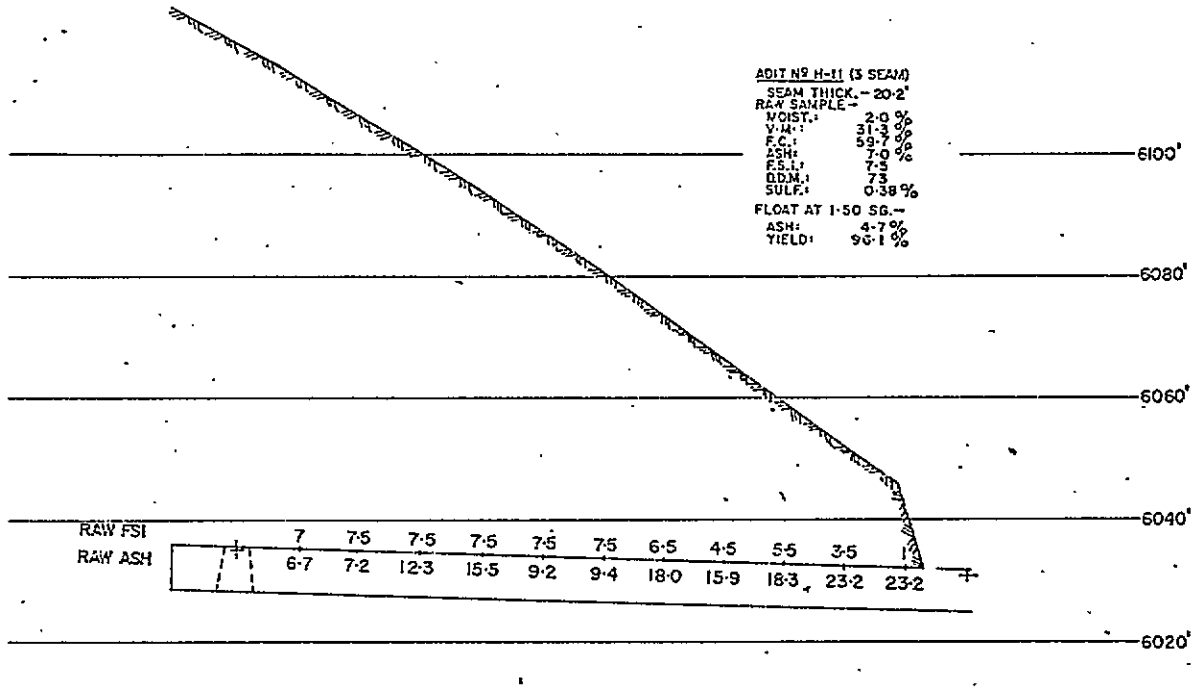
CROSSCUT AT 150' - SEAM - THICK.
RAW SAMPLE -
ASH: 25·2 %
FSI 2
CLEAN COMPOSITE - FL. AT 1·42
YIELD: 59·1 %
MOIST.: 1·8 %
VOL.M.: 29·1 %
ASH: 8·2 %
F.C.: 60·9 %
FSI: 6
DDM: 20·9
SULF.: 0·59 %



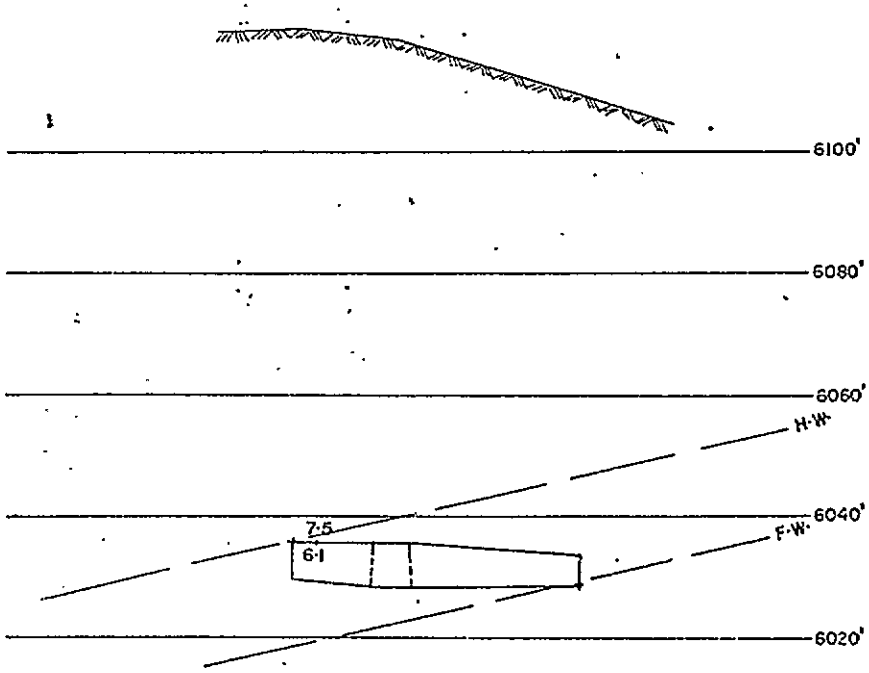
SECTION A-A

SECTION B-B

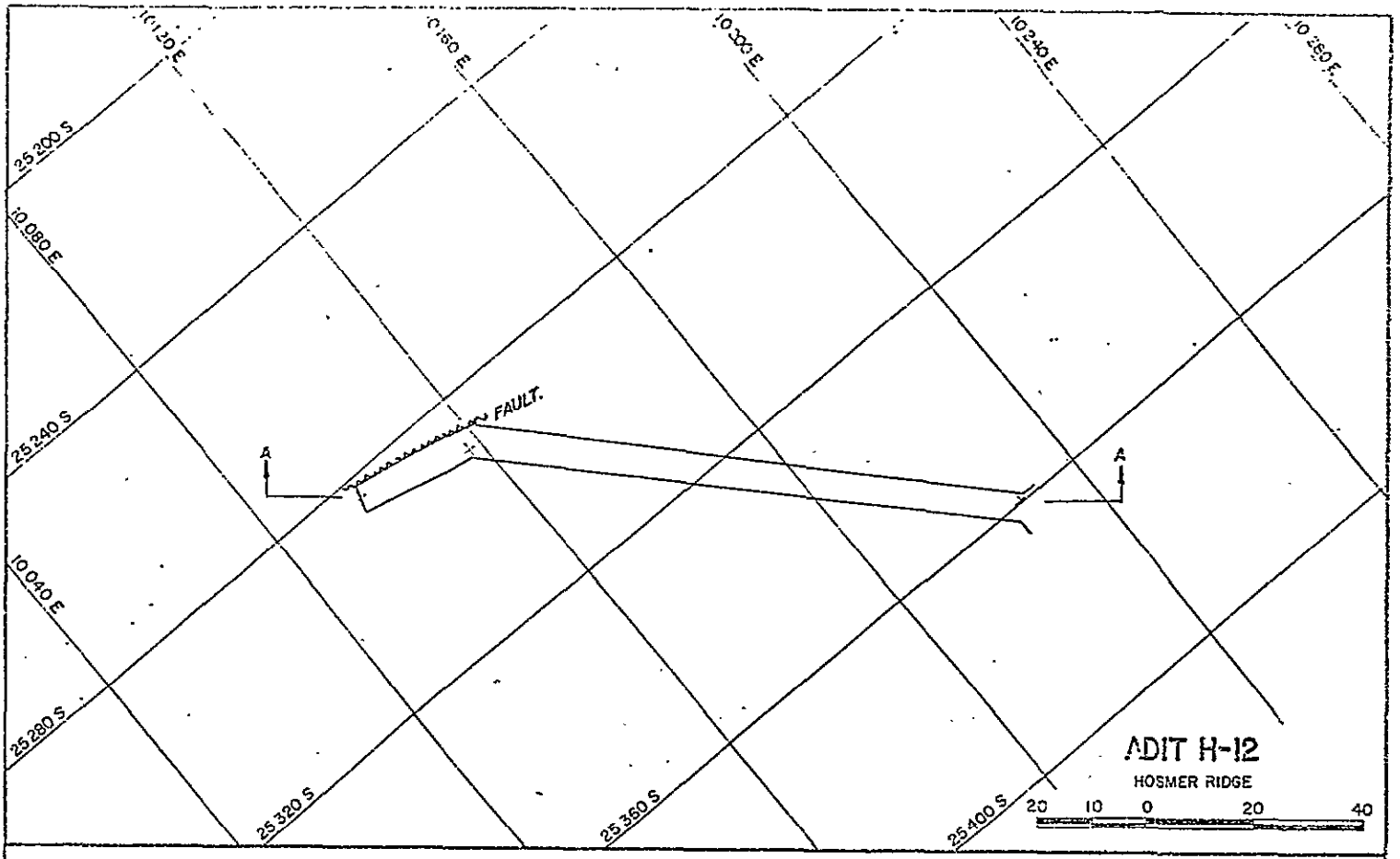


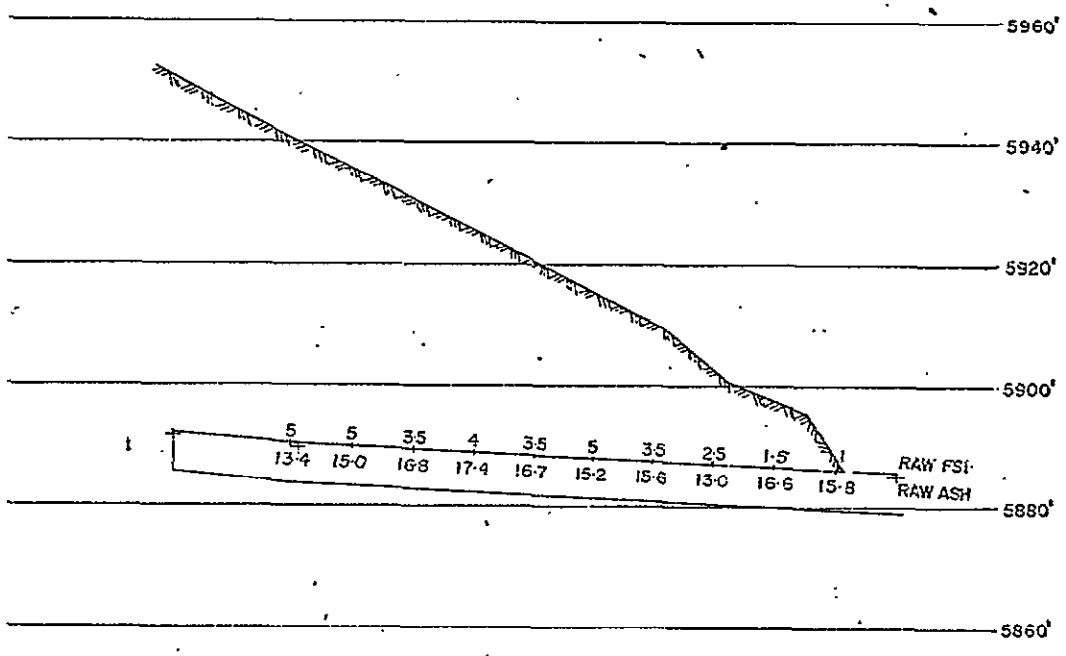


SECTION A-A



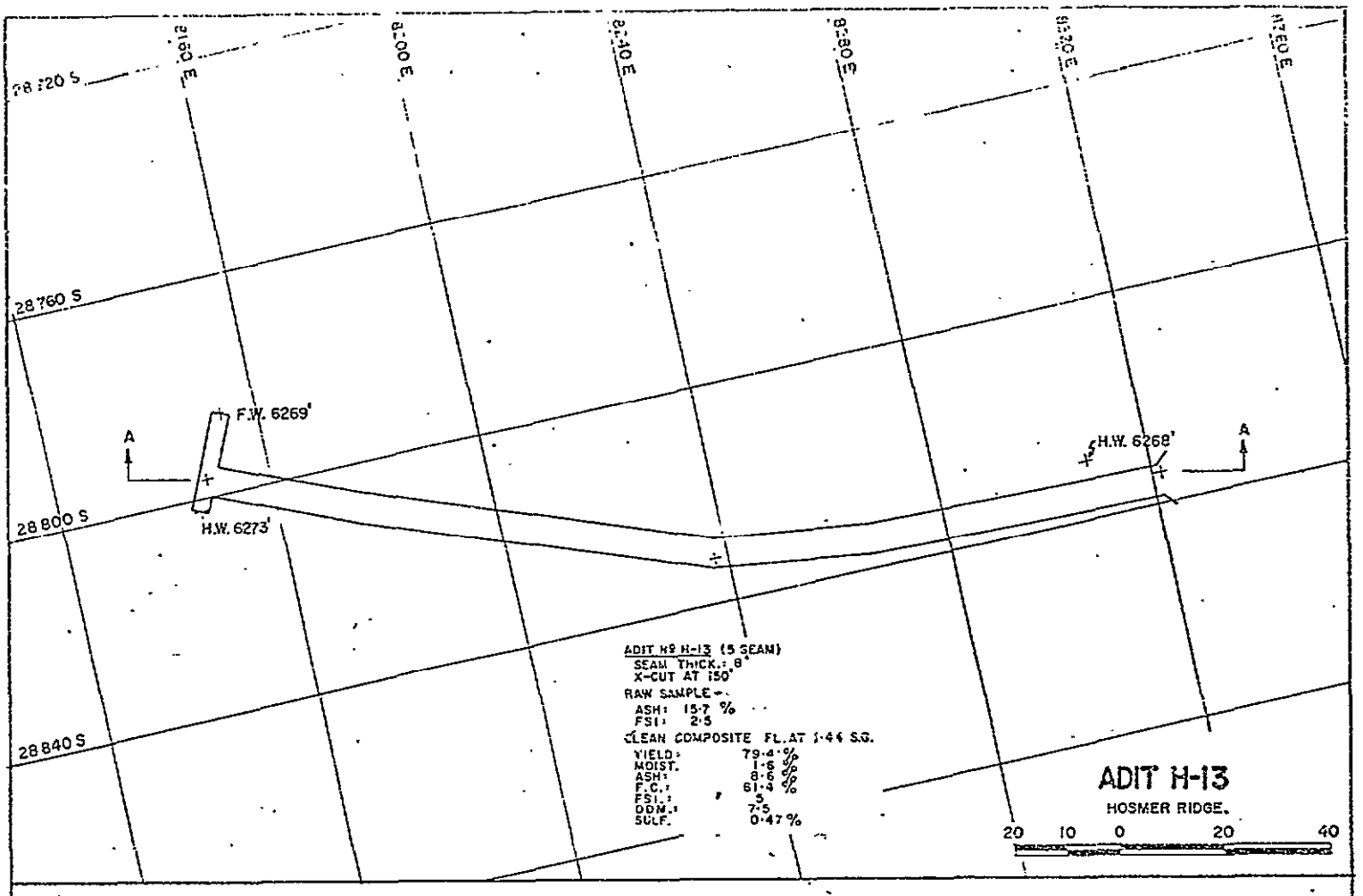
SECTION B-B

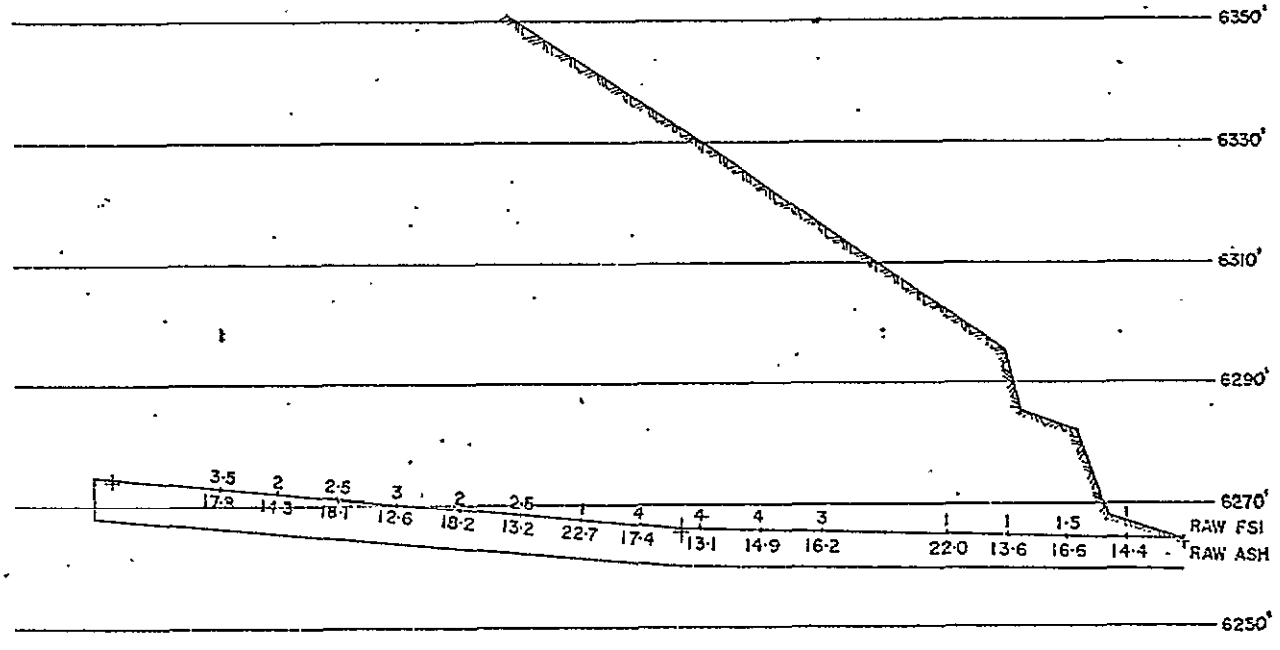




SECTION A-A

N.B.: ENTRY DRIVEN TO 120', DEFERRED BECAUSE OF SPRING BREAKUP.

