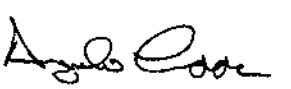
TELKWA PROPERTY

1993/1994 GEOLOGICAL ASSESSMENT REPORT

Property Name:	Telkwa Property	N.T.S.	93L/11
Coalfield:	Telkwa		
General Nature of Report:	1993/1994 Assessment Report		
Specific Licences Involved:	CL4278, CL4279, CL4280, CL4281, CL8403, CL4267 and CL5839		
Location (U.T.M.):	6045000/611500 to 6056000/628500		
Owner:	Manalta Coal Limited		
Operator:	Manalta Coal Limited		
Author(s) of the Report:	Mr. Angelo Ledda, B.Sc. Geology		
Date of Performed Work:	Summer and Fall of 1993 and 1994		
Report Due Date:	1994		
Report Submission Date:	October 10, 1996		



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1.0 INTRODUCTION

1.1 GENERAL

This report presents the geological work undertaken to date on the Telkwa coal licences in west-central British Columbia held by Manalta Coal Limited. Cumulative work completed during the 1993 and 1994 exploration programs is particularly emphasized, detailing the geology, coal reserves and coal quality of affected license areas. Since acquiring the Telkwa Property in May of 1992 Manalta Coal Limited has undertaken three exploration programs on the Property in as many years.

1.2 LOCATION AND ACCESS

The Telkwa Coal Property is located in west-central British Columbia approximately 15 kilometres south of the city of Smithers and about 2 kilometres southwest of the community of Telkwa (Enclosure 1), both of which are situated along the Yellowhead Highway (Highway #16) 11 kilometres apart. Smithers, in turn, is located 380 kilometres by rail east of Prince Rupert and the Ridley Island coal handling facilities (Figure 1.1). Smithers is serviced by commercial aircraft on a daily basis.

The Telkwa Property currently consists of 14,658 hectares held under 58 coal license blocks, measuring approximately 20 kilometres in the north-south direction by 14 kilometres east-west. The Telkwa River flows eastward through the property bisecting it into two approximate halves, both of which contain coal measures of economic significance.

Access to the north side of the property is via Smithers along an all-weather public road which approximately parallels the Bulkley and Telkwa Rivers. The south side of the property is accessed from the community of Telkwa, again by an all-weather

road. Logging roads are common, especially on the southern half of the property, branching periodically from the all-weather access road, allowing access to more remote locations of the property via four-wheel drive and all-terrain vehicles.

The area is serviced by a 500 KV powerline which bisects the property in an approximate east-west direction, running along the south side of the Telkwa River. In addition, Pacific Northern operates an underground natural gas transmission line which also transects the property, parallelling the south side of the Telkwa River and branching northward towards Smithers along the eastern licence blocks.

