

3.0 MINING PLAN SUMMARY

3.1 Geological Considerations

Geological information is quoted from the following report:

DIAMOND DRILLING AND TRENCHING REPORT  
ON COAL LICENCES 3986 to 3993 INCLUSIVE AND 6792

PINE RIVER AREA  
LIARD MINING DIVISION  
NTS 93 0/9

Latitude: 55° 36' North  
Longitude: 122° 14' West

Owner of Licences:	J.W. MacLeod, P. Eng.
Operator:	Sempee Resources Inc.
Consultant:	G.A. Noel and Associates, Inc.
Authors:	A.S. Marton, B.Sc. Project Geologist  Harold M. Jones, P.Eng.
Date:	May 31, 1981

**G.A. NOEL AND ASSOCIATES**  
Consulting Geologists  
Vancouver, B.C.

Property

The property consists of nine coal licences (Figure 3-1). They are:

<u>Coal Licence</u>	<u>H e c t a r e s</u>	
3986	293.0	
3987	292.0	
3988	292.6	
3989	292.2	
3990	292.6	
3991	<b>292.6</b>	
<b>3992</b>	<b>292.6</b>	
<b>3993</b>	292.6	
6792	292.0	
4 Applied For	292.6	Each
Total Area	3803.6	Hectares

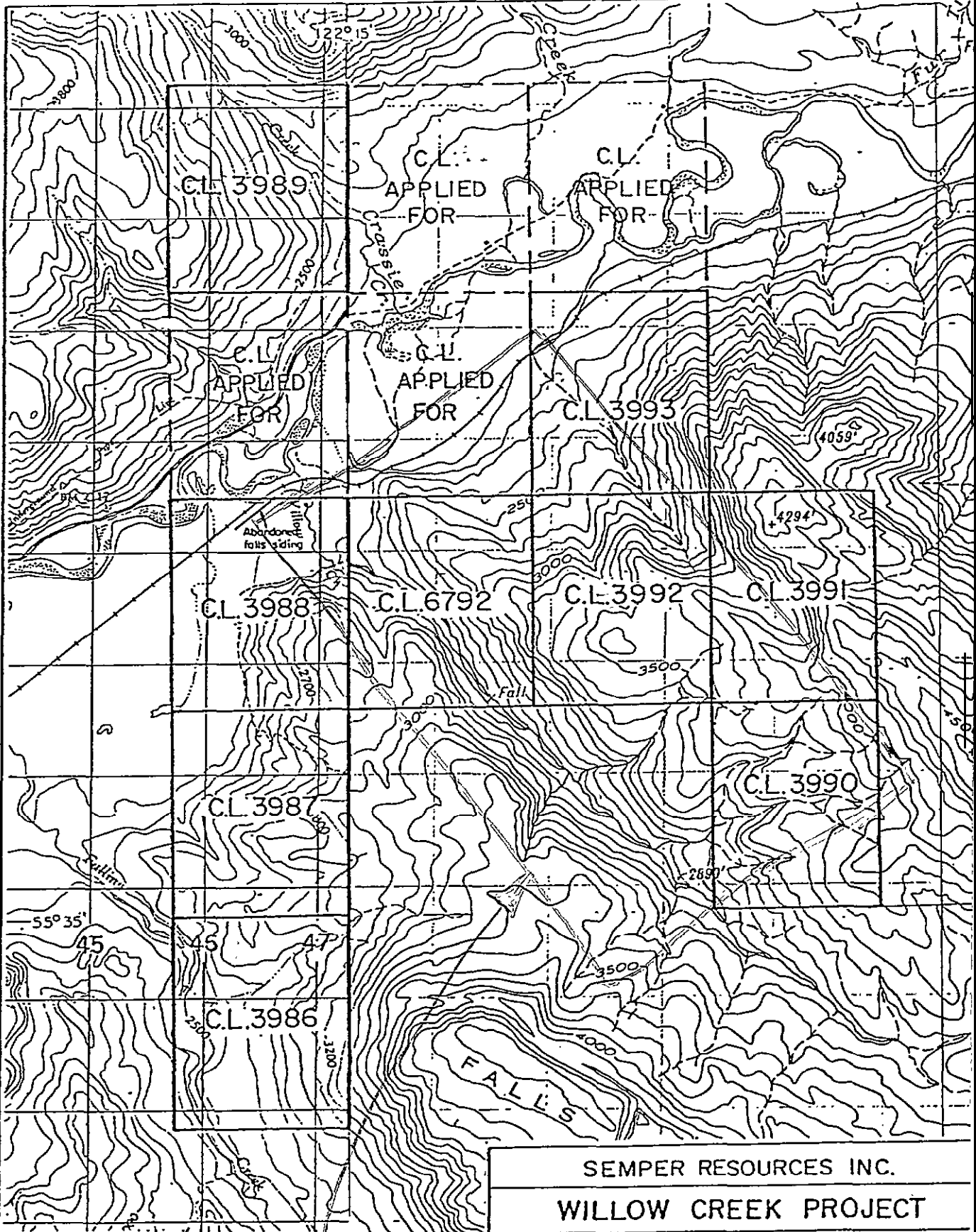
Coal Licences 3986 - 3993 are owned by:


J.W. McLeod, P.Eng.  
1220 Arbutus Street  
Vancouver, B.C.

They are presently held under option by:

Semper Resources Inc.  
1012 - 475 Howe Street  
Vancouver, B.C.

Semper Resources Inc. is the owner of Licence 6792.




  
 APPROXIMATE  
 BOUNDARY OF  
 1:5000 MAPS.  
 2 KM

SEMPER RESOURCES INC.			
WILLOW CREEK PROJECT			
COAL LICENCES 3986-3993 & 6792			
COAL LICENCE MAP			
FIG. 3-1			
SCALE 1:50,000	NTS 93-0-9	DWG. NO.	
DATE/REVISIONS APRIL 1981	DWG. BY	WORK BY G.A. NOEL & AS	

The following is a brief description of the rock types found on Coal Leases No. 3986 through 3993 quoted from the 15 August 1980 report by G. A. Noel and Associates.