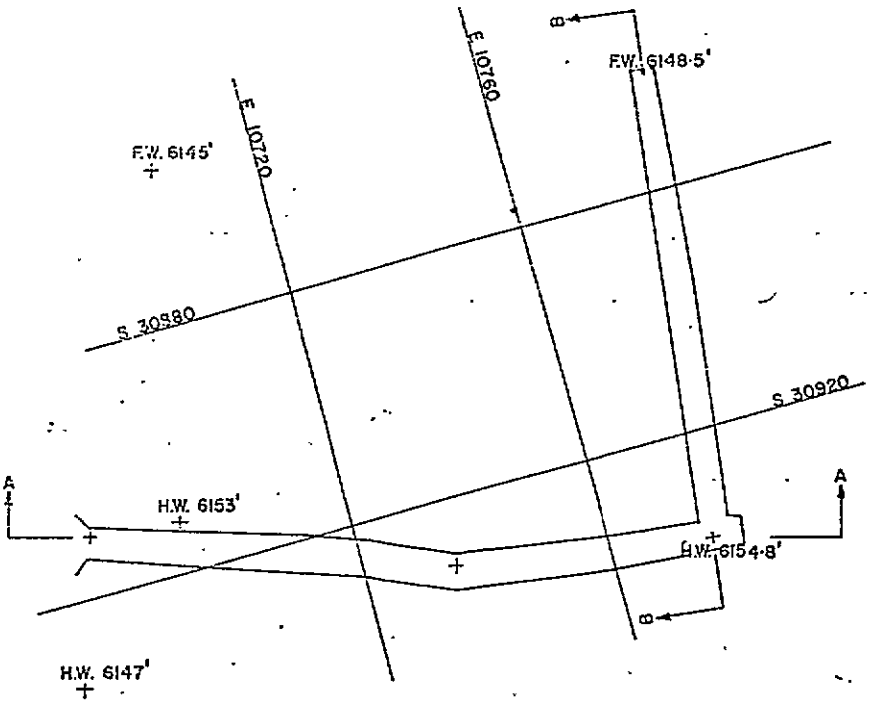

28 720 S
28 760 S
28 800 S
28 840 S
E 0618
E 0638
E 0658
E 0678
E 0698
E 0718
F.W. 6269'
H.W. 6273'
H.W. 6268'
A
A
ADIT Nº H-13 (5 SEAM)
SEAM THICK.: 8'
X-CUT AT 150'
RAW SAMPLE -
ASH: 15·7 %
FSI: 2·5
CLEAN COMPOSITE FL. AT 1·44 S.G.
YIELD: 79·4 %
MOIST. 1·6 %
ASH: 8·6 %
F.C.: 61·4 %
FSI.: 3
DDM.: 7·5
SULF. 0·47 %
ADIT H-13
HOSMER RIDGE.
20 10 0 20 40


6350'
6330'
6310'
6290'
6270'
6250'
3·5 2 2·5 3 2 2·5 1 4 4 4 3 1 1 1·5 1
17·9 14·3 18·1 12·6 18·2 13·2 22·7 17·4 13·1 14·9 16·2 22·0 13·6 16·6 14·4
RAW FSI
RAW ASH

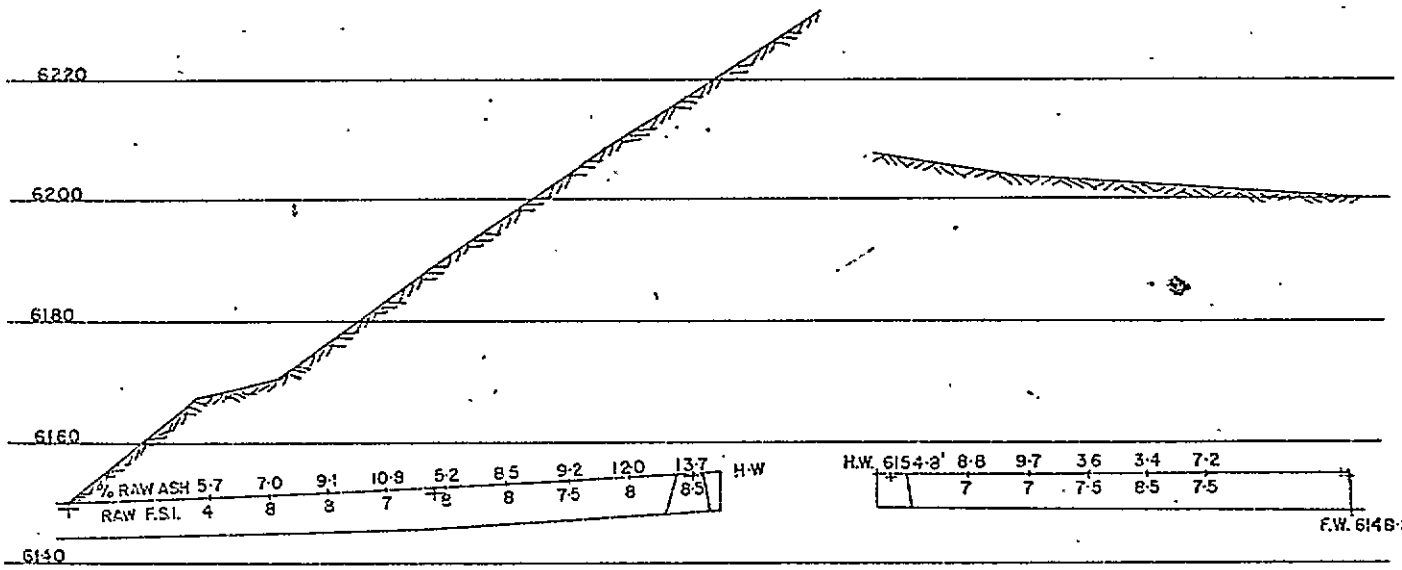
SECTION A-A

ADIT H-14

HOSMER RIDGE



ADIT Nº H-14 (3 SEAM-LOWER)
SEAM THICK.– 27·2'
RAW SAMPLE–
MOIST.: 1·9 %
V.M.: 32·4 %
F.C.: 57·3 %
ASH: 8·4 %
F.S.I.: 7·5
DOM.: 390
SULF.: 0·44 %
FLOAT AT 1·50 S.G.–
ASH: 4·3 %
YIELD: 93·7 %

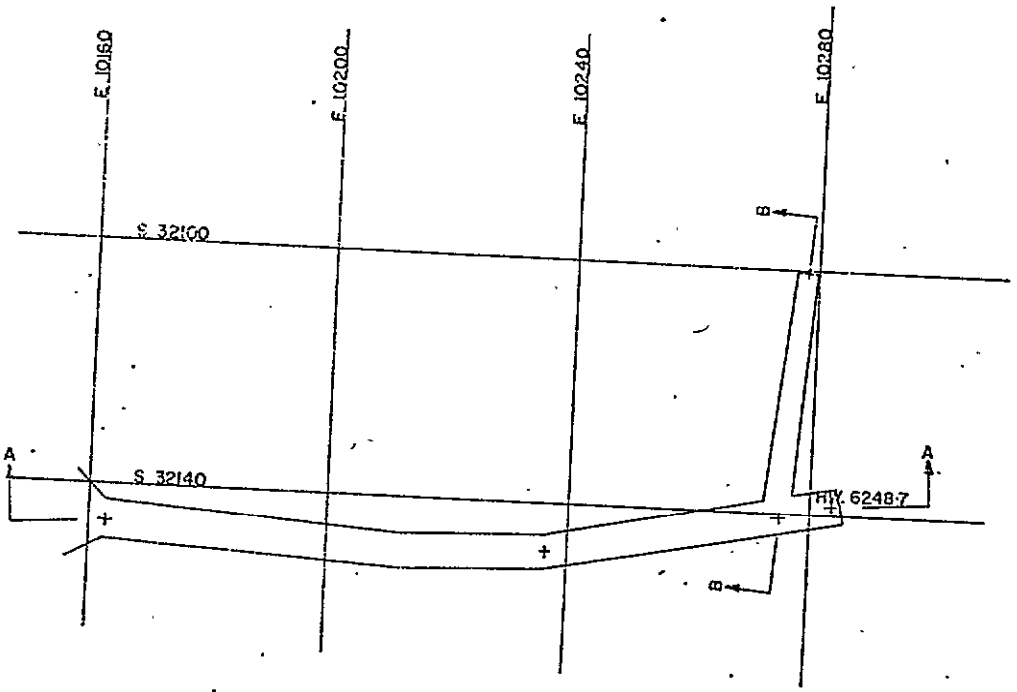


SECTION A-A

SECTION B-B

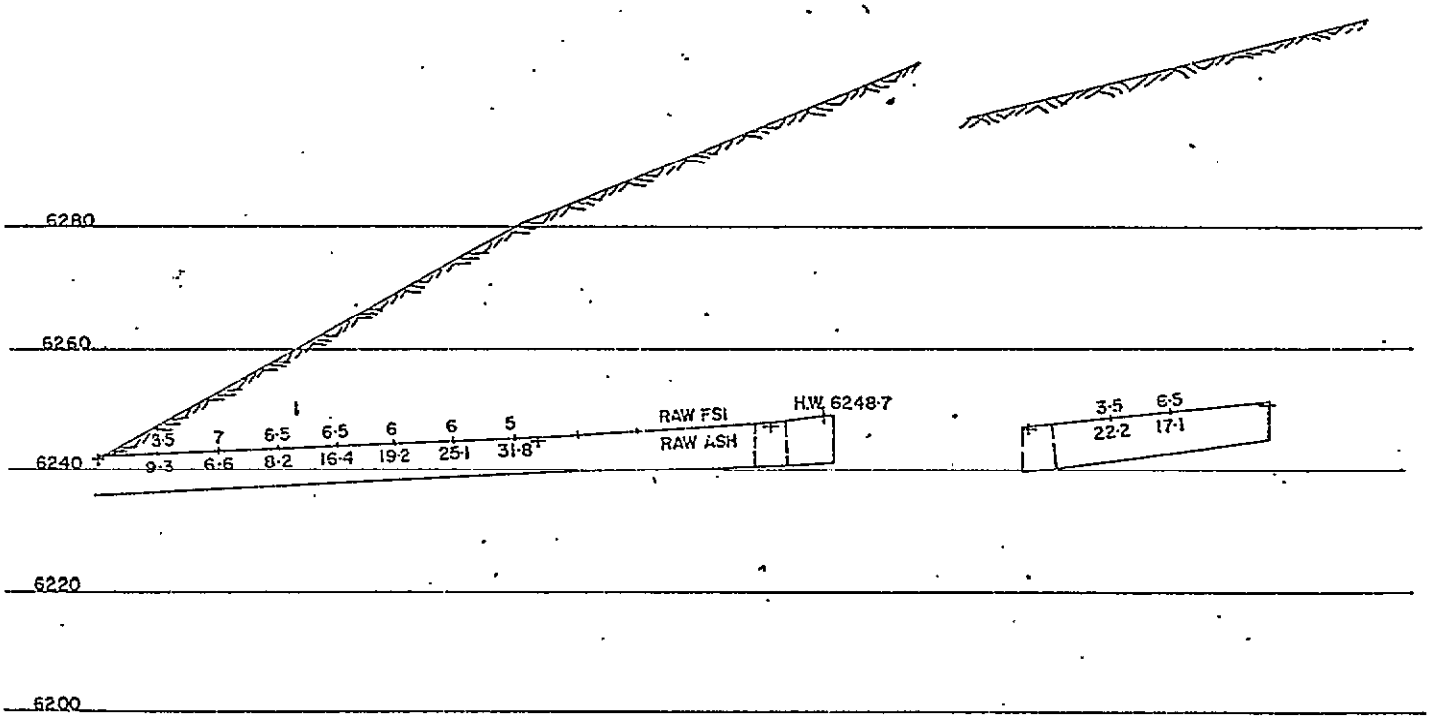
ADIT H-15

HOSMER RIDGE



ADIT No H-15 (2 SEAM)
SEAM THICK.: 19"
X-CUT AT 90°
RAW SAMPLE –
ASH: 33·5 %
FSI.: 3
CLEAN COMPOSITE FL. AT 1·57 S.G.

YIELD:	56·3 %
MOIST.:	2·6 %
ASH:	7·6 %
F.C.:	57·4 %
FSI:	6·5
DDM:	189
SULF.:	0·58 %

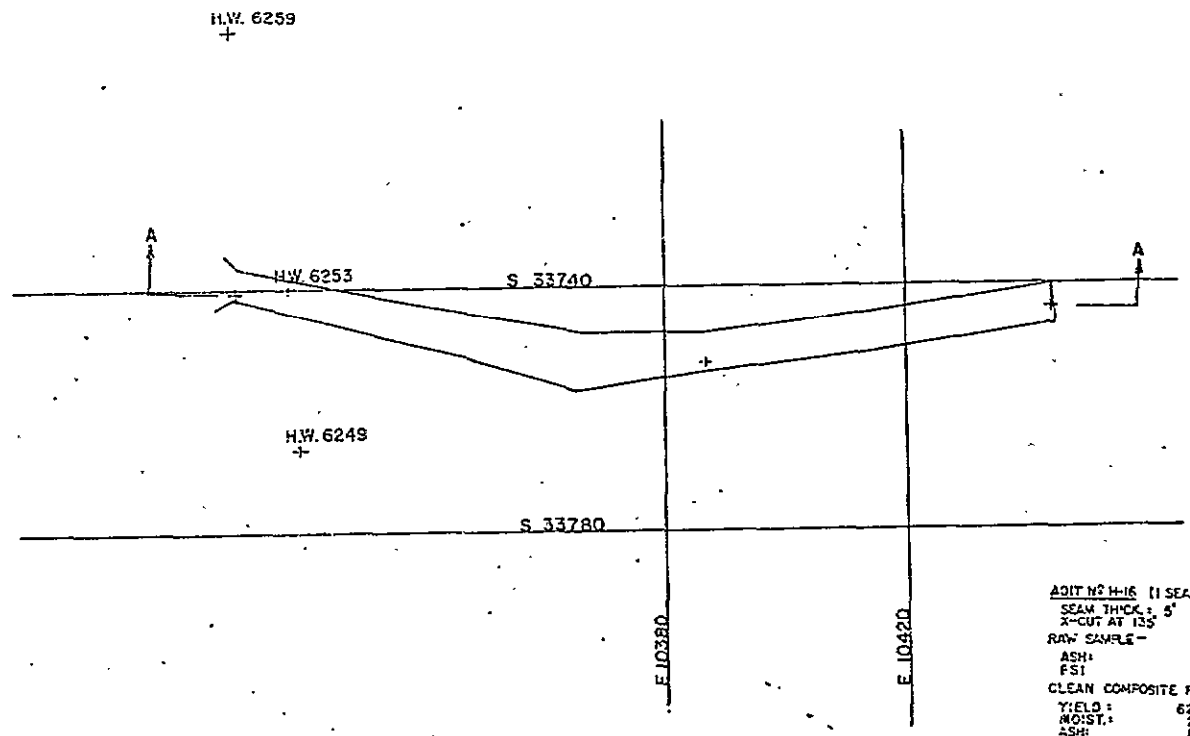


SECTION A-A

SECTION B-B

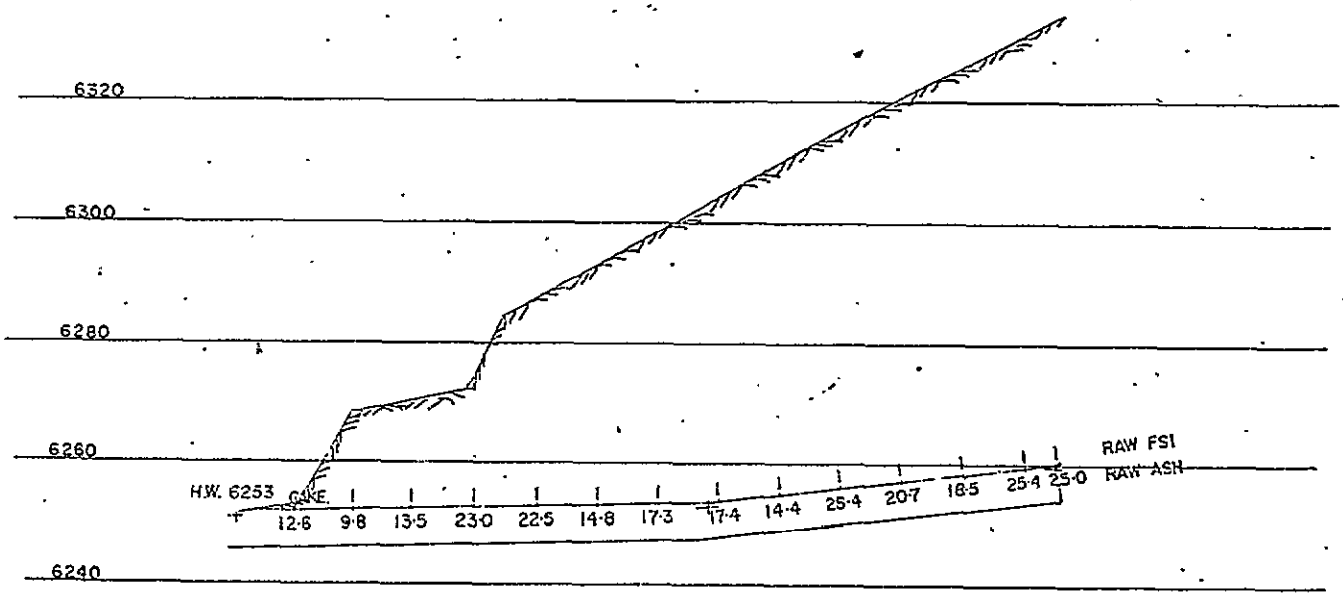
ADIT H-16

HOSMER RIDGE



ADIT Nº H-16 (1 SEAM)
SEAM THICK.: 5'
X-CUT AT 135'
RAW SAMPLE –
ASH:
FSI
CLEAN COMPOSITE FL. AT 1·45 S.G.