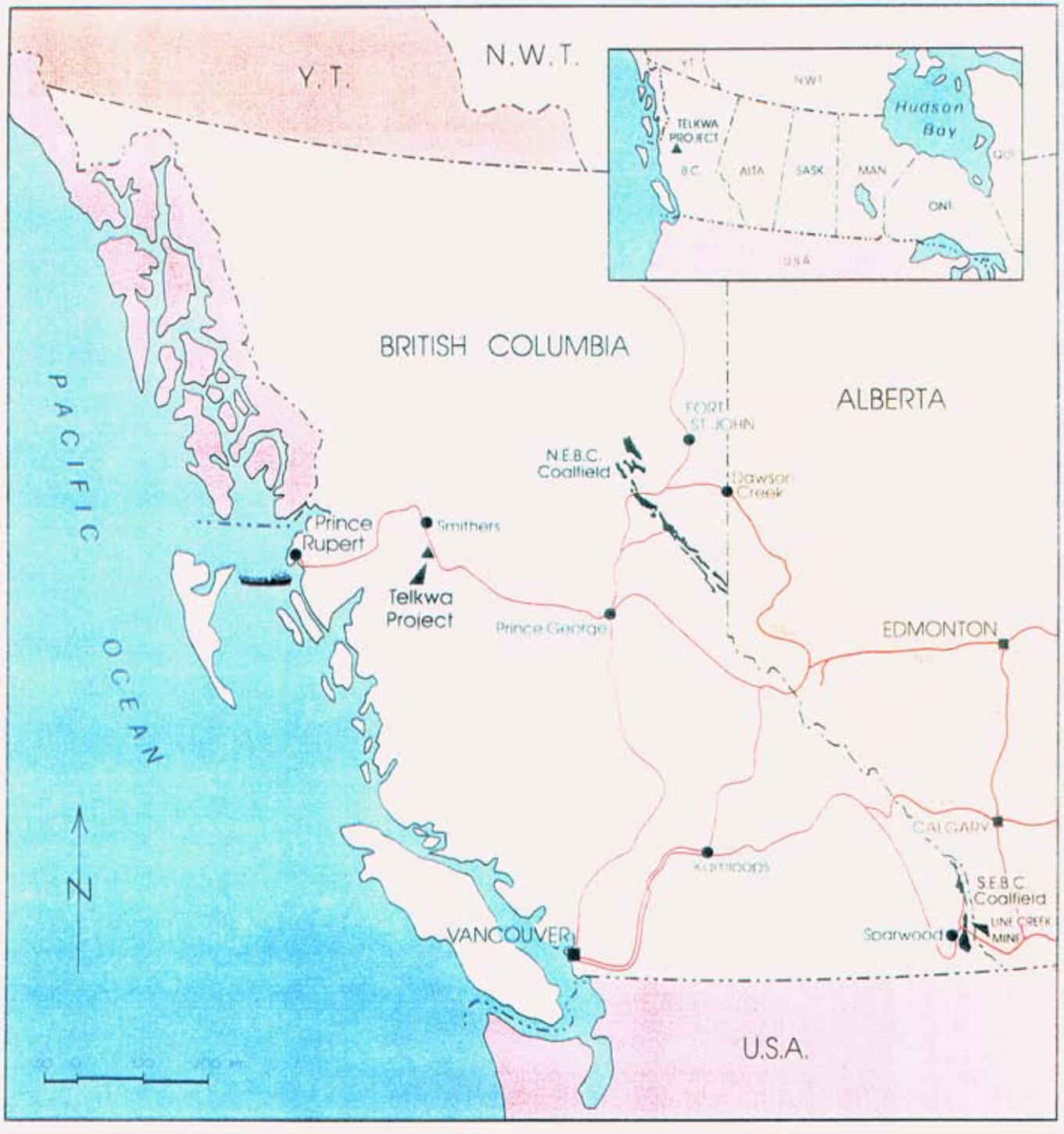


FIGURE 1.1

manalta coal ltd.

TELKWA PROPERTY LOCATION MAP

1.3 PHYSIOGRAPHY

The physiographic setting for the Telkwa property is typically foothills, intermediate to the Bulkley Range of the Hazelton Mountains and the low-lying gently rolling relief of the Nechako Plateau. The Bulkley Range is obvious to the north and west of the property where the landscape is bedrock controlled, while within the property limits and easterly topography is generally rounded and covered with widespread glacial drift. Bedrock on the property is usually obscured as glacial sediments form a shallow mantle over much of the area, exceptions occurring sporadically or along sections of deeply eroded river and stream valleys such as Goathorn Creek.

The principal drainage system on the property is the Telkwa River which flows east across the property until it ultimately drains into the Bulkley River at the community of Telkwa. Major tributaries to the Telkwa River include Pine Creek which drains much of the area on the northern licences, and Tenas and Goathorn Creeks which drain the south.

Elevations within the property limits range from a low of 530 meters above sea level at the Telkwa River's eastern contact with the property boundary to a high of 1375 metres at the property's southernmost extremity near Cabinet Creek. Most elevations, however, lie within 600 and 900 metres.

Vegetation at lower elevations along watercourses consist mainly of cottonwoods, spruce and shrubs. The tree layer is typically composed of large, widely spaced cottonwoods with scattered hybrid spruce and trembling aspen. The understorey is composed of a rich diversity of shrub species which include high-bush cranberry, red-osier dogwood, alder, prickly rose, snowberry and black twinberry. At higher elevations the predominant vegetational cover consists of lodgepole pine, balsam fir and spruce. Understorey species include alder, willow, black twinberry and prickly rose (TAESCO, 1985). Some of the area has been commercially logged and a number of areas have been cleared for agricultural purposes.

Pacific Inland Resources Ltd. of Smithers harvests timber within the license area for the production of commercial building products. One of the principal mills in the area is situated at the outskirts of Smithers along the access road to the north side of the property.

Soils in the vicinity vary in thickness and have developed on glacial till, outwash sediments and occasionally on weathered parent material. Parent material generally tends to be represented by either sedimentary sandstones and siltstones of the Skeena Group or volcanic sediments of the Hazelton Group.

1.4 TENURE

The Telkwa Property currently consists of 14,658 hectares (36,221 acres) of coal licences as well as 1295 hectares (3200 acres) of Freehold land collectively held by Manalta Coal Limited (Enclosure 2). Surface ownership rights are held in part by the Crown (approximately 70% of the property surface area), in part by Manalta Coal Ltd. (approximately 8% in the form of Freehold land) and in part by third party land owners. The property coal licences are summarized on Table 1.1.