- a) **Mudstone** (claystone), siltstone, and sandstone: these are all fine grained rocks, brown to grey brown, usually soft, calcareous, and finely bedded to massive. The two extreme ends of this rock group are distinctive. The mudstone is consistently soft, dark brown to yellow-brown, calcareous and massive to concretionary. The sandstone is brown to grey-brown on the weathered surface, grey on fresh surfaces, fine grained, finely bedded, calcareous, and hard. Weathered sandstone is soft, yellow-brown, and approaches mudstone in appearance. In many cases faint fine bedding is preserved. Coaly plant remains and fine coal seams occur on some bedding planes. Locally, ripple marks are preserved.

The writer reserved siltstone for very fine grained, grey, usually massive beds, often shaly. These rocks are very fine grained but coarser than mudstone. They are non-concretionary and usually non-calcareous.

All rocks in this group are strongly weathered. Hard, resistant sandstone beds are few. As a result, in taking field notes, terms such as silty mudstone, silty siltstone, sandy siltstone, etc. were used based on the fine gritty nature of the weathered rocks. In plotting the geology, these various rocks were assigned to definite rock types.

- b) **Carbonaceous shale**: very dark grey to black, strong shaly texture, with or without fine to coarse coal seams. When appreciable coal seams are present, the rocks were mapped as coaly shale.

- c) **Coal:** always soft,- crumbly, weathered, but usually with bright vitrain bands. It may contain bands of carbonaceous and/or coaly shales.

### Exploration

Fieldwork on the Willow Creek coal licences was conducted in two stages. The first stage consisted of backhoe trenching, geological mapping, of the trenches and sampling of the coal seams exposed in the trenches. This work included digging four trenches on licence 3987 totalling 2,480 ft (763 m) and one trench on licence 3992 totalling 965 ft (297 m). This work was reported by Jones (1980).

The work referred to above was successful in exposing three significant coal seams on licence 3992. As a result of this encouragement, Semper Resources Inc. resumed backhoe trenching in October 1980, then followed up with a diamond drill program. The object of the additional exploration was to further expose, along strike, the significant coal seams on licence 3992, explore for additional seams, and to test the seams at depth by drilling.

From October 1980 to March 1981, G.A. Noel & Associates, on behalf of Semper Resources Inc., conducted an exploration program on their Willow Creek coal licences. Work consisted of backhoe trenching followed by diamond drilling. This exploration was concentrated on licence 3992 upon which significant coal seams were exposed during a preliminary program in July-August 1980.

Seven trenches totalling 9,964 ft (1,835 m) were excavated. These exposed eight coal zones and traced two of them along a strike length of 1,625 ft (500 m)

Twelve HQ holes totalling 9,776 ft (3,008 m) were diamond drilled to test the coal zones both along strike and at depth. Eight zones greater than 4.9 ft (1.5 m) were intersected within the upper part of the Gething Formation. From the limited data to date, the coal zones are inferred to lie within the east limb of the Willow Creek anticline upon which is superimposed a small gently dipping synclinal fold.

More detailed drilling is required before a coal reserve may be calculated. However, assuming continuity over 6,175 ft (1,900 m) strike length of the eight significant seams, 18.4 million tonnes of coal resources are indicated within the drilling area. A further 33 million tonnes of resources are inferred down dip to the 2,275 ft (700 m) elevation and along strike to the north. Assay data indicates that of this total, approximately four million tonnes may be of metallurgical grade while the remainder is thermal coal.

It was concluded that additional diamond drilling is required to fully assess the potential of the coal licences.

A proposed mining method was drawn up, based on the coal resources indicated above. The plans refer to coal seam number seven; this would be the initial mining zone, other zones will be mined later, if required.

3.2 In Situ Coal Quality

The coal quality of the eight different seams are outlined in Table 3.2.1 The surface plan showing coal zones is illustrated in Figure 3-Z-1.

3.3 Mining Strategy and Production Schedule

From the exploration results of diamond drilling and trenching it was possible to estimate coal resources. The reserves listed in Section 1.3.1 and Table 3.3.1 are:

<u>Total</u>	<u>(Resources)</u>	
, 18.4 million tonnes	- Resources indicated	
33.b	- " inferred	
<u>24.0</u>	" possible	
<u>75.4</u>	" Total	

*thermal coal*

The mining strategy is to proceed along the coal seam No.7 using the room and pillar mining technique. The mining strategy is outlined in Figures 3-3-2, 3-3-3 and 3-3-4 for one, five, and ten years of mining respectively. See also Figure 3-4-1.

This will produce an estimated 600,000 tonnes of coal annually at a daily rate of 2,400 tonnes of clean coal.