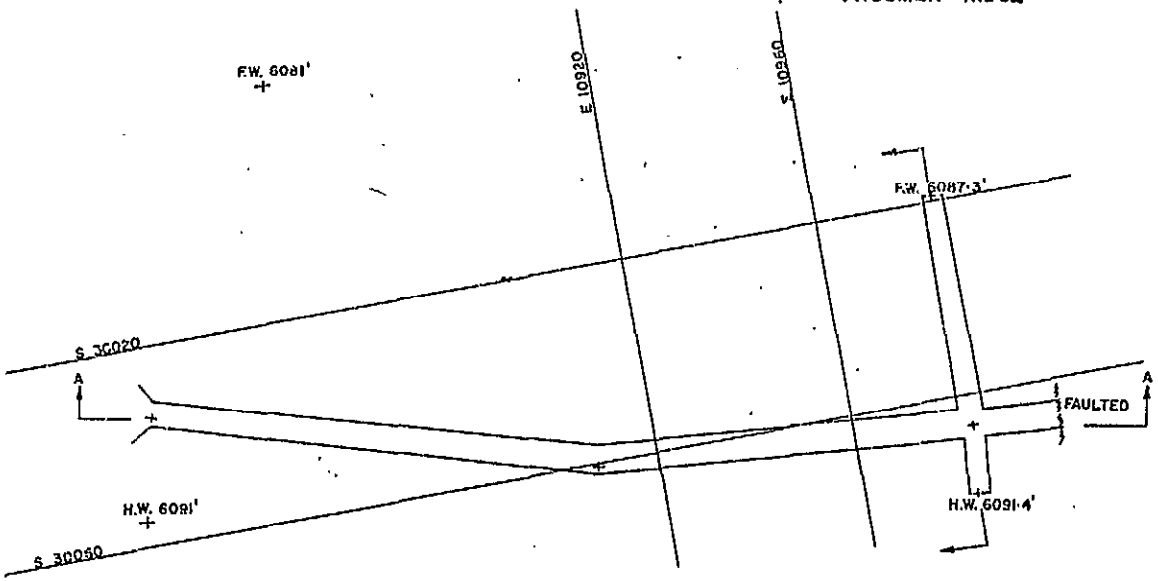
YIELD:	62·9 %
MOIST.:	2·5 %
ASH:	8·5 %
F.C.:	56·9 %
FSI:	1
SON.:	1·0
SULF.:	0·48 %



SECTION A-A

ADIT H-17

HOSMER RIDGE



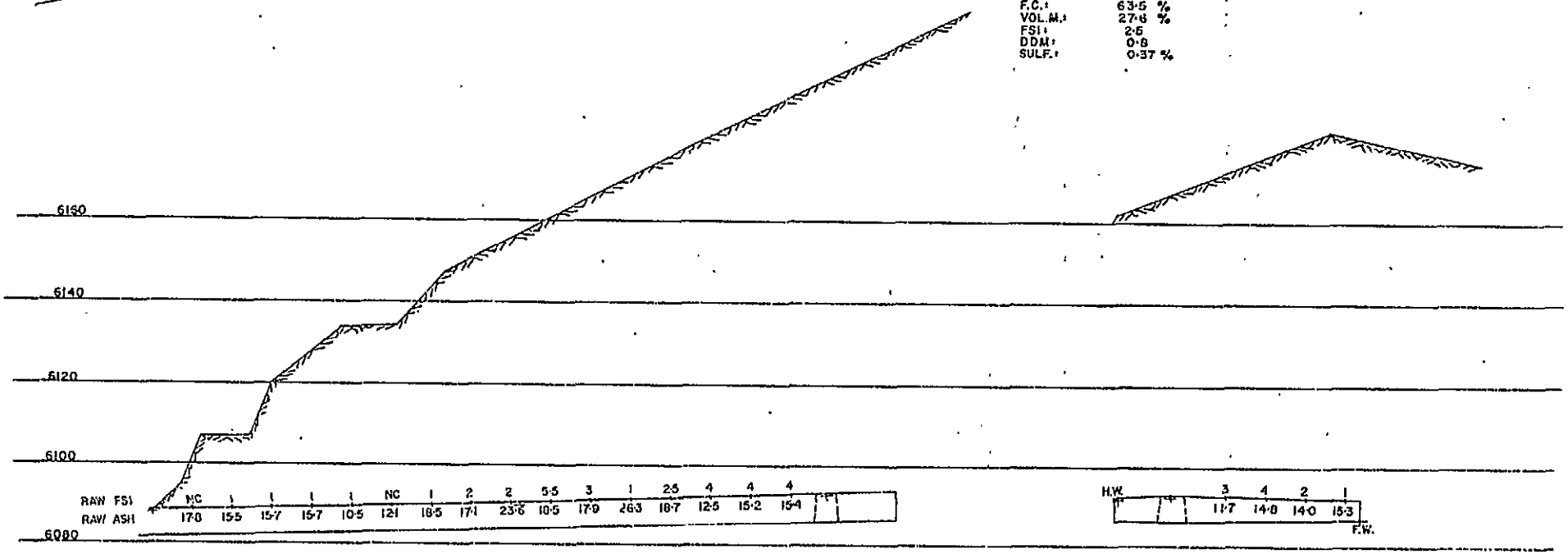
CROSSCUT AT 170' - SEAM .' THICK.

RAW SAMPLE –

ASH: 22·0 %
FSI: 1·6

CLEAN COMPOSITE FL. AT 1·45 S·G

YIELD:	66·5 %
MOIST.:	1·7 %
ASH:	7·2 %
F.C.:	63·5 %
VOL.M.:	27·6 %
FSI:	2·5
DDM:	0·8
SULF.:	0·37 %

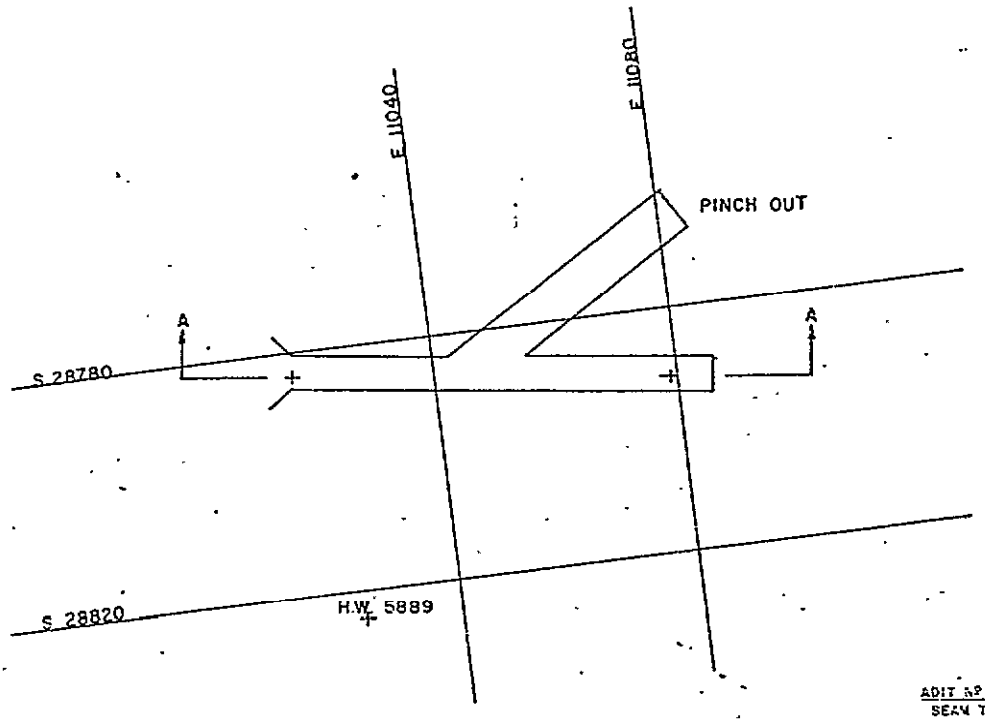


SECTION A-A

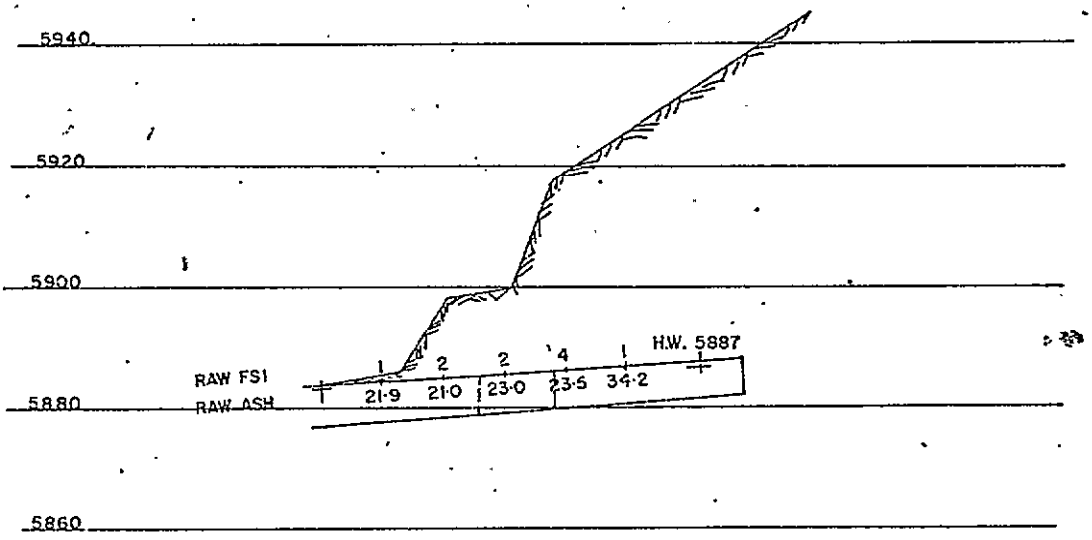
SECTION B-B

ADIT H-18

HOSMER RIDGE



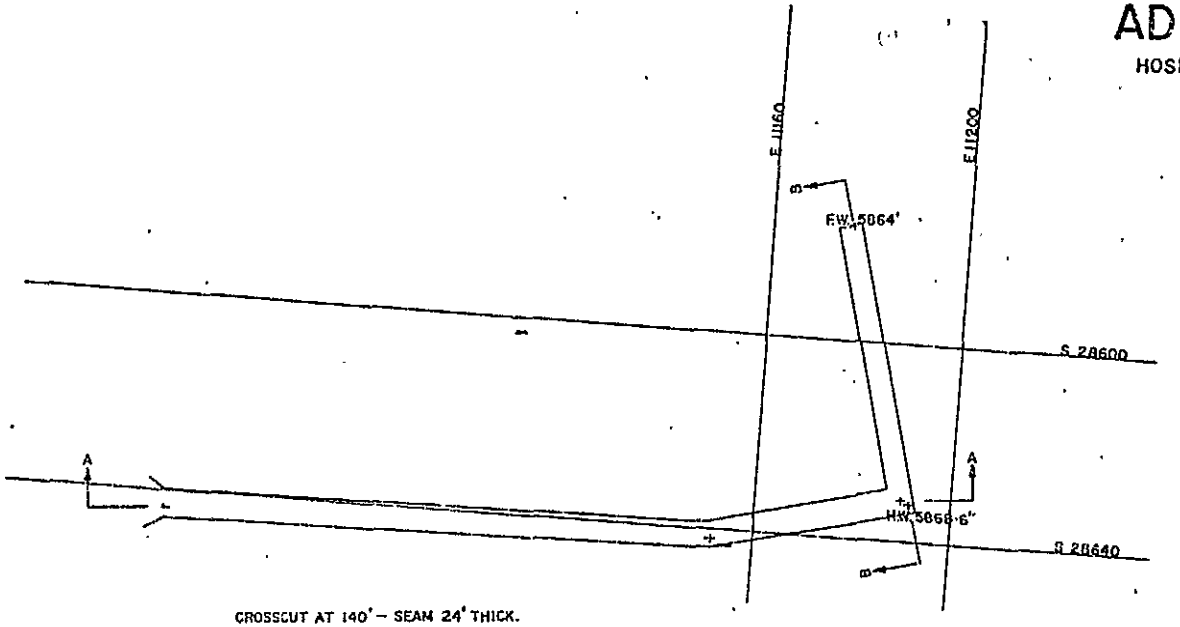
ADIT No H-18 (7 SEAM)
SEAM THICK.: 11'
ENTRY DRIVEN TO 70',
SEAM PINCHED OUT TO 3'.
ADIT ABANDONED.



SECTION A-A

ADIT H-19

HOSMER RIDGE



CROSSCUT AT 140' – SEAM 24' THICK.

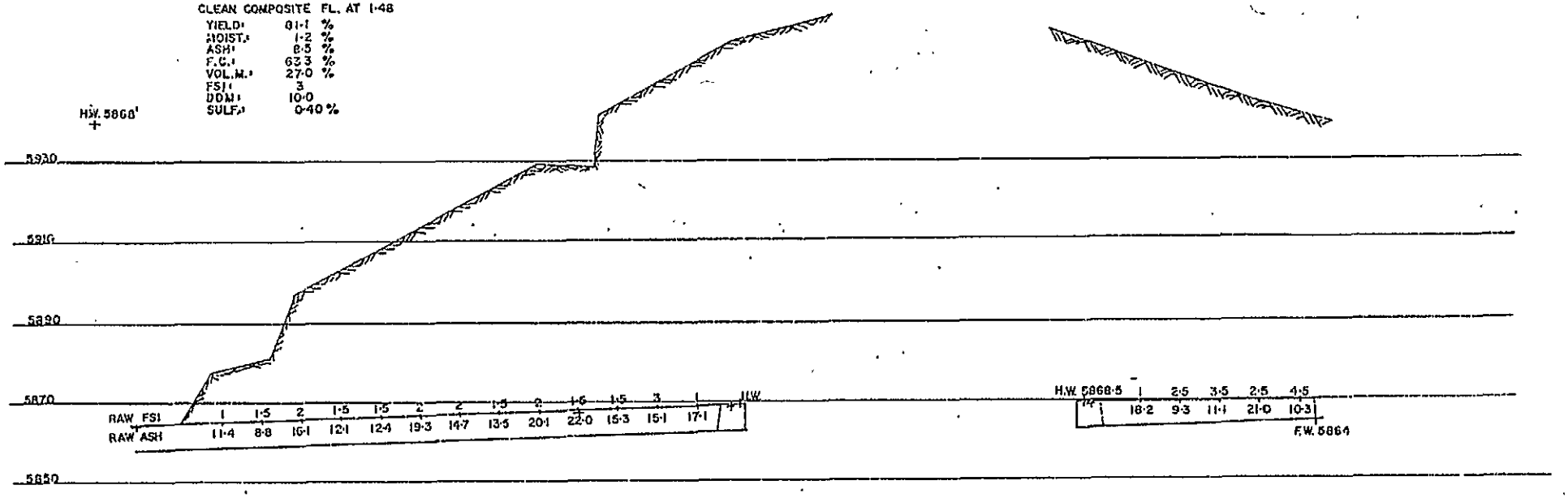
RAW SAMPLE–

ASH: 14·5 %

FSI: 2

CLEAN COMPOSITE FL. AT 1·48

YIELD:	81·1 %
MOIST.:	1·2 %
ASH:	8·5 %
F.C.:	63·3 %
VOL.M.:	27·0 %
FSI:	3
DDM:	10·0
SULF.:	0·40 %

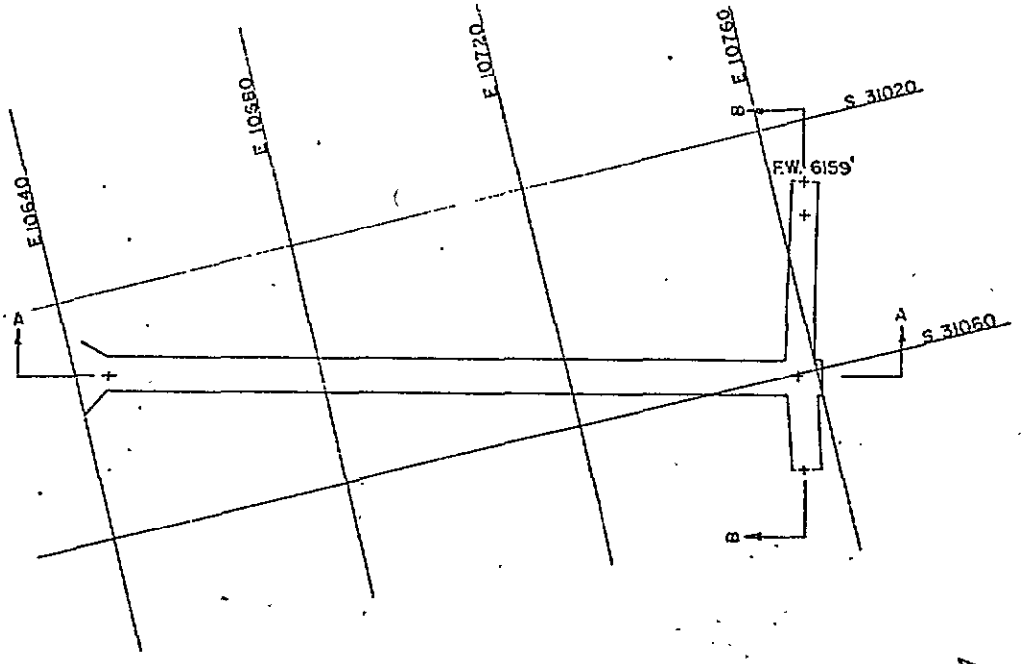


SECTION A-A

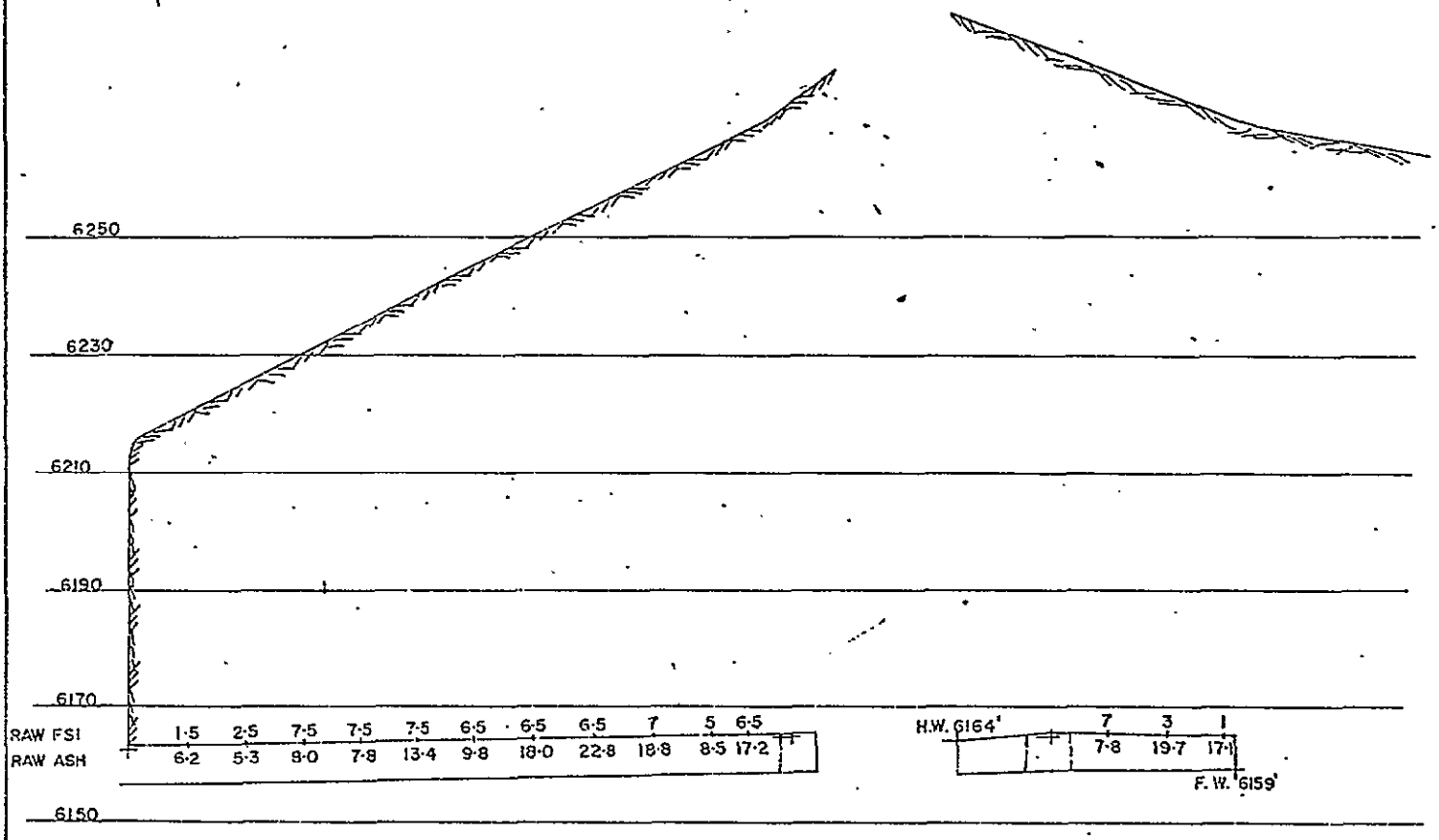
SECTION B-B

ADIT H-20

HOSMER RIDGE



ADIT Nº H-20 (3 SEAM-UPPER)
SEAM THICK.- 15'
RAW SAMPLE—
MOIST.: 2·5 %
V-M.: 32·0 %
F-C.: 59·5 %
ASH 6·0 %
F.S.I.: 6
D.D.M.: 55
SULF.: 0·66 %
FLOAT AT 1·50 S.G.—
ASH: 4·6 %
YIELD: 78·6 %

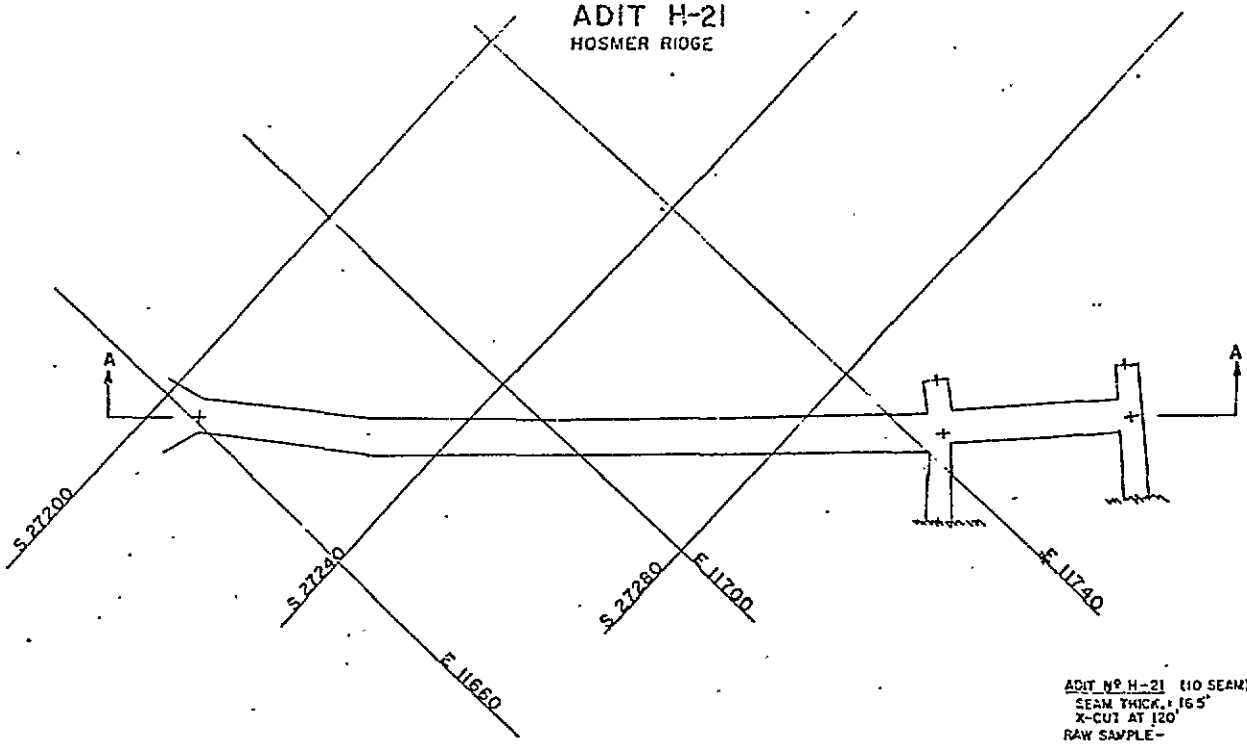


SECTION A-A

SECTION B-B

ADIT H-21

HOSMER RIDGE

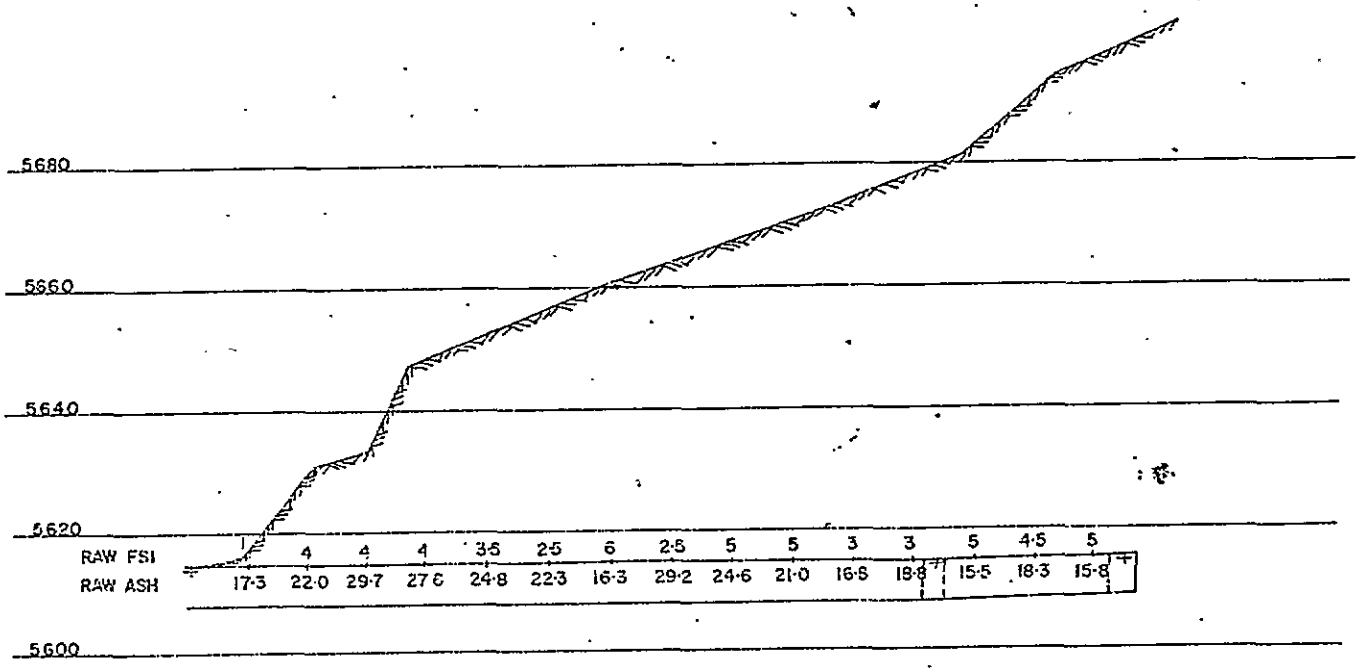


ADIT Nº H-21 (10 SEAM)
SEAM THICK.: 16.5'
X-CUT AT 120'

RAW SAMPLE–
ASH: 15.8 %
FSI: 2.5

CLEAN COMPOSITE FL. AT 1.42 S.G.

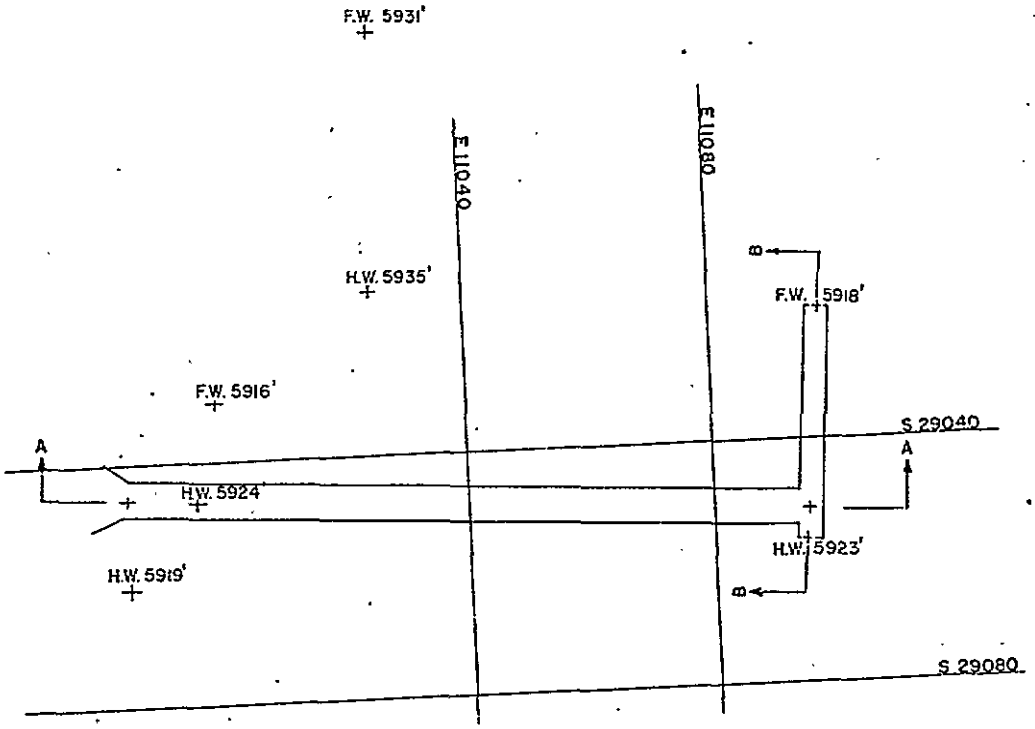
YIELD:	68.7 %
MOIST.:	1.2 %
ASH:	7.0 %
F.C.:	62.4 %
V.M.:	29.4 %
FSI.:	7
RDM.:	45
SULF.:	0.32 %



SECTION A–A

ADIT H-22

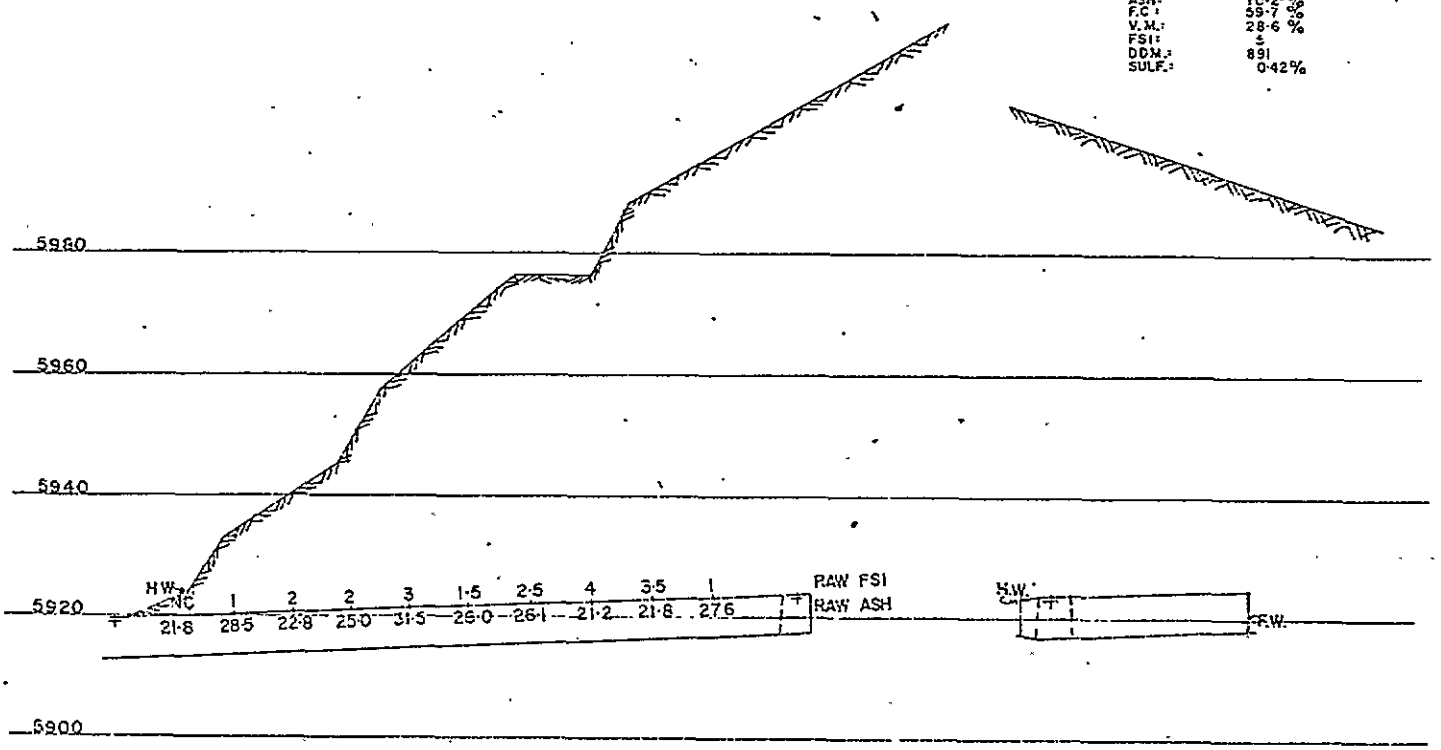
HOSMER RIDGE



ADIT Nº H-22 (7 SEAM)
SEAM THICK. 14·4'
X-CUT AT 110'
RAW SAMPLE—
ASH: 31·8 %
FSI: 2·5

CLEAN COMPOSITE FL. AT 1·46 S·G·

YIELD:	45·4 %
MOIST.:	1·5 %
ASH:	10·2 %
F.C.:	59·7 %
V.M.:	28·6 %
FSI:	5
DDM.:	891
SULF.:	0·42%

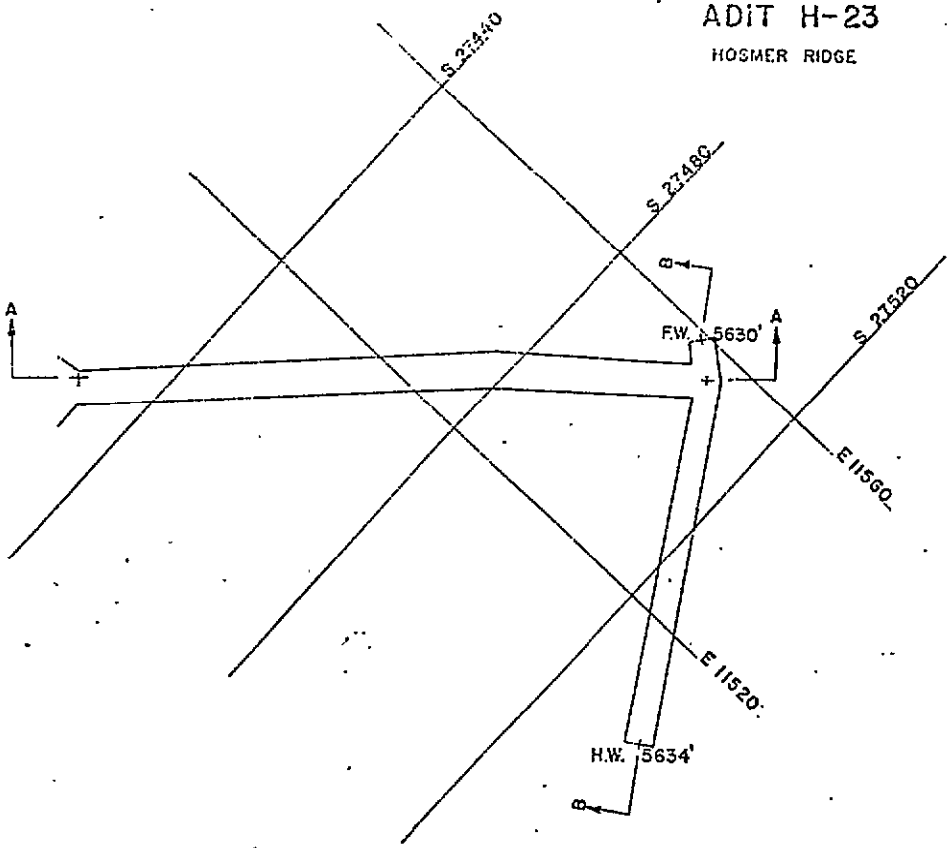


SECTION A-A

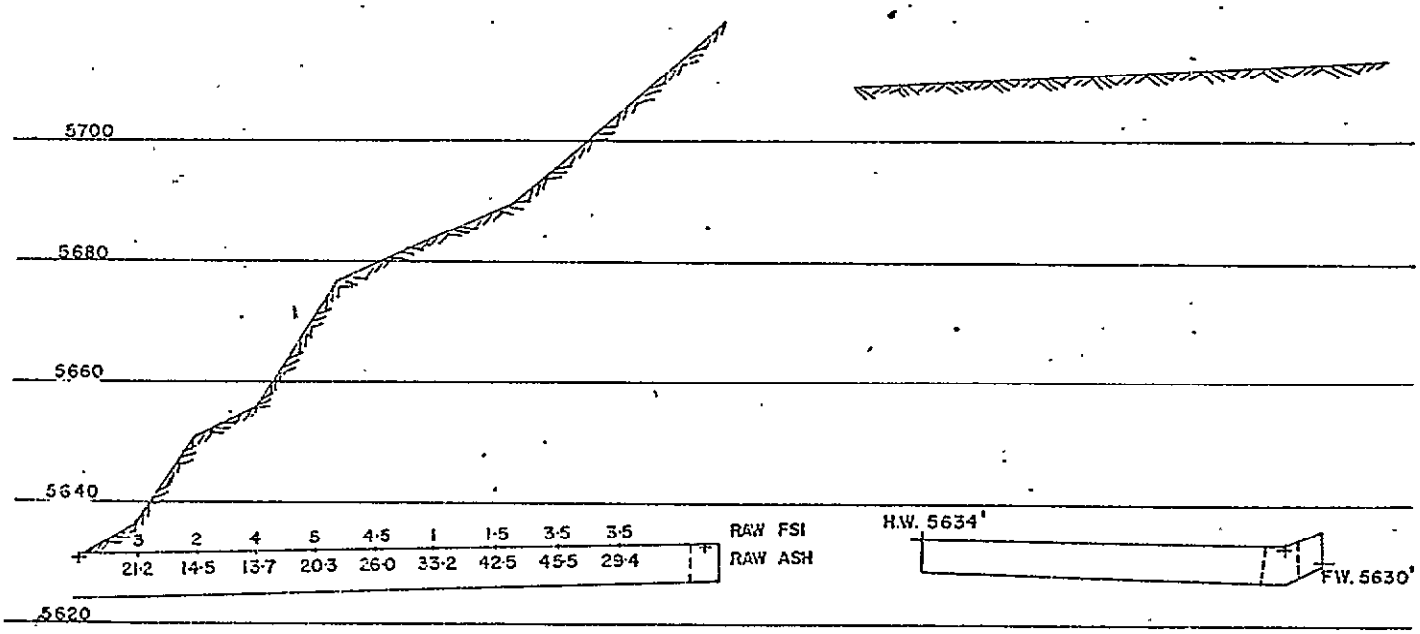
SECTION B-B

ADIT H-23

HOSMER RIDGE



ADIT No. H-23 (9 SEAM)	UPPER BENCH	LOWER BENCH
SEAM THICK.	21·7'	19·4'
X-CUT AT	90'	90'
RAW SAMPLE –		
ASH:	23·6 %	18·7 %
FSI:	4·5	5·5
CLEAN COMPOSITE –		
FLOAT AT:	1·52 S.G.	1·60 S.G.
YIELD:	67·4 %	81·1 %
MOIST.:	1·0 %	1·3 %
ASH:	10·2 %	8·6 %
F.C.:	59·3 %	60·6 %
V.M.:	29·5 %	29·2 %
FSI:	6·5	6
G.D.M.:	244	30
SULF.:	0·44 %	0·41 %