Table 3.2.1

Location D.D.H.	Sample No.	Interval (m)	Width (m)	Ash %	Volatile Matter Values	Fixed Carbon Dry Assay	Sulphur	F.S.I.	B.T.U. (Moist)	B.T.U. (Dry)	Type	Analysis Report No
<b>SEAM ONE</b>												
81-5	97871	7.5 - 8.5	1.0	20.09	22.95	56.96	0.56	1½	11,240	11,830	Thermal	64-20010
81-4	97051	30.1 - 31.1	1.7	3.50	21.3	75.2	0.56	2	14,440	14,894	Thermal	64-19955
	97052	31.1 - 32.7	1.6	3.18	24.39	72.43	0.53	6	14,429	14,921	Coking	64-19956
80-3	438	71.6 - 72.2	1.6	19.29	27.21	53.5	0.42	1½	11,105	11,625	Thermal	64-19912
	439	72.2 - 73.05	1.65	2.5	21.1	76.36	0.31	1	14,413	15,083	Thermal	64-19913
81-11	97644	13.1 - 14.3	1.2	7.11	21.42	71.47	0.44	1	13,466	14,102	Thermal	64-20128
	97645	14.3 - 16.2	1.9	12.38	21.54	66.08	0.43	2	12,838	13,660	Thermal	64-20129
81-6	97887	55.47 - 57.0	1.53	2.08	21.83	76.09	0.44	1½	14,516	15,089	Thermal	64-20045
	97858	57.0 - 58.35	1.35	25.41	21.18	53.41	0.51	8	10,832	11,125	Coking	64-20046
81-9	97619	38.1 - 41.3	3.2	6.55	22.36	71.09	0.44	3	13,791	14,357	Thermal	64-20097
81-10	97627	54.8 - 57.0	2.2	7.26	22.3	70.44	0.47	2½	13,544	14,281	Thermal	64-20111
	97628	57.0 - 58.25	1.25	6.39	26.21	67.4	0.50	9	13,758	14,636	Coking	64-20112
<b>SEAM TWO</b>												
81-5	97872	21.9 - 22.9	1.0	16.57	20.92	62.51	0.56	4½	12,168	12,498	Thermal	64-20011
81-4 (2A) (2B)	97853	49.05 - 50.1	1.05	19.2	21.91	53.89	0.63	7½	12,015	12,420	Coking	64-19957
	97854	51.0 - 51.55	0.55	6.83	20.61	72.56	0.62	1½	14,060	14,413	Thermal	64-19958
	97855	51.75 - 52.07	0.32	7.66	24.57	67.77	0.76	7½	14,214	14,506	Coking	64-19959
81-11	97646	31.4 - 35.5	1.4	17.55	20.02	62.43	0.72	2½	12,292	12,847	Thermal	64-20130
	97647	35.7 - 36.9	1.2	15.12	21.2	63.65	0.5	3½	13,285	13,853	Thermal	64-20131
81-6	97889	73.4 - 75.0	1.6	47.64	IL.65	31.71	L.53	1	6,660	6,966	Waste	64-20047
81-9	97620	48.9 - 50.9	1.0	27.79	20.51	51.7	0.41	2½	10,669	10,886	Thermal	64-20098
81-10	97629	65.8 - 66.7	0.9	Lb.52	16.48	35.0	0.37	6	7,074	7,359	Waste	64-20113
<b>SEAM THREE</b>												
80-3	440	98.4 - 100.25	1.85	5.17	19.7	75.09	0.44	1½	13,941	14,454	Thermal	64-19914
1-11	97648	40.65 - 41.15	0.5	3L.7	17.72	47.58	0.51	3½	8,685	9,737	Thermal	64-20132
	97649	41.75 - 42.9	2.15	13.29	25.56	61.15	0.17	2	12,522	13,356	Thermal	64-20133
81-6	97890	87.4 - 90.9	1.5	6.48	20.5	72.95	0.35	1	13,795	14,291	Thermal	64-20048
	97891	90.9 - 92.0	1.1	7.85	23.92	68.23	0.39	1	13,350	13,887	Thermal	64-20049
81-9	97621	57.8 - 59.85	1.1	11.98	24.26	63.76	0.47	1½	12,763	13,114	Thermal	64-20099
81-10	97630	73.8 - 75.3	1.5	18.01	19.39	62.6	0.4	1	11,309	12,451	Thermal	64-20114
	97631	75.3 - 76.8	1.5	9.61	24.22	66.17	0.41	1½	12,798	13,666	Thermal	64-20115
	97632	76.8 - 78.3	1.5	9.79	17.45	72.76	0.41	1½	12,310	13,859	Thermal	64-20116
<b>SEAM FOUR</b>												
81-5(A) (B)	97874	71.6 - 73.8	2.2	2.1	19.54	78.36	0.46	1½	14,560	15,116	Thermal	64-20013
	97875	73.8 - 75.0	1.2	3.33	23.61	73.06	0.41	6	14,493	14,989	Coking	64-20014
	97876	77.3 - 80.3	3.0	4.15	22.7	73.15	0.43	6½	14,037	14,756	Coking	64-20015
81-4	97857	94.75 - 96.6	1.85	4.7	19.54	75.76	0.4	1½	13,807	14,745	Thermal	64-19961
	97858	96.6 - 98.6	2.0	13.87	20.73	65.4	0.48	5	12,545	13,261	Thermal	64-19962
80-3	441	122.3 - 126.3	4.0	13.27	20.16	66.57	0.46	1	12,383	13,207	Thermal	64-19915
81-11	97650	69.2 - 70.7	1.5	5.18	22.23	76.59	0.48	1	13,990	15,027	Thermal	64-20134
	97651	70.7 - 73.2	2.5	4.6	20.56	74.84	0.55	3	11,075	14,807	Thermal	64-20135
81-12	97653	21.6 - 23.5	1.9	14.38	19.93	65.69	0.59	1	12,357	12,754	Thermal	64-20137
81-6	97893	128.4 - 130.8	2.4	4.47	20.35	75.18	0.54	1	14,214	14,837	Thermal	64-20051
	97894	130.8 - 132.1	1.3	2.2	20.8	77.0	0.58	2	14,674	15,101	Thermal	64-20052
81-10	97633	90.5 - 100.0	1.5	9.11	21.88	69.01	0.59	7½	12,892	13,545	Coking	64-20117

Table 3.2.1

## SUMMARY OF COAL QUALITY

Location D.D.H.	Sample No.	Interval (m)	Width (m)	Ash	Volatile Matter % Values	Fixed Carbon - Dry Assay	Sulphur	F.S.I.	LT. % (Moist)	LT. % (Dry)	Type	Analysis Report
<b>SEAM FIVE</b>												
81-5(A)	97878	168.9 - 170.6	1.7	17.23	15.72	67.05	0.67	1	12,450	12.79*	Thermal	64-20017
(B)	97879	171.4 - 172.2	0.8	5.29	17.19	77.52	J. 91	1	14,271	14,666	Thermal	64-20018
81-4(A)	97862	192.2 - 193.1	1.2	3.53	17.95	78.52	J. 73	1	14,666	15,027	Thermal	64-19966
(B)	97863	193.9 - 194.4	0.5	12.89	17.05	70.06	0.75	1	13.13*	13,482	Thermal	64-19967
81-7(A)	97601	12.4 - 12.95	0.55	5.56	16.9*	77.5	J. 81	1	14,010	14,490	Thermal	64-20064
(B)	97602	13.6 - 14.4	0.8	7.05	16.08	76.87	0.77	1	13.91*	14,406	Thermal	64-20065
L-3	443	213.0 - 219.0	1.0	11.46	17.28	71.26	0.64	1	12.973	13.603	Thermal	64-19917
	444	219.7 - 203.9	0.9	10.48	18.01	71.51	0.7	1	13.953	14,390	Thermal	64-19918
80-2	416	12.2 - 13.0	0.3	50.98	10.72	28.3	0.26		4,540	4,809	Thermal	64-19894
	417	13.0 - 13.55	0.55	2.42	16.35	81.23	0.62	1	14,285	15,056	Thermal	64-19891
	418	13.55 - 13.8	0.25	13.38	15.72	70.9	0.56	1	13,215	13,789	Thermal	64-19897
	419	13.8 - 14.1	0.3	5.65	18.64	75.71	0.68	3	14,260	14,653	Thermal	64-19892
	420	14.1 - 14.3	0.2	67.79	8.34	27.89	0.3*		4,253	4,417	Waste	64-19893
	421	14.3 - 14.52	0.9	4.66	16.25	79.09	0.62	1	13,902	14,843	Thermal	64-19395
81-6	97895	237.7 - 238.4	0.7	18.72	25.97	55.31	0.5	0	7,058	7,285	Waste	64-2005
	97896	238.1 - 240.1	1.7	4.14	17.53	78.33	0.65	1	14,325	11,817	Thermal	64-2005
81-9	97622	209.5 - 210.2	0.7	13.05	16.78	70.17	0.76	1	12,729	13,351	Thermal	64-2010
81-10	97637	210.0 - 211.2	1.2	3.04	17.31	79.65	0.64	1	14,395	15,048	Thermal	64-2012
	97638	211.2 - 213.1	1.9	25.87	15.15	58.98	0.47	1	10,754	11,103	Thermal	64-2012
	97639	213.1 - 214.3	1.2	8.10	17.75	74.15	0.61	1	14,860	15,77*	Thermal	64-2012
<b>SEAM SIX</b>												
81-5	97880	193.2 - 194.1	0.9	3.52	15.48	81.0	0.63	1	14,334	14,786	Thermal	64-20011
	97881	194.1 - 196.65	2.55	37.85	15.03	47.12	0.59	1	10.8*9	11,089	Thermal	64-20021
81-8	97611	28.6 - 29.6	1.0	2.58	15.24	32.13	0.57	0	14,314	15,060	Thermal	64-20081
	97612	29.6 - 31.1	1.5	8.12	15.34	16.56	0.5	0	13,039	13,775	Thermal	64-20091
	97613	31.1 - 31.7	0.6	4.68	18.04	77.26	0.6	0	13,833	14,491	Thermal	64-20091
81-L	97864	217.85 - 218.5	0.65	2.3	16.47	81.2	0.71	0	14,680	15,104	Thermal	64-19961
	97865	218.5 - 220.3	1.8	3.49	18.27	13.2	0.64	1	14,368	14,752	Thermal	64-19961
81-7	97603	38.1 - 39.9	1.8	3.75	15.85	80.4	0.55	1	14,339	14,957	Thermal	64-20064
	97604	39.9 - 41.1	1.2	4.03	16.07	79.9	0.67	1	14,386	14,975	Thermal	64-20067
80-3	446	268.8 - 269.1	0.3	12.41	15.03	72.56	0.61	0	12,879	13,360	Thermal	64-19924
	447	269.1 - 270.4	1.3	1.91	15.68	82.41	0.58	0	14,547	15,166	Thermal	64-19921
	448	270.4 - 270.7	0.3	2.63	16.43	80.94	0.57	0	14,424	15,036	Thermal	64-19922
	449	270.7 - 272.3	1.6	2.15	16.61	81.24	0.66	1	14,368	15,191	Thermal	64-19923
80-2	424	61.0 - 62.3	1.3	2.44	16.41	81.15	0.54	1	14,411	15,008	Thermal	64-19895
	425	62.3 - 63.9	1.6	1.7	16.67	81.63	0.57	1	14,573	15,239	Thermal	64-19895
	426	63.9 - 64.2	0.3	15.23	16.47	68.3	0.56	2	13,042	13,311	Thermal	64-19900
80-1	404	25.0 - 27.4	2.4	4.1	15.61	80.29	0.5*	1	14,601	14,863	Thermal	64-19878
81-6	97898	255.7 - 256.6	0.9	3.08	16.43	80.49	0.6	0	14,538	15,050	Thermal	64-20056
	97899	256.6 - 258.2	1.6	2.1	17.29	80.5*	0.67	1	11,790	15,2*7	Thermal	64-20057
81-V	97623	220.7 - 222.5	1.8	16.92	24.21	58.87	0.53	1	11,435	12,555	Thermal	64-20101
1-10		229.05 - 231.25	2.2		20.54	72.43	0.63	1	13,664	14,224	Thermal	64-20124

Table 3.2.1 (cont'd)