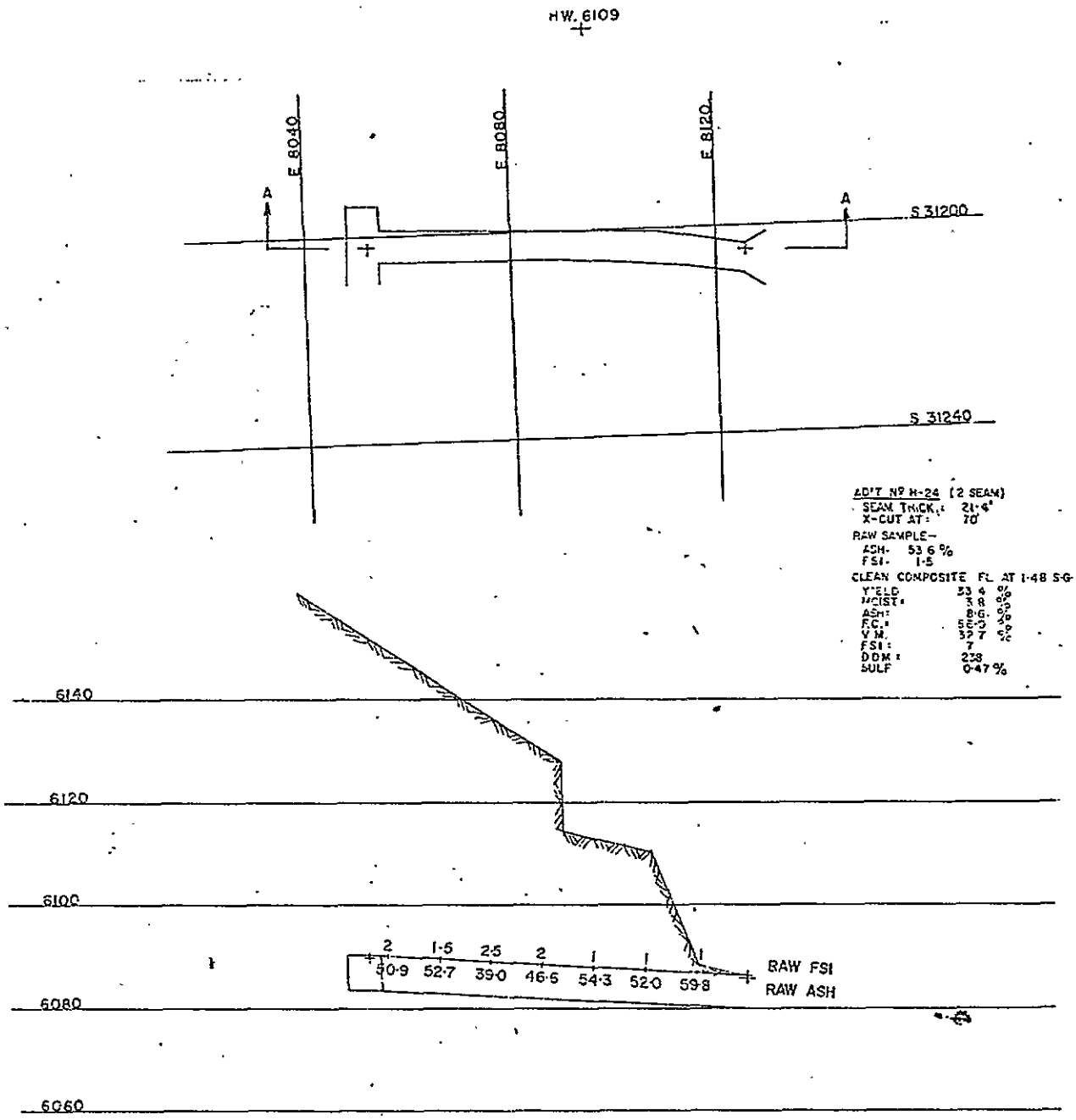


SECTION A-A

SECTION B-B

ADIT H-24

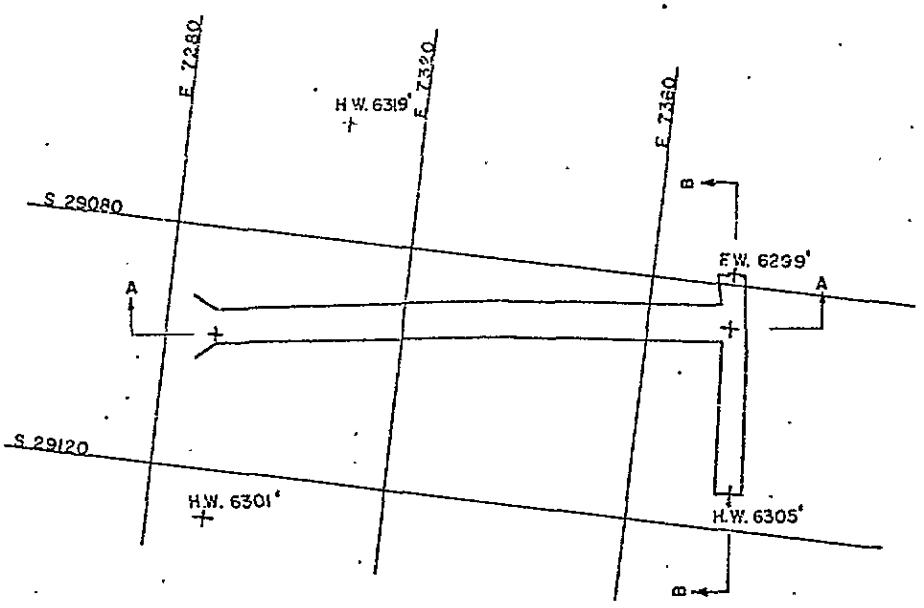
HOSMER RIDGE



SECTION A-A

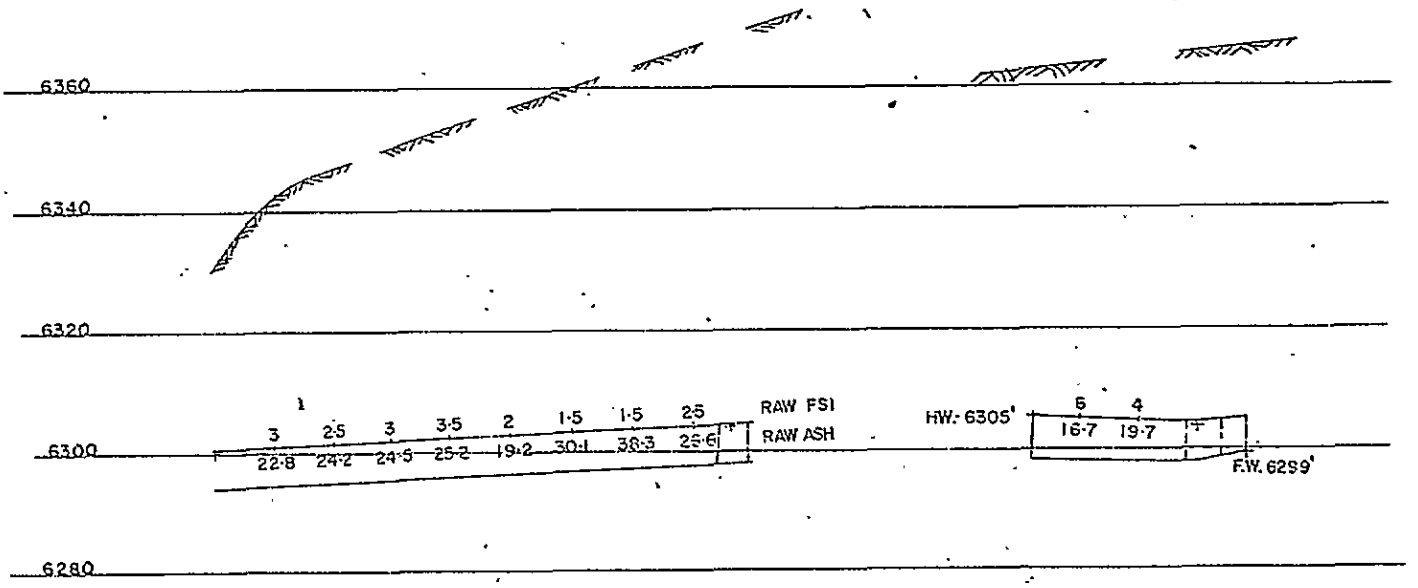
ADIT H-25

WHEELER RIDGE.



ADIT Nº H-25 (4 SEAM)
SEAM THICK. 13·2'
X-CUT AT 90°
RAW SAMPLE—
ASH: 23·4%
FSI: 2·5
CLEAN COMPOSITE FL. AT 1·50 SG.

YIELD:	72·4 %
MOIST.:	1·9 %
ASH:	8·6 %
F.C.:	61·0 %
V.M.:	28·7 %
FSI:	5·5
DDM:	5
SULF.:	0·45 %

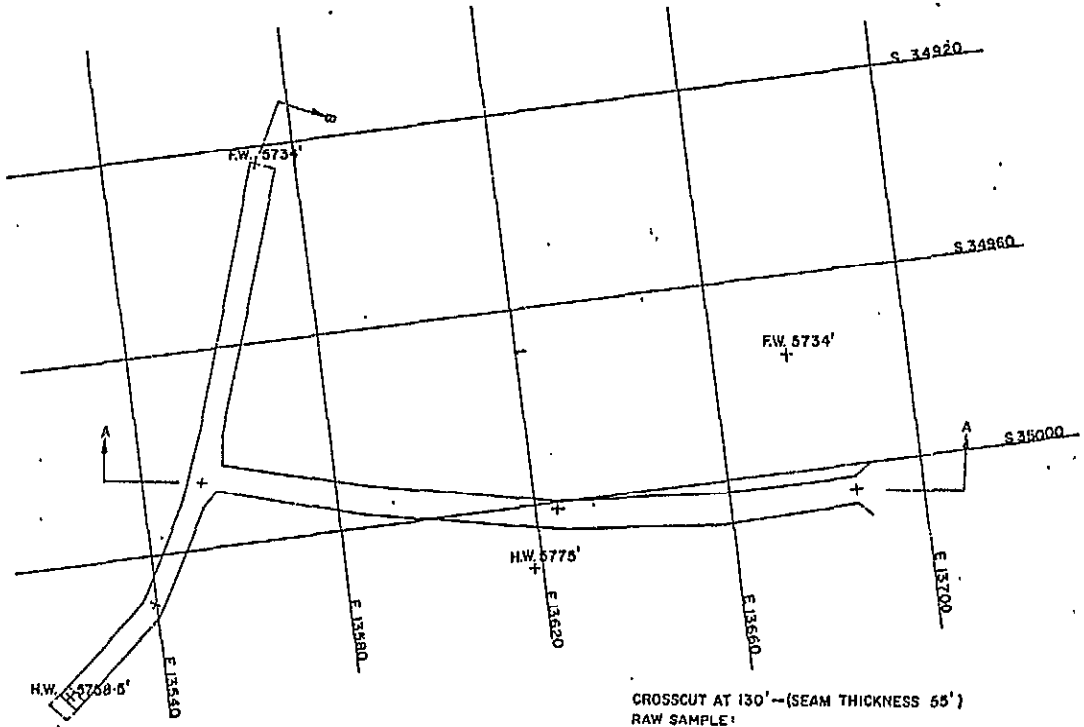


SECTION A-A

SECTION B-B

ADIT H-26

HOSMER RIDGE



CROSSCUT AT 130'—(SEAM THICKNESS 55')

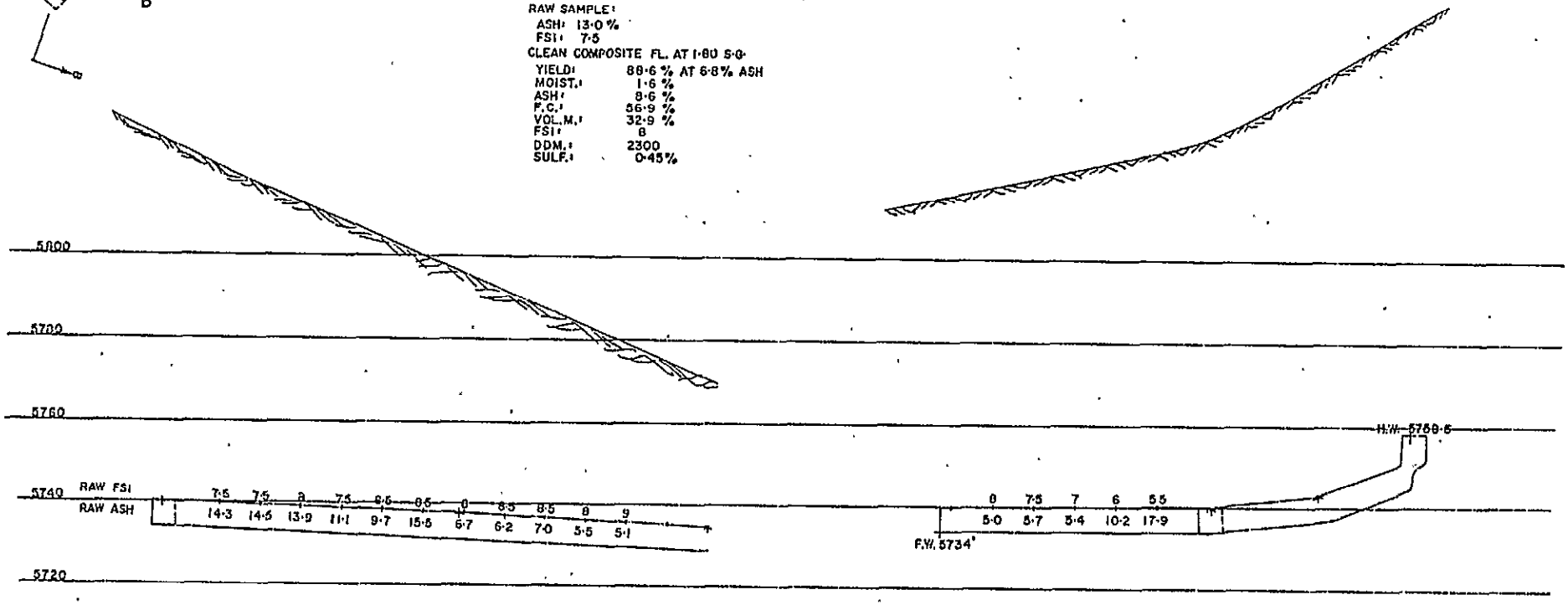
RAW SAMPLE:

ASH: 13·0 %

FSI: 7·5

CLEAN COMPOSITE FL. AT 1·80 S·G·

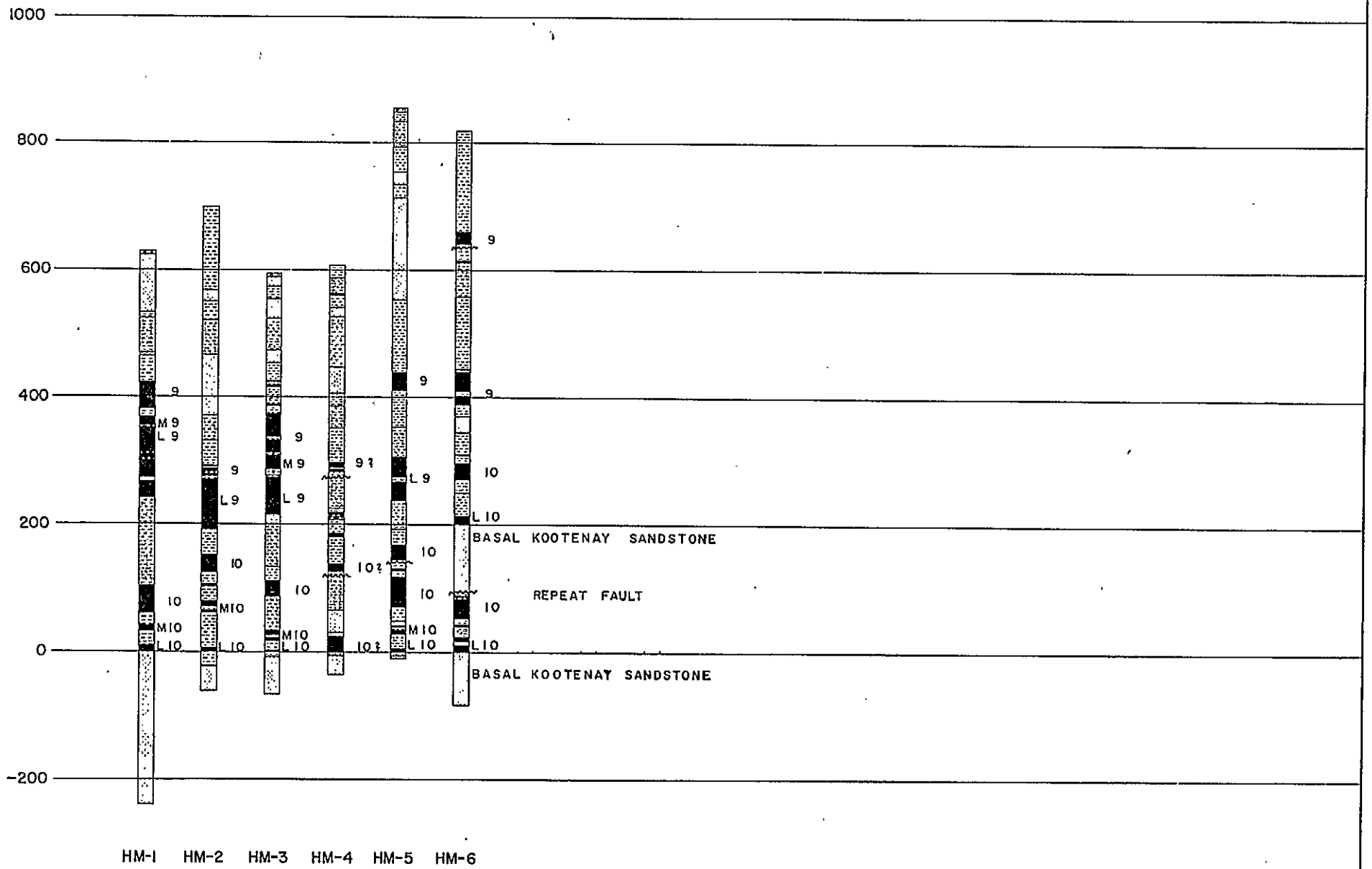
YIELD:	88·6 % AT 6·8% ASH
MOIST.:	1·6 %
ASH:	8·6 %
F.C.:	56·9 %
VOL.M.:	32·9 %
FSI:	8
DDM.:	2300
SULF.:	0·45%



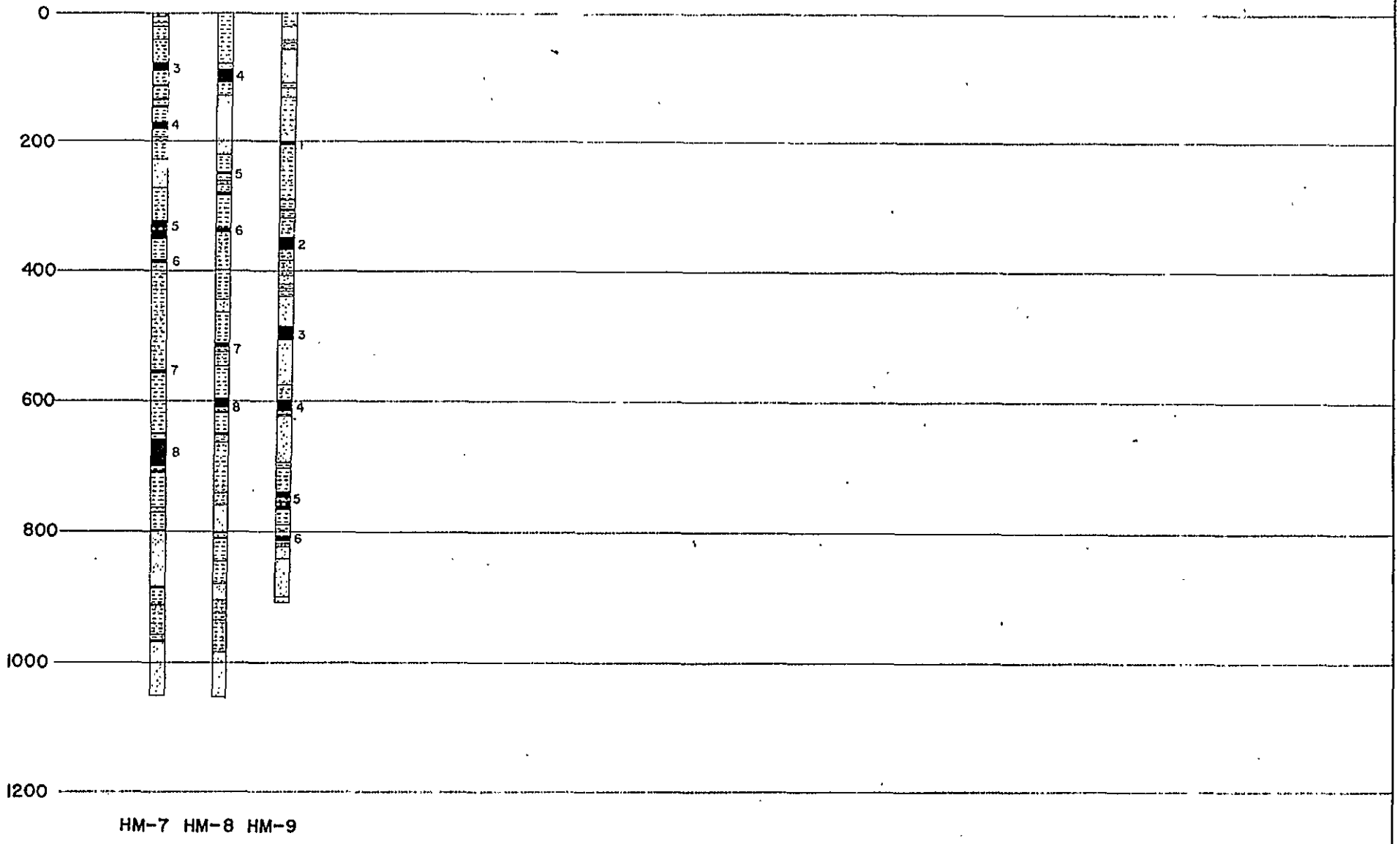
SECTION A-A

SECTION B-B

DRILL HOLE LOGS-20

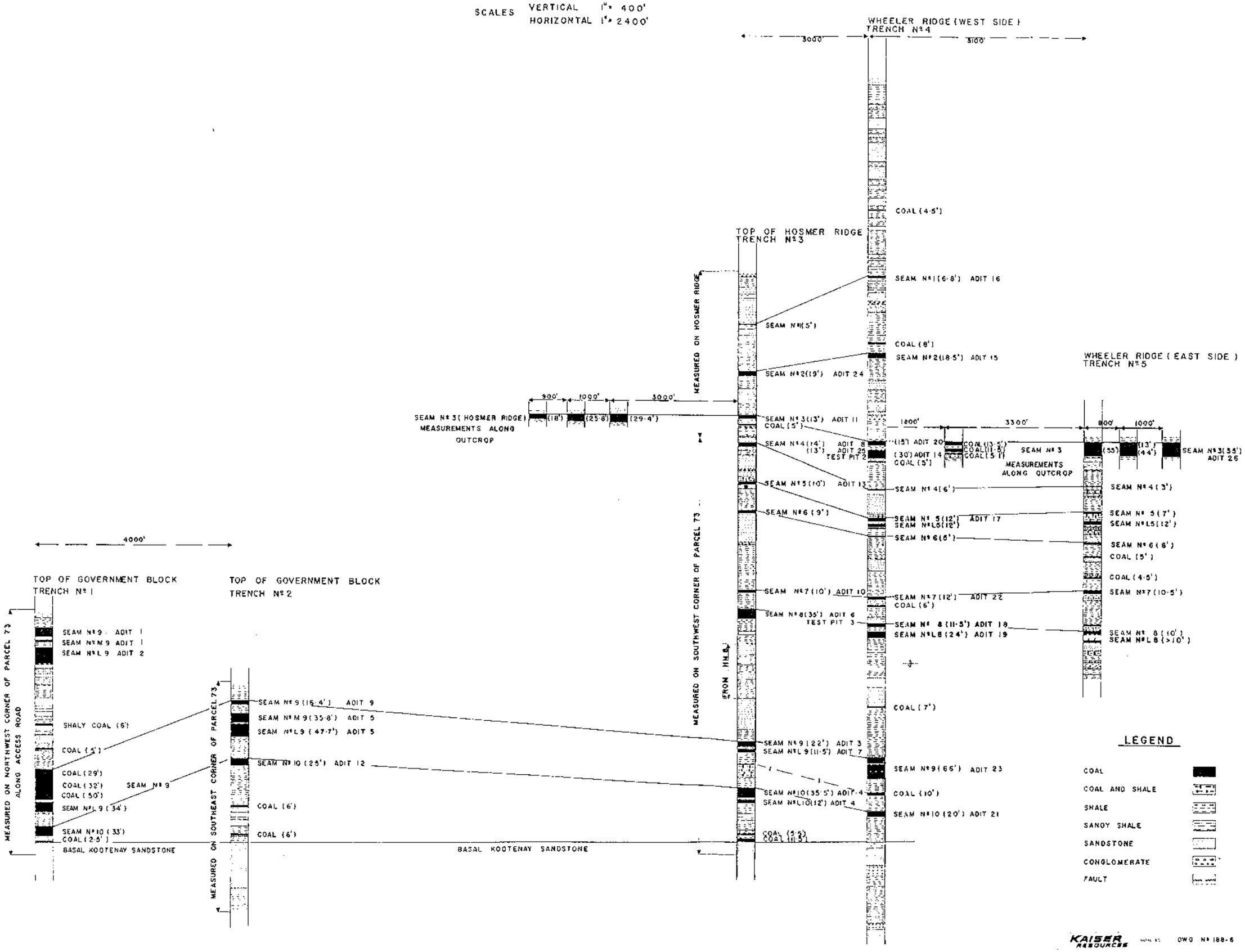


DRILL HOLE LOGS—20 A



CORRELATION CHART (HOSMER RIDGE AREA)

SCALES VERTICAL 1" = 400'
HORIZONTAL 1" = 2400'



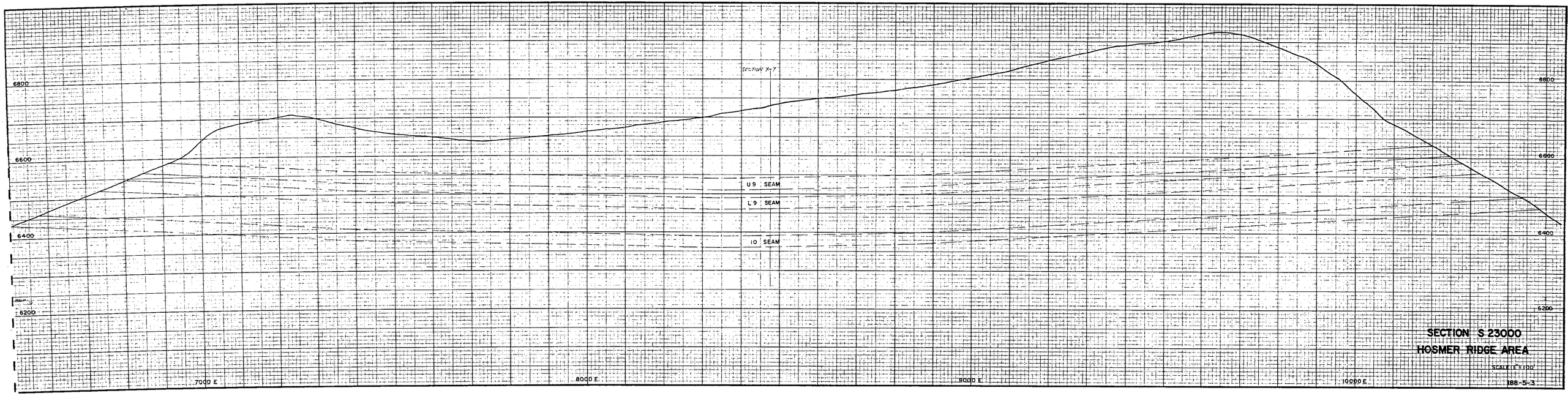
MINING METHODS

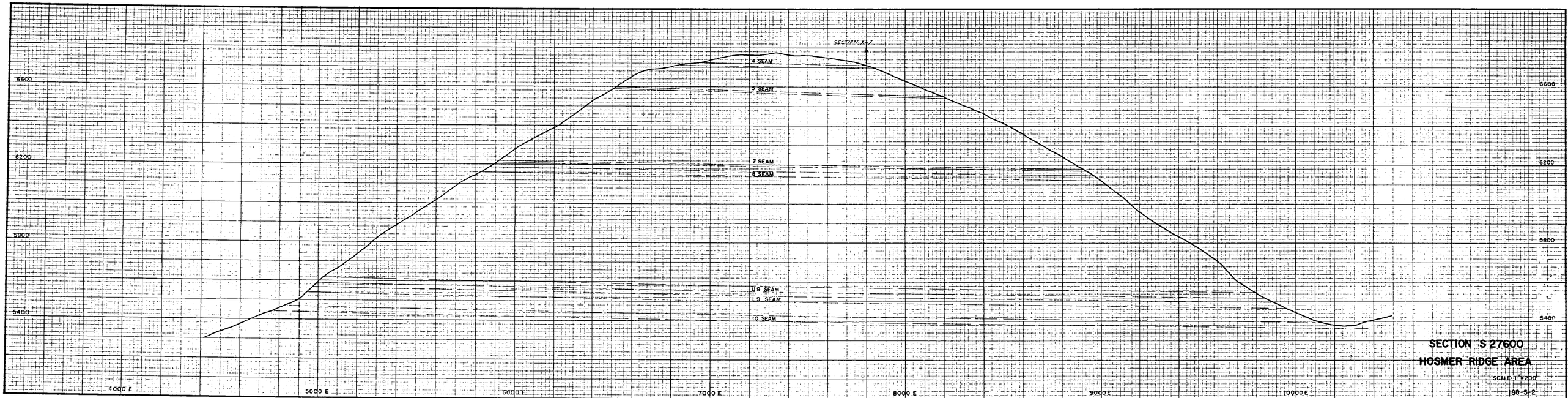
Methods Applicable

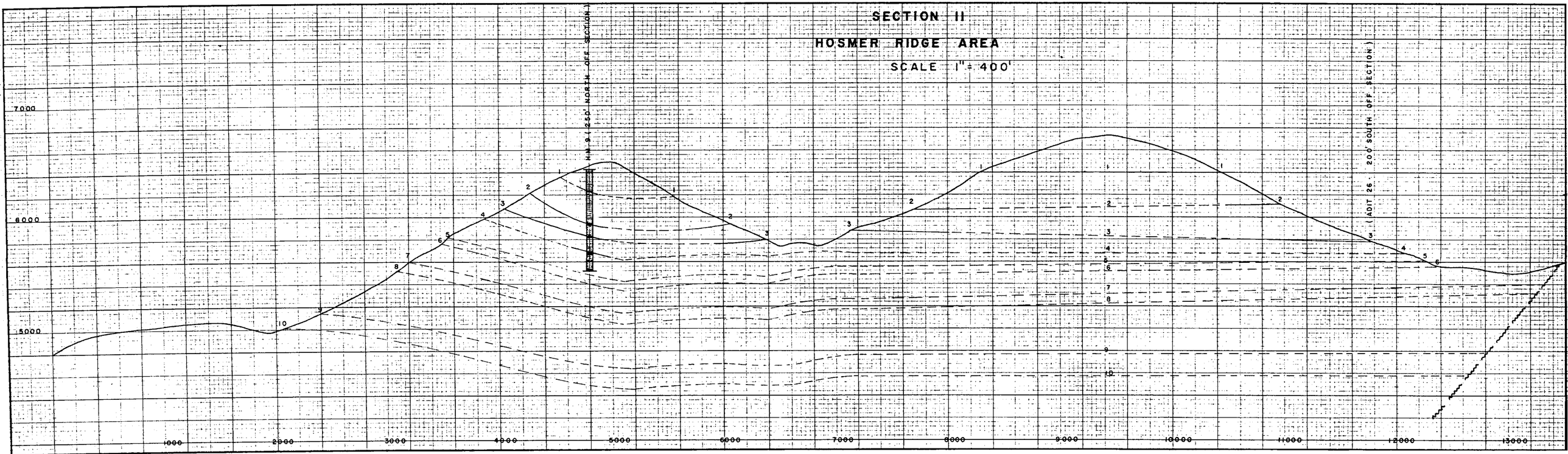
Reserves in the southwest portion of the Dominion Block including 4, 5, 7, 8, 9 and 10 seams have strip potential and could be mined by conventional shovel and truck mining methods. Maximum dip within the Parcel 73 block is 18 degrees.

On Hosmer and Wheeler Ridge the dips vary between 5 and 15 degrees so that either the conventional mining longwall method or the room and pillar method using continuous mining machines could be employed.