Table 3.2.1

## SUMMARY OF COAL QUALITY

Location D.D.H.	Sample No.	Interval (m)	Width (m)	Ash	Volatile Matter % Values	Fixed Carbon - Dry Assay	Sulphur	F.S.I.	B.T.U. (Moist)	B.T.U. (Dry)	Type	Analy Report
<b>SEAM SEVEN</b>												
81-5	97882	236.75-238.4	1.65	38.72	14.83	46.45	0.4	1	9.022	9.178	Thermal	64-200
	97883	238.4 -239.5	1.1	2.62	16.05	a.33	0.56	1	14.776	15.169	Thermal	64-200
	97884	240.0 -241.4	1.4	13.37	16.32	70.31	0.66	1	12,983	13,464	Thermal	64-200
	97885	241.4 -242.2	0.8	2.39	17.36	80.25	0.72	1	14,501	15.22	Thermal	64-200
81-8(A)	97614	63.2 - 64.8	1.6	8.3	15.98	75.71	0.62	1	13,974	14,312	Thermal	64-200
(B)	97615	65.3 - 66.15	0.85	5.42	15.67	78.91	0.67	1	14,260	14,644	Thermal	64-200
(C)	97616	67.9 - 69.45	1.55	7.45	16.8	75.75	1.1	1	14,147	14,462	Thermal	64-200
81-4	97866	259.1 -259.7	0.6	7.1	14.83	78.07	0.6	0	14,022	14,413	Thermal	64-195
	97867	259.7 -261.2	1.5	5.56	15.84	78.6	0.52	1	14,155	14,737	Thermal	64-195
	97868	261.2 -262.7	1.5	2.14	15.9	81.96	0.53	0	14,725	15,195	Thermal	64-195
	07869	262.7 -264.05	1.35	22.7	11.23	63.66	0.63	0	11,552	11,896	Thermal	64-195
81-7(A)	97605	71.7 - 76.7	2.0	13.38	14.51	72.11	0.44	1	12,995	13,498	Thermal	64-200
(B)	97606	76.9 - 77.3	0.4	25.54	13.95	60.51	0.58	0	11.07	11,209	Thermal	64-200
(C)	97607	78.6 - 80.6	2.0	6.39	15.91	77.7	0.78	1	13,971	14,390	Thermal	64-200
80-3	450	310.8 -311.5	0.7	5.1	14.82	80.07	0.5	0	13,786	14,575	Thermal	64-195
	451	311.5 -312.2	0.7	2.38	15.07	82.55	0.42	0	14,190	15,096	Thermal	64-195
	452	312.2 -313.0	0.8	2.41	16.25	81.34	0.39	1	14,620	15,220	Thermal	64-195
	453	313.0 -314.6	1.6	25.2	13.39	61.41	0.3	1	10,762	11,155	Thermal	64-195
	454	315.0 -316.3	1.3	3.02	15.54	81.44	0.59	1	14,420	14,968	Thermal	64-195
80-2	427	124.0 -124.7	0.7	7.33	17.05	75.62	0.7	1	14,111	14,415	Thermal	64-195
	428	127.2 -128.7	1.5	2.02	42.75	55.23	0.17	0	12.6%	15.102	Thermal	64-195
	429	128.7 -129.4	0.7	2.01	16.41	81.58	0.47	0	x.737	15.133	Thermal	64-195
	430	129.5 -130.8	1.3	1.75	16.09	82.16	0.45	1	14,439	14,886	Thermal	64-195
80-1	405	71.2 - 71.9	0.7	1.19	16.6	81.9	0.64	1	15,029	15,356	Thermal	64-195
	406	72.5 - 74.1	1.6	4.53	16.59	78.88	0.49	1	14,212	14,783	Thermal	64-195
	407	74.4 - 75.6	1.2	3.39	15.61	81.0	0.51	1	14,168	15,031	Thermal	64-195
	408	77.0 - 78.4	1.4	2.96	16.63	80.41	0.72	1	14,321	15,040	Thermal	64-195
	409	74.1 - 74.4	0.3	62.55	9.96	27.49	0.25	1	4,178	4,368	Waste	64-195
81-6	97901	290.2 -291.7	1.5	2.12	15.73	82.15	0.4	0	14,590	15,094	Thermal	64-200
	97902	291.7 -293.2	1.5	20.05	15.53	64.42	0.37	1	10,653	11,648	Thermal	64-200
	97903	293.2 -294.1	0.9	29.16	14.35	58.49	0.5	0	10,277	10,999	Thermal	64-200
	97904	294.2 -294.8	0.6	9.39	23.25	67.36	0.64	1	13,662	14,150	Thermal	64-200
	97905	294.95-295.9	0.95	4.4	15.97	79.63	0.48	1	13,906	14,811	Thermal	64-200
81-5	97624	265.5 -267.5	2.0	6.03	16.84	77.13	0.38	1	13,593	14,389	Thermal	64-200
	97625	267.7 -268.0	0.7	4.11	16.54	79.35	0.45	1	14,063	14,867	Thermal	64-200
	97626	269.2 -270.85	1.65	2.07	16.33	81.6	0.57	1	14,849	15,315	Thermal	64-200
81-10(A)	97641	263.6 -264.3	0.7	2.19	19.34	78.47	0.99	1	14,904	15,193	Thermal	64-200
	97642	261.3 -267.25	2.9	3.4	17.88	78.72	1.42	1	14,305	14,899	Thermal	64-200
(B)	97643	273.1 -274.75	1.35	3.66	16.61	79.73	0.76	1	14,247	14,926	Thermal	64-200
<b>SEAM EIGHT</b>												
81-5	97886	272.3 -273.4	1.1	27.51	14.45	58.04	0.74	1	10,771	11,017	Thermal	64-200
81-8	97617	93.8 - 94.4	0.6	8.91	16.42	74.67	1.03	1	13.71	13,999	Thermal	64-200
81-7	97608	105.75-107.05	1.3	11.44	15.57	72.99	0.91	1	13,263	13,571	Thermal	64-200
80-3	456	334.1 - 3 x .9	0.8	4.29	15.92	79.19	0.79	1	14,494	14,889	Thermal	64-195
	457	336.9 -335.6	0.7	69.6	9.12	21.28	0.37	1	3.701	3.820	Waste	64-195
80-2	435	161.1 -162.0	0.9	3.6	16.1	80.3	0.75	1	14,498	14,897	Thermal	64-195
	436	162.0 -163.7	1.7	25.38	14.64	59.98	0.65	1	10,820	11,119	Thermal	64-195
80-1	410	115.0 -115.4	0.4	18.98	8.79	12.23	0.69	1	2,299	2,374	Waste	64-195
	411	115.4 -116.1	1.0	26.03	12.54	61.43	0.7	1	10,711	11,064	Thermal	64-195
	412	116.L -117.0	0.6	33.11	14.54	52.35	1.42	1	9,371	9,740	Thermal	64-195
	413	117.0 -117.9	0.9	76.75	8.73	14.52	1.47	1	2,856	2,943	Waste	64-195

Table 3.2.1 cont'd

TABLE 3.3.1

## TOTAL RESOURCES - CALCULATIONS

Coal Seam	Strike Length		Total	Dip-Length	Ave. Width	S:G:	Tonnes
	From	To					
1							
Indicated a	700N	1200S	1900m	250m	3.1m	1.3	1,914,250
Inferred b	"	"	1900m	600m	3.1m	1.3	4,594,200
Inferred c	700N	900N	200m	800m	3.1m	1.3	644,800
2							
Indicated a	700N	1200S	1900m	300m	2.0m	1.3	1,482,000
Inferred b	"	"	1900m	550m	2.0m	1.3	2,717,000
Inferred c	700N	1000N	300m	800m	2.0m	1.3	624,000
3							
Indicated a	200N	1200S	1400m	300m	3.2m	1.3	1,747,200
Inferred b	"	"	1400m	550m	3.2m	1.3	3,203,200
Inferred c	Nil	"	"	"	"	"	"
4							
Indicated a	700N	1200S	1900m	350m	3.6m	1.3	3,112,200
Inferred b	"	"	1900m	550m	3.6m	1.3	4,890,600
Inferred c	700N	1200N	500m	800m	3.6m	1.3	1,872,000
5							
Indicated a	700N	400S	1100m	650m	2.2m	1.3	2,044,900
Inferred b	"	"	1100m	400m	2.2m	1.3	1,258,400
Inferred c	700N	1400N	700m	900m	2.2m	1.3	1,801,800
6							
Indicated a	700N	400S	1100m	700m	2.3m	1.3	2,302,300
Inferred b	"	"	1100m	250m	2.3m	1.3	822,250
Inferred c	700N	1500N	800m	900m	2.3m	1.3	2,152,800
7							
Indicated a	700N	400S	1100m	850m	4.1m	1.3	4,983,550
Inferred b	"	"	1100m	150m	4.1m	1.3	879,450
Inferred c	700N	1600N	900m	900m	4.1m	1.3	4,317,300
8							
Indicated	700N	200S	900m	450m	1.5m	1.3	789,750
Inferred	"	"	"	"	"	"	"
Total Indicated					18.4 million tonnes		
Total Inferred					33 " "		

Source: G. A. Noel &amp; Associates Inc., 1981.

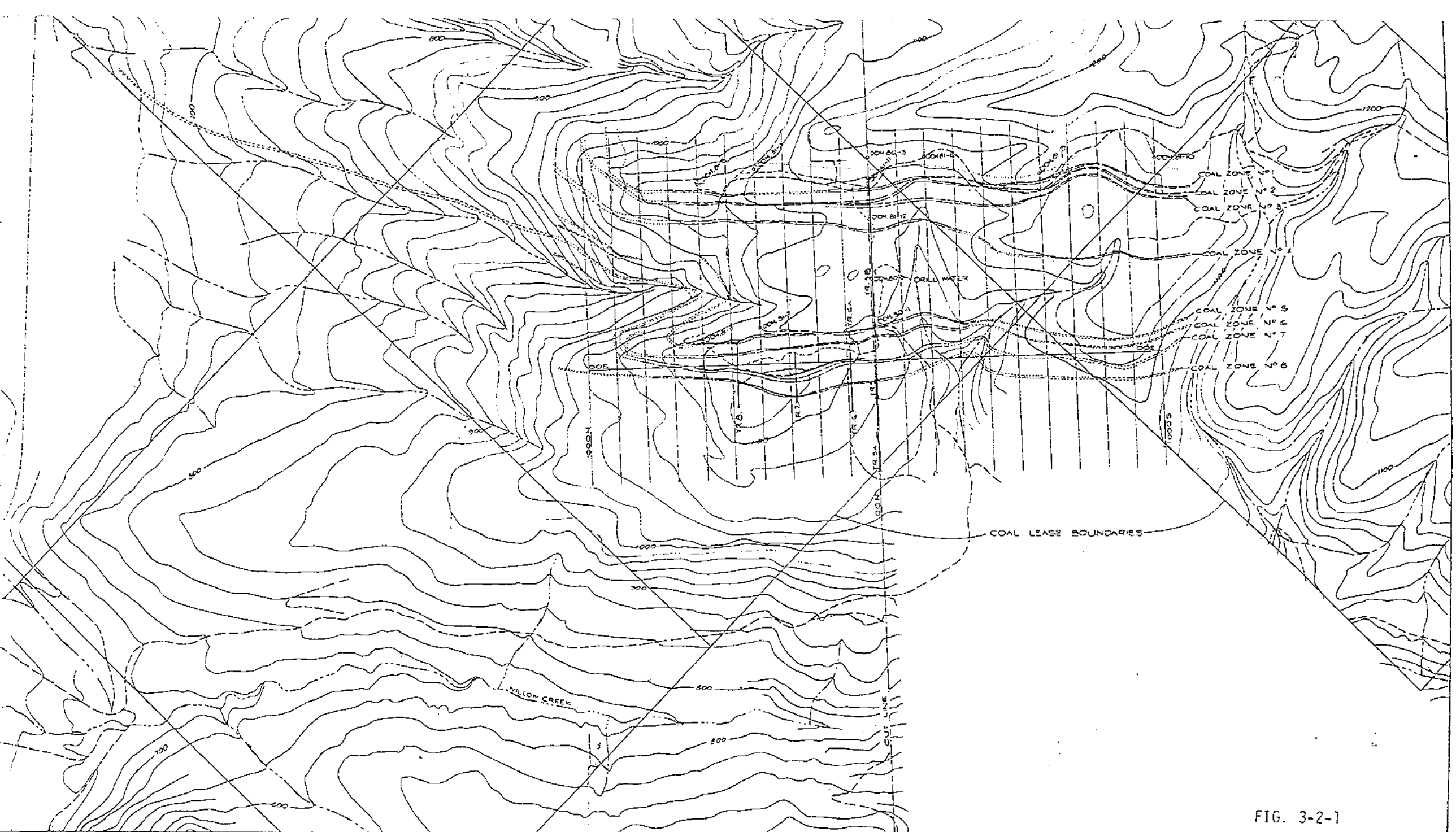
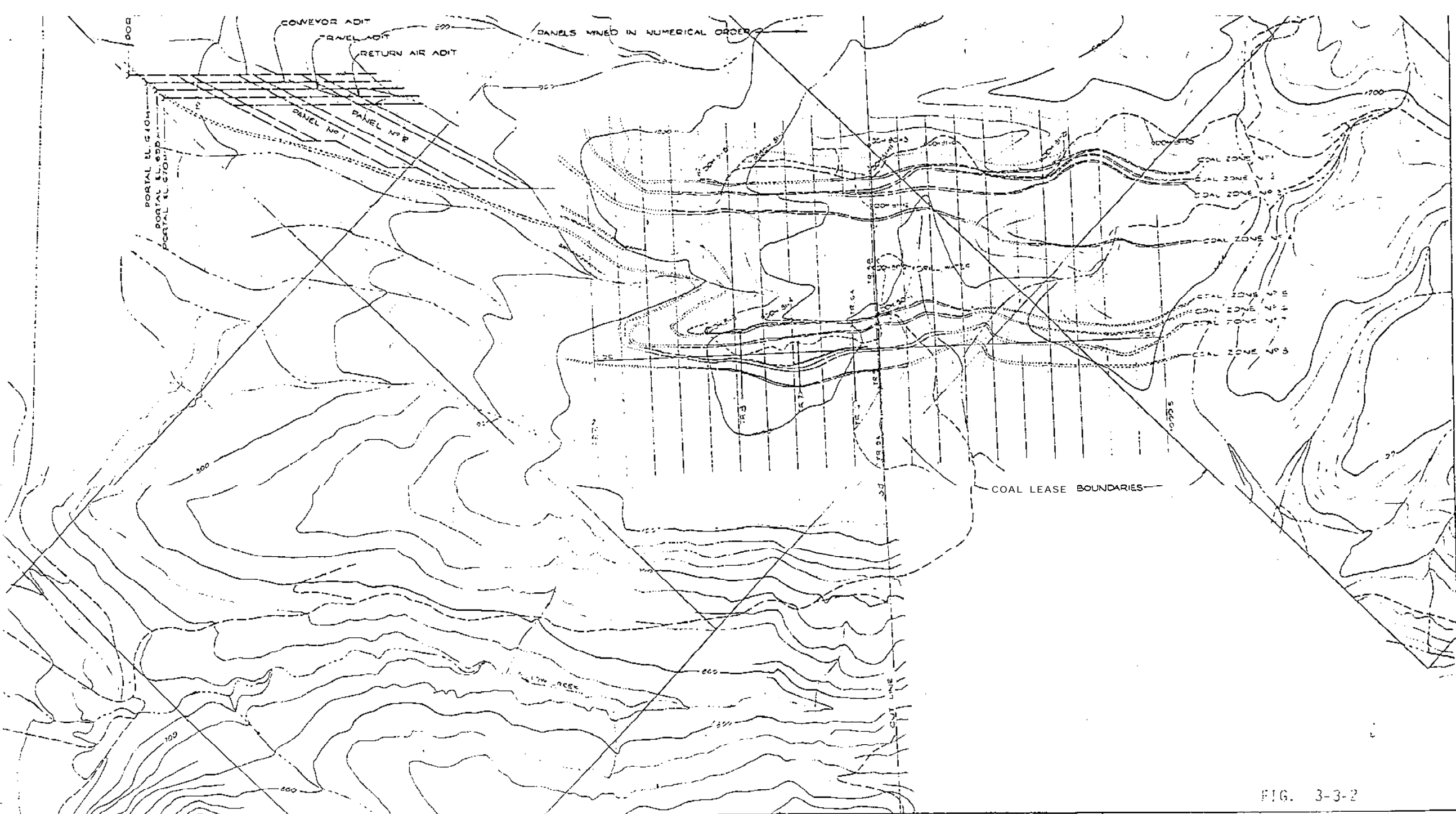