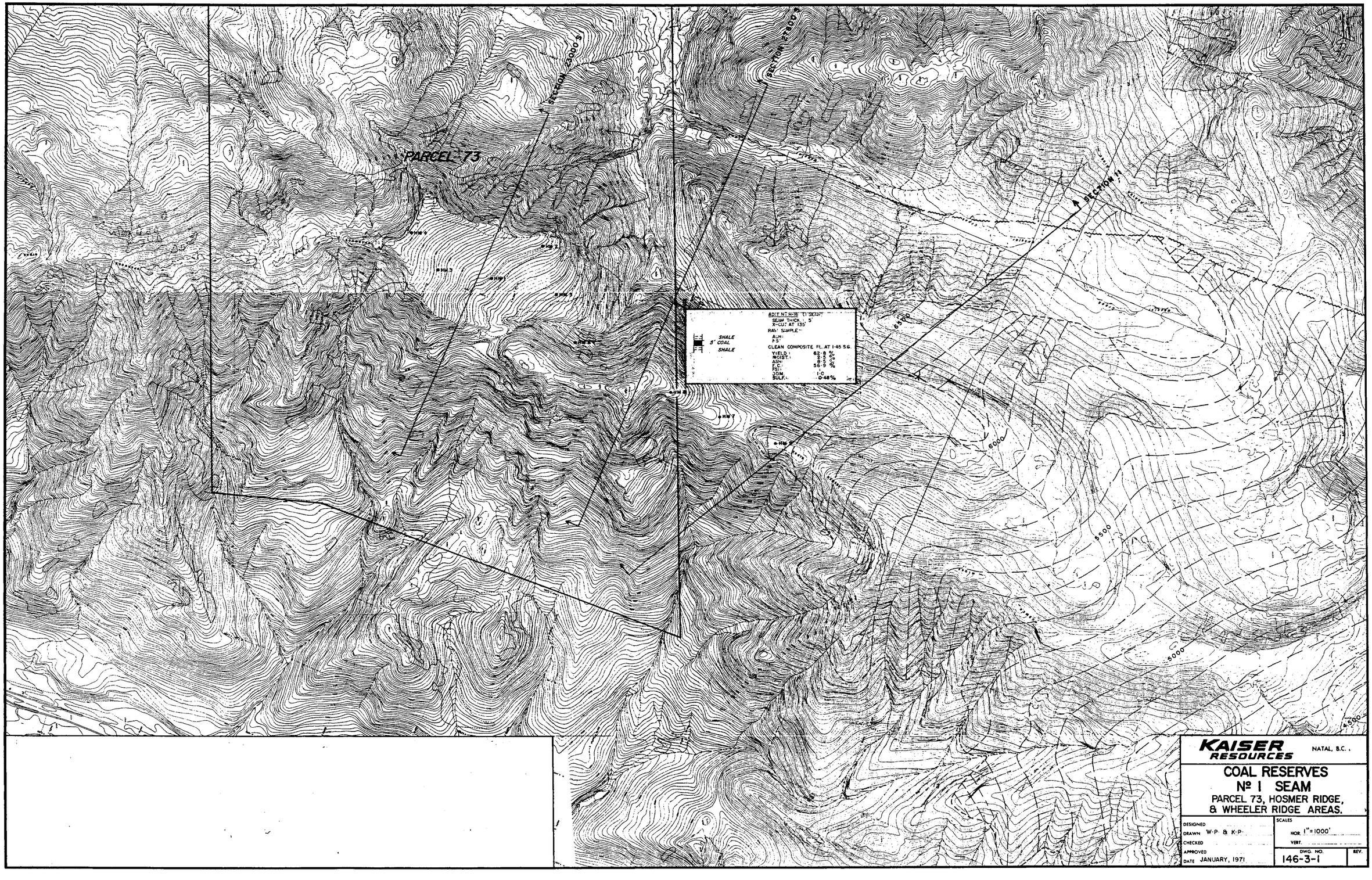
The hydraulic mining method for seams pitching more than 10 degrees is presently being employed in the Michel mining area on a demonstration basis in the #10 seam, and to date appears to have excellent potential for dips between 10 degrees and 40 degrees.

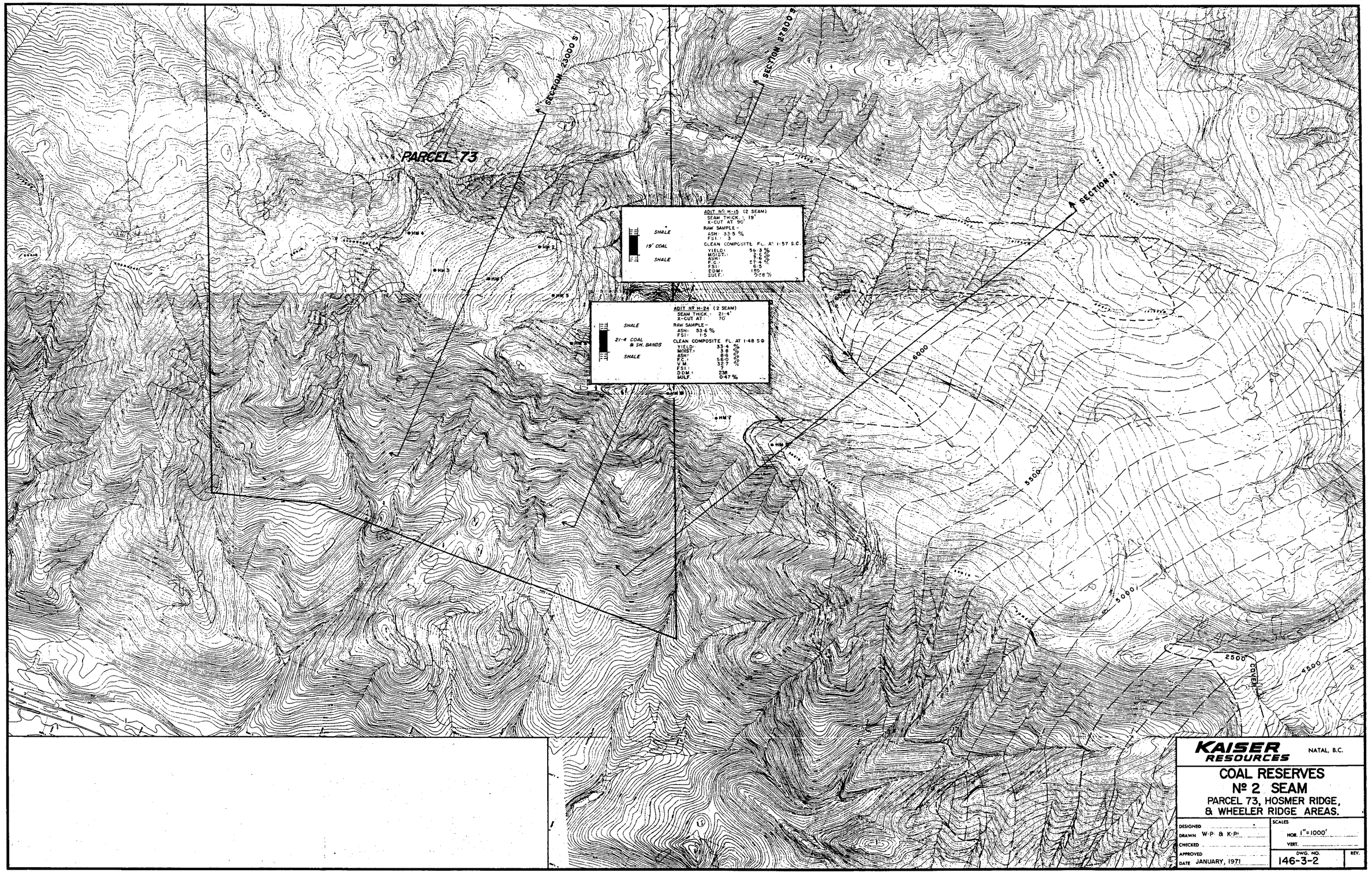

SECTION X-Y
6800
6600
6400
6200
U 9 SEAM
L 9 SEAM
10 SEAM
7000 E
8000 E
9000 E
10000 E
SECTION S 23000
HOSMER RIDGE AREA
SCALE 1" = 100'
188-5-3


SECTION X-Y
4 SEAM
5 SEAM
7 SEAM
8 SEAM
U 9 SEAM
L 9 SEAM
10 SEAM
6600
6200
5800
5400
4000 E
5000 E
6000 E
7000 E
8000 E
9000 E
10000 E
SECTION S 27600
HOSMER RIDGE AREA
SCALE 1"=200'
88-5-2


SECTION II
HOSMER RIDGE AREA
SCALE 1" = 400'
HM 9 + 250' NORTH OFF SECTION 1
(ADIT 26 - 200' SOUTH OFF SECTION)
7000
6000
5000
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
13000


KAISER RESOURCES
PARCEL 73, HOSMER RIDGE,
AND WHEELER RIDGE
SCALE 1" = 1000'
PARCEL 73
SECTION
10 SEAM
9 SEAM
8 SEAM
7 SEAM
3 SEAM
2 SEAM
GENERAL SECTION

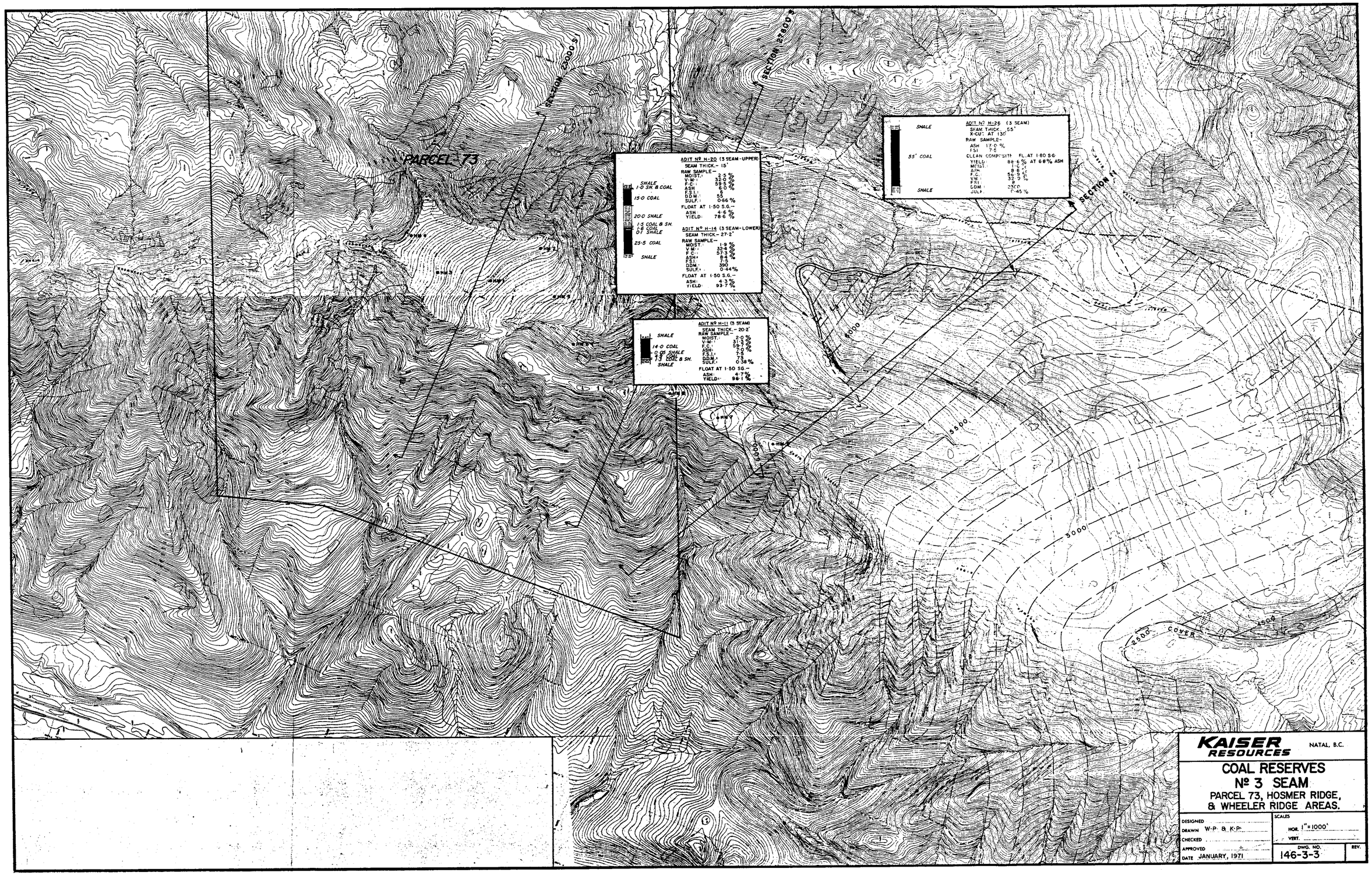

PARCEL 73
SECTION 2000 S
SECTION 2700 S
SECTION 11
ADIT NO. HOLE 11 SEAM
SEAM THICK.: 5'
X-CUT AT 135'
RAW SAMPLE
ASH: 5.5
CLEAN COMPOSITE FL. AT 1·45 S.G.
YIELD: 62·8 %
MOIST.: 2·3 %
ASH: 5·3 %
F.C.: 56·9 %
V.M.: 10
SULF.: 0·48%
SHALE
5' COAL
SHALE
6500
6000
5500
5000
4500
KAISER RESOURCES
NATAL, B.C.
COAL RESERVES
№ 1 SEAM
PARCEL 73, HOSMER RIDGE,
& WHEELER RIDGE AREAS.
DESIGNED
DRAWN W·P· & K·P·
CHECKED
APPROVED
DATE JANUARY, 1971
SCALES
HOR. 1" = 1000'
VERT.
DWG. NO.
146-3-1
REV.

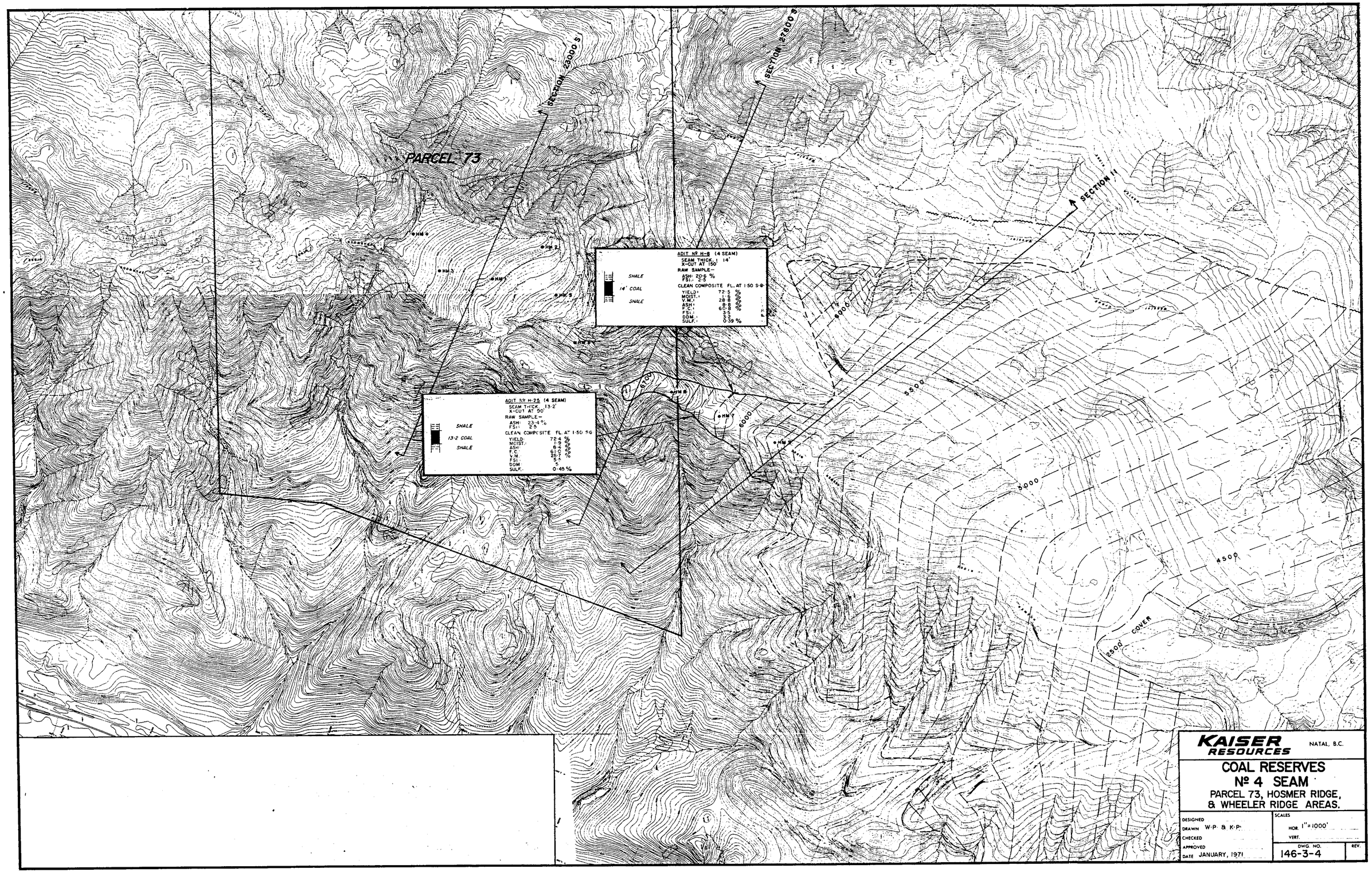


KAISER RESOURCES NATAL, B.C.

COAL RESERVES
Nº 2 SEAM
PARCEL 73, HOSMER RIDGE, & WHEELER RIDGE AREAS.