FIG. 3-2-1


SECTION	DATE	CLIENT: SEMPER RESOURCES INC.	TITLE	DRAWN BY
SCALE: 1:5000			WILLOW CREEK PROJECT	
DATE: 11/1/81		LOCATION: CHETWYND B.C.	SURFACE PLAN	
DRAWN BY: PAUL L. B...				



COAL LEASE BOUNDARIES

FIG. 3-3-2

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PROJECT	RHM, SEMPER RESOURCES INC.	TITLE	WILLOW CREEK PROJECT
SCALE	5000	DATE	JUL 81
DRAWN BY	J.S.K.	LOCATION	CHETWYND B.C.
CHECKED BY	P.A.H.	PROJECT NO.	7561
		COORDINATOR	
		MINING PLAN	DRAWING NUMBER

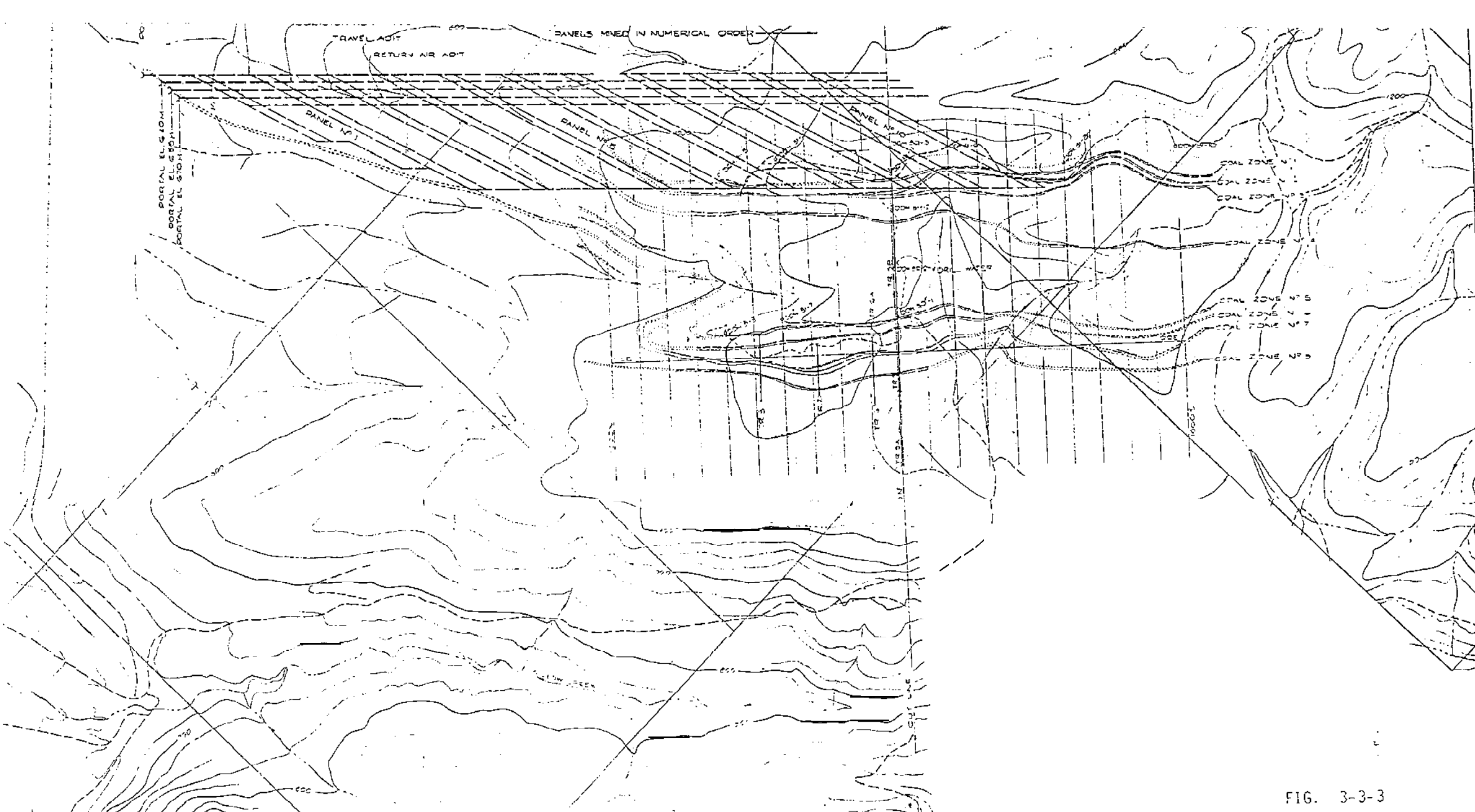


FIG. 3-3-3

Scale	1:5000
Author	J.B.R. (A.L. 81)
Date	13.11.81
Drawn by	B.M. (A.L. 81)

CLIENT: SEMPER RESOURCES INC.	TITLE	500 M
LOCATION: CHETNYNO B.C.	WILLOW CREEK PROJECT	PROJECT NO. (OPTIONAL)
	COAL SEAM NO. 7	75-1
	MINING PLAN	DATE (OPTIONAL)

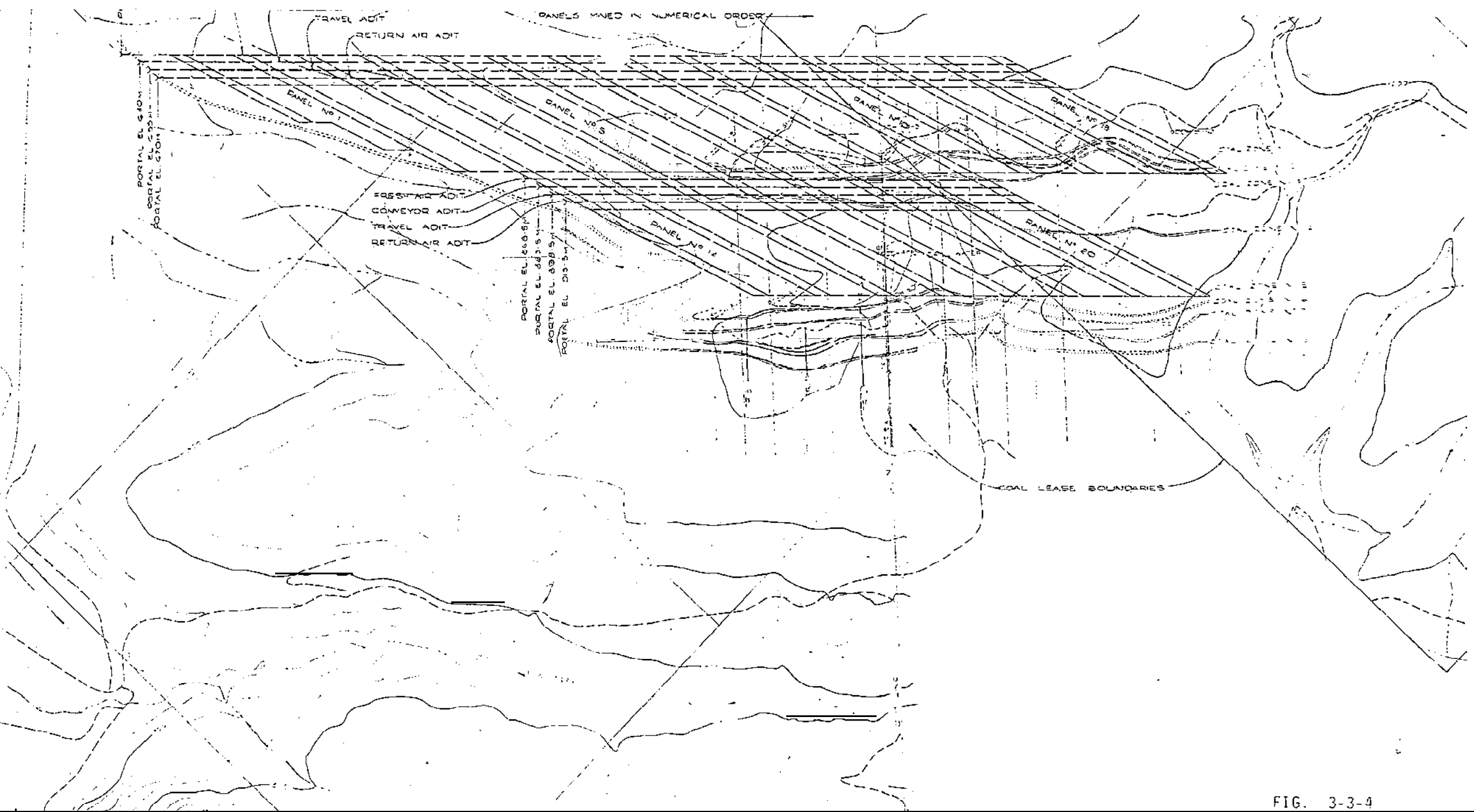


FIG. 3-3-4

										SECTION DATE 1/25/81 DRAWN BY J.S.T. J.S.B. CHECKED BY P.A.		CLIENT SEMPER RESOURCES INC. LOCATION CHETWIND, S.C. WITH BOUNDARY		TITLE WILLOW CREEK PROJECT COAL SEAM NO. 7 MINING PLAN		DRAWING NUMBER 756	
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