DESIGNED		SCALES	
DRAWN	W.P. & K.P.	HOR.	1" = 1000'
CHECKED		VERT.	
APPROVED		DWG. NO.	REV.
DATE	JANUARY, 1971	146-3-2	

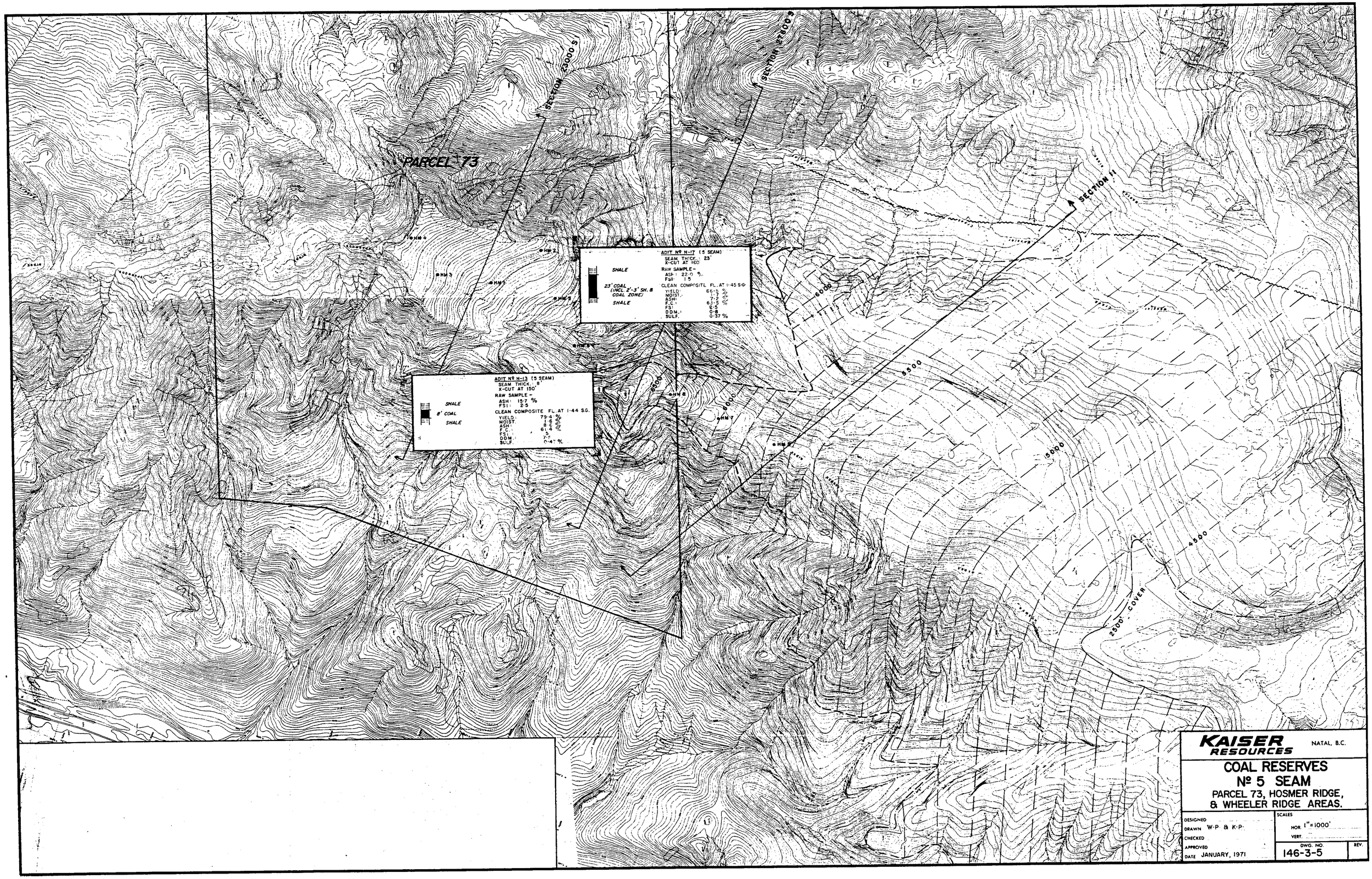

PARCEL 73
SECTION 25000 S
SECTION 27400 S
SECTION X
ADIT Nº H-20 (3 SEAM-UPPER)
SEAM THICK.- 15'
RAW SAMPLE-
MOIST. 2·5 %
V.M. 33·0 %
F.C. 58·5 %
ASH 6·0 %
F.S.I. 5
D.D.M. 55
SULF. 0·66 %
FLOAT AT 1·50 S.G.-
ASH 4·6 %
YIELD 78·6 %
SHALE
1·0 SH. & COAL
15·0 COAL
20·0 SHALE
1·5 COAL & SH.
4·6 COAL
0·1 SHALE
25·5 COAL
SHALE
ADIT Nº H-14 (3 SEAM-LOWER)
SEAM THICK- 27·2'
RAW SAMPLE-
MOIST. 1·9 %
V.M. 32·4 %
F.C. 57·3 %
ASH 8·4 %
F.S.I. 7·5
D.D.M. 390
SULF. 0·44 %
FLOAT AT 1·50 S.G.-
ASH 4·3 %
YIELD 93·7 %
ADIT Nº H-11 (3 SEAM)
SEAM THICK.- 20·2'
RAW SAMPLE-
MOIST. 2·0 %
V.M. 31·3 %
F.C. 59·1 %
ASH 7·6 %
F.S.I. 7·5
D.D.M. 73
SULF. 0·38 %
FLOAT AT 1·50 S.G.-
ASH 4·7 %
YIELD 96·1 %
SHALE
14·0 COAL
0·05 SHALE
1·4 COAL
7·3 COAL & SH.
SHALE
ADIT Nº H-26 (3 SEAM)
SEAM THICK. 55'
X-CUT AT 130'
RAW SAMPLE-
ASH 17·0 %
FSI 7·5
CLEAN COMPOSITE FL. AT 1·80 S.G.
YIELD 88·6 % AT 6·8 % ASH
MOIST. 1·6 %
ASH 6·8 %
F.C. 55·5 %
V.M. 32·0 %
FSI 8
DDM 3300
SULF. 0·45 %
SHALE
55' COAL
SHALE
5000
5500
3500
COVER
KAISER RESOURCES
NATAL, B.C.
COAL RESERVES
Nº 3 SEAM
PARCEL 73, HOSMER RIDGE,
& WHEELER RIDGE AREAS.
DESIGNED
DRAWN W.P. & K.P.
CHECKED
APPROVED
DATE JANUARY, 1971
SCALES
HOR. 1" = 1000'
VERT.
DWG. NO.
146-3-3
REV.



KAISER RESOURCES NATAL, B.C.

COAL RESERVES
Nº 4 SEAM
PARCEL 73, HOSMER RIDGE, & WHEELER RIDGE AREAS.

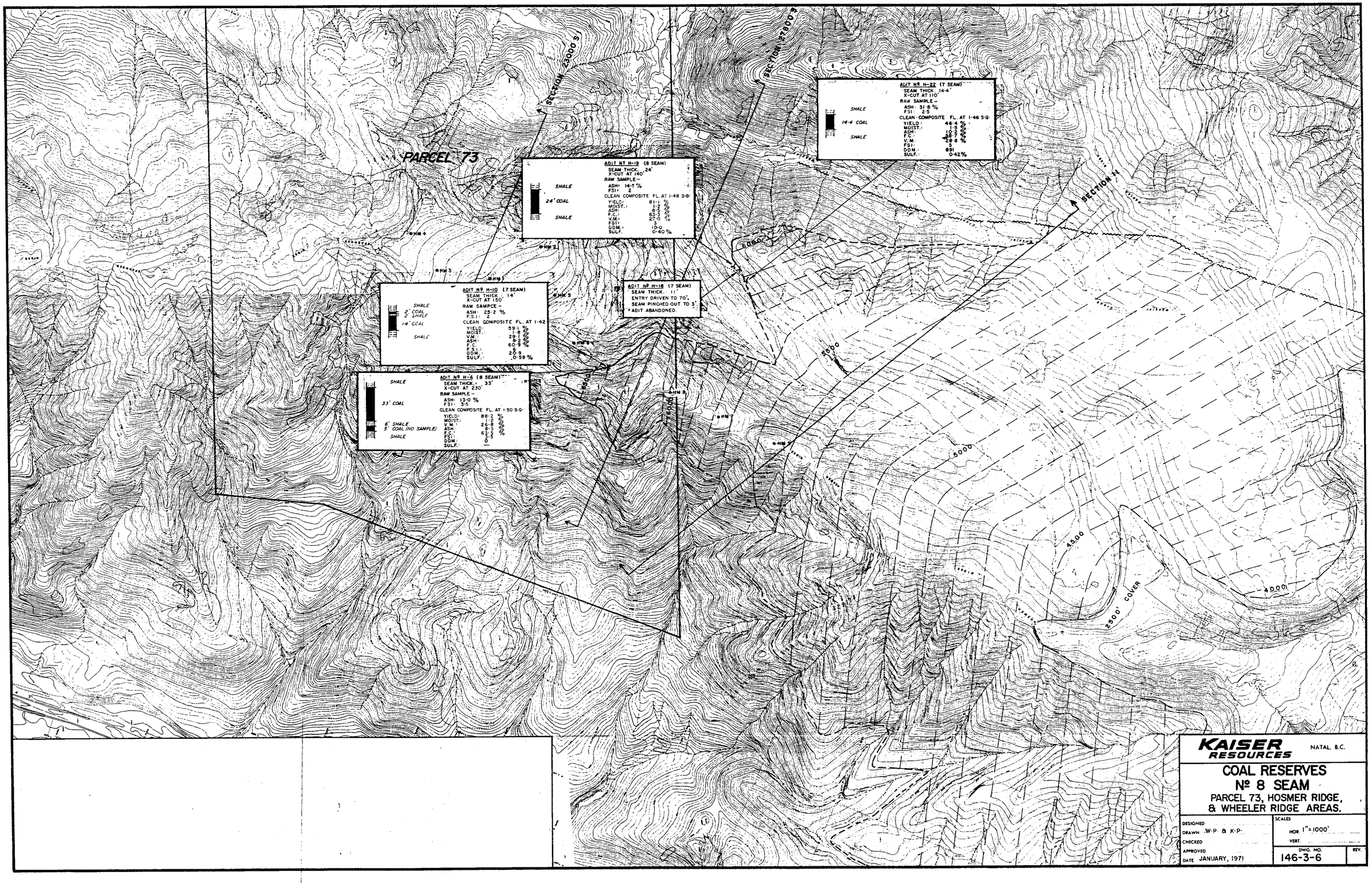
DESIGNED		SCALES	
DRAWN	W.P. & K.P.	HOR. 1" = 1000'	
CHECKED		VERT.	
APPROVED		DWG. NO.	REV.
DATE	JANUARY, 1971.	146-3-4	



KAISER RESOURCES NATAL, B.C.

COAL RESERVES
Nº 5 SEAM
PARCEL 73, HOSMER RIDGE, & WHEELER RIDGE AREAS.

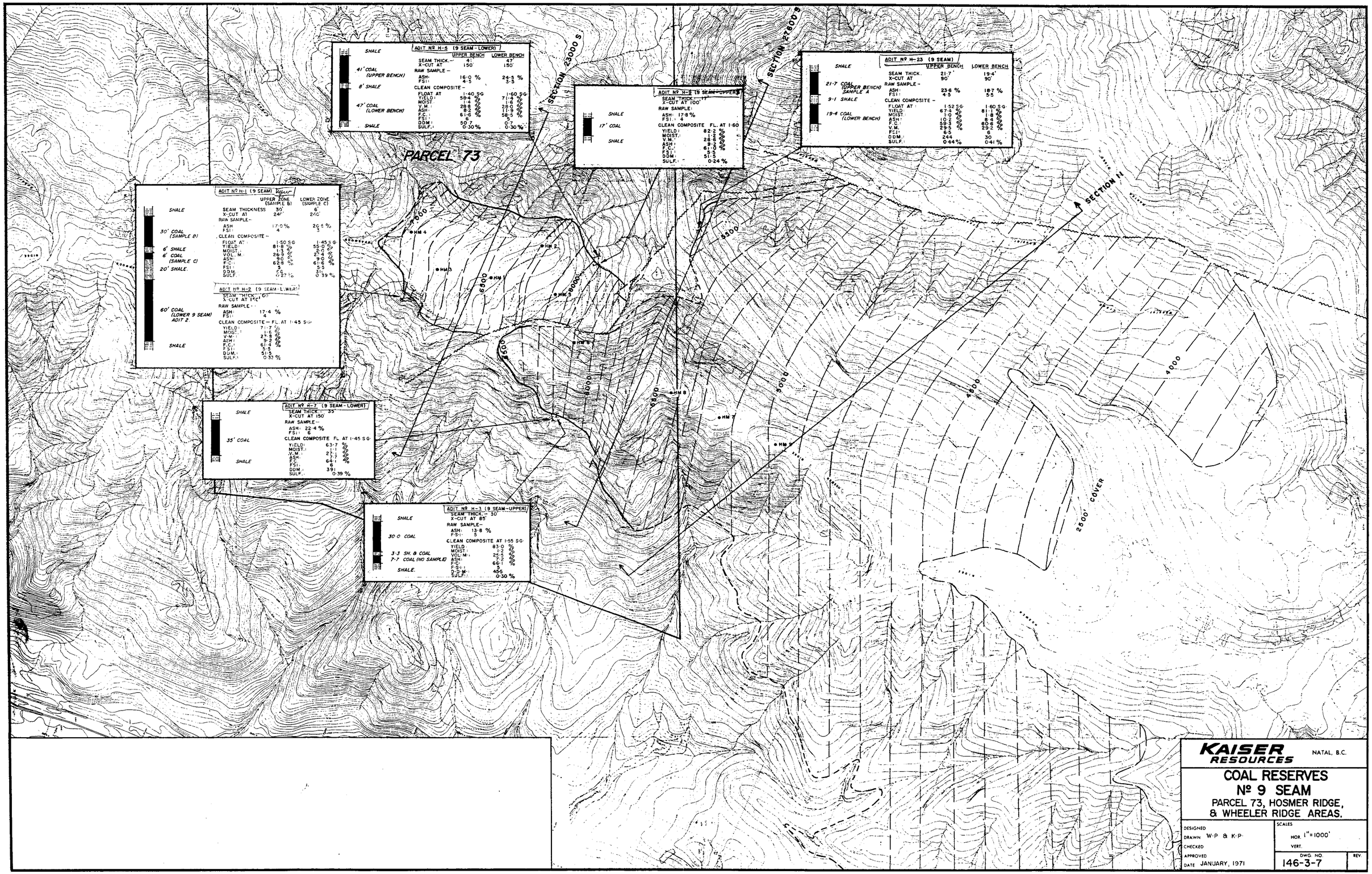
DESIGNED		SCALES	
DRAWN	W.P. & K.P.	HOR.	1" = 1000'
CHECKED		VERT.	
APPROVED		DWG. NO.	REV.
DATE	JANUARY, 1971	146-3-5	



KAISER RESOURCES NATAL, B.C.

COAL RESERVES
Nº 8 SEAM
PARCEL 73, HOSMER RIDGE, & WHEELER RIDGE AREAS.

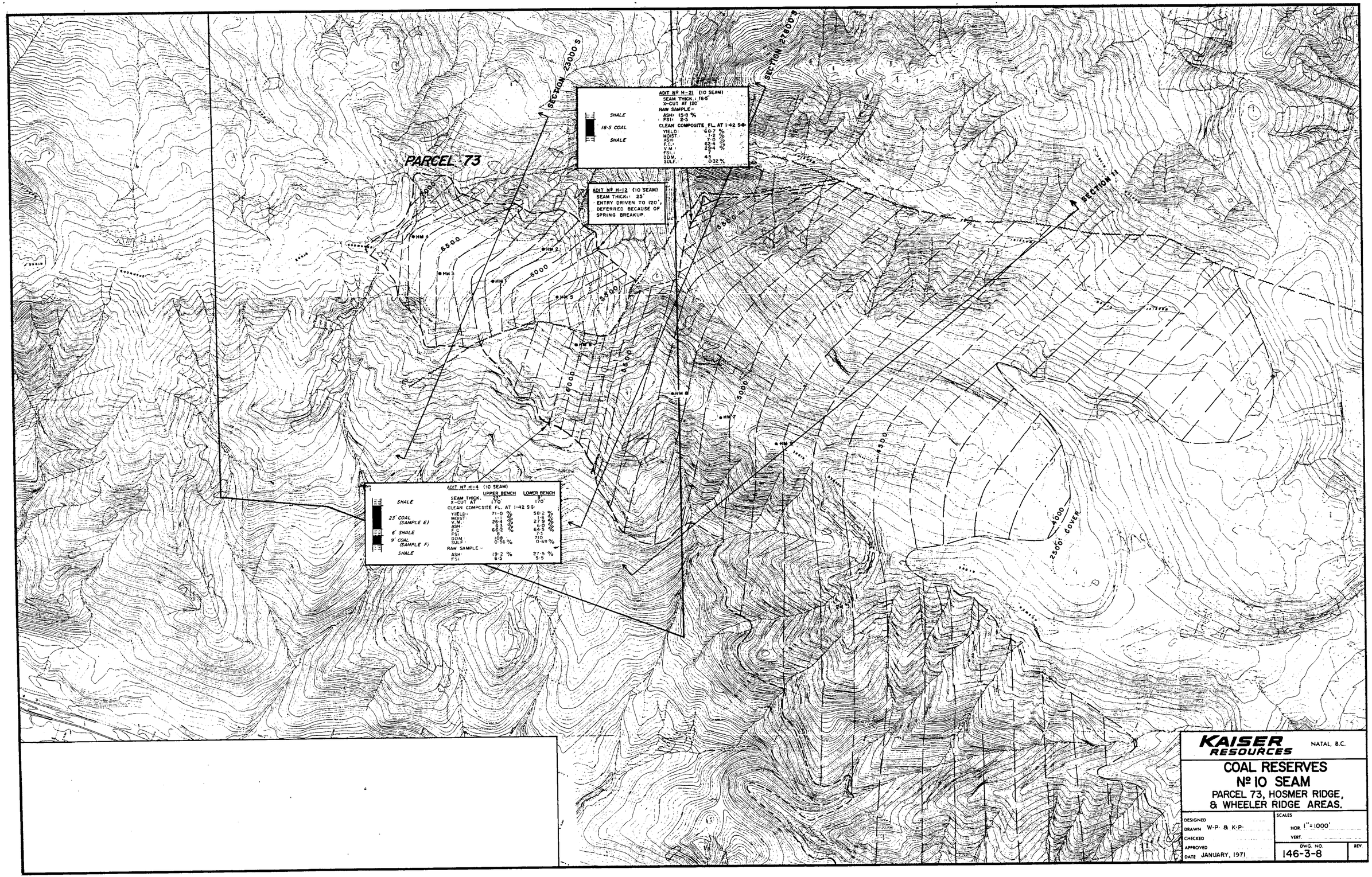
DESIGNED		SCALES	
DRAWN	W·P & K·P·	HOR.	1" = 1000'
CHECKED		VERT.	
APPROVED		DWG. NO.	REV.
DATE	JANUARY, 1971	146-3-6	



KAISER RESOURCES NATAL, B.C.

COAL RESERVES
Nº 9 SEAM
PARCEL 73, HOSMER RIDGE, & WHEELER RIDGE AREAS.

DESIGNED	
DRAWN	W·P & K·P·
CHECKED	
APPROVED	
DATE	JANUARY, 1971
SCALES	HOR. 1" = 1000' VERT.
DWG. NO.	146-3-7
REV.	



KAISER RESOURCES NATAL, B.C.

COAL RESERVES
Nº 10 SEAM
PARCEL 73, HOSMER RIDGE, & WHEELER RIDGE AREAS.

DESIGNED		SCALES	
DRAWN	W.P. & K.P.	HOR.	1" = 1000'
CHECKED		VERT.	
APPROVED		DWG. NO.	REV
DATE	JANUARY, 1971	146-3-8	