TABLE 1.1: TELKWA PROPERTY - COAL LICENCE SUMMARY

LICENCE NUMBER	HECTARES	ACRES	EXPIRY DATE
3709	259	640	31-Dec-96
3710	259	640	31-Dec-96
3875	259	640	31-Dec-96
3876	259	640	31-Dec-96
3877	259	640	31-Dec-96
3878	259	640	31-Dec-96
3879	259	640	31-Dec-96
3880	259	640	31-Dec-96
3881	259	640	31-Dec-96
3882	259	640	31-Dec-96
3883	259	640	31-Dec-96
3884	259	640	31-Dec-96
4260	259	640	31-Dec-96
4261	259	640	31-Dec-96
4262	259	640	31-Dec-96
4264	259	640	31-Dec-96
4265	259	640	31-Dec-96
4267	259	640	31-Dec-96
4269	259	640	31-Dec-96
4270	259	640	31-Dec-96
4271	259	640	31-Dec-96
4272	259	640	31-Dec-96
4274	259	640	31-Dec-96
4275	259	640	31-Dec-96
4276	259	640	31-Dec-96
4277	259	640	31-Dec-96
4278	259	640	31-Dec-96
4279	259	640	31-Dec-96
4280	259	640	31-Dec-96
4281	259	640	31-Dec-96
4282	259	640	31-Dec-96
4283	259	640	31-Dec-96
5305	259	640	31-Dec-96
5306	259	640	31-Dec-96
5307	259	640	31-Dec-96
5839	259	640	31-Dec-96
6040	130	321.2	31-Dec-96
7691	259	640	31-Dec-96
7692	259	640	31-Dec-96
7693	259	640	31-Dec-96
7694	259	640	31-Dec-96
7695	259	640	31-Dec-96
7696	259	640	31-Dec-96
327828	130	321.2	30-Nov-97
327829	260	642.5	30-Nov-97
327830	260	642.5	30-Nov-97
327971	259	640	31-Jul-97
327972	259	640	31-Jul-97
328323	260	642.5	30-Nov-97
334059	269	664.7	28-Feb-97
334060	269	664.7	28-Feb-97
TOTAL	12,974	32,059	

1.5 HISTORICAL PERSPECTIVE

Coal was initially discovered in the Telkwa area at about 1900 although production did not commence in the Goathorn Creek area until 1918. On the north bank of the Telkwa River the Aveling (Telkole) Mine produced coal from 1921 to 1922 and again from 1940 to 1945. Telkwa Colliery (McNiel Mine) on the south side of the Telkwa River began producing in 1923 (Malott, 1990). Initial mining production was mainly for local consumption until after 1930 when underground operations were initiated at Bulkley Valley Collieries near Goathorn Creek. Production since that time has been sporadic, however, with underground operations often curtailed by structural complications and inadequate pre-development exploration.

Since 1950 the Telkwa Coalfield has been actively prospected by a variety of companies. The following is a summary of the area's exploration activities since that time. Regional geology, plotted annual exploration drill-holes and identified resource areas are found within Enclosure 3.

- **1951 - The Government of Canada** conducted a regional survey, much of which included the Telkwa licence area.

- **1969 - Canex Aerial Limited** completed a drilling program of approximately 20 boreholes on the Telkwa North licenses.

- **1977 to 1978 - Cyprus Anvil Mining** completed a rotary drilling program within the Telkwa South licences.

- **1979 - Shell Canada/Crowsnest Resources Ltd.** completed 13 rotary drill-holes, 4 of which were located on Telkwa South licenses, and the remaining 9 situated on the north side of the Telkwa River. Chip samples were not recovered for analytical testing.

- **1981 - Shell Canada/Crowsnest Resources Ltd.** completed a mapping and exploration drilling program which consisted of 11 rotary holes and one diamond drill-hole, all of which were spaced randomly throughout the Telkwa property. Coal samples were recovered from 4 of the rotary holes as well as the diamond drill-hole for analyses.

- **1982 - Shell Canada/Crowsnest Resources Ltd.** drilled 72 boreholes on the property, the majority of which were located on the south side of the Telkwa River. Of the 72 holes, 7 were rotary drill-holes and 65 were diamond drill-holes. Coal samples were collected and analyzed from all holes which intersected significant coal units.

- **1983 - Shell Canada/Crowsnest Resources Ltd.** completed 69 diamond drill-holes on the Telkwa South licences, most of which were located within what has been designated as the Pit #3 resource area. Included within the program were a small number of large-diameter core-holes which, along with all other drill-holes that intersected significant coal units, were sampled and had coal analyses performed. Of the 69 boreholes completed, 11 were situated within the proposed Pit #3 test-pit limits, to provide a preview of the pit development.

Based upon drill-hole information a 219 tonne bulk sample from 7 seams was subsequently extracted from a test-pit located within the Pit #3 area. A full suite of coal quality analyses was performed, including testing on various simulated washplant products.

- **1984 - Shell Canada/Crowsnest Resources Ltd.** completed 44 diamond drill-holes, the majority of which were located within the Pit #3 resource area on the south side of the Telkwa River. Less than 10% of the holes were drilled on the Telkwa North coal licences. All significant coal units were sampled and analyzed.

- **1985 - Shell Canada/Crowsnest Resources Ltd.** completed 4 diamond drill-holes, all of which were located north of the Telkwa River. All significant coals were sampled and analyzed.

- **1986 - Shell Canada/Crowsnest Resources Ltd.** completed 4 diamond drill-holes, again located on the Telkwa North coal licences within an area that has been designated as Pits #7 and #8 Resource Area. Coal analyses were performed on all significant seams.

- **1988 - Shell Canada/Crowsnest Resources Ltd.** completed an exploration program exclusive to the Telkwa North licences which consisted of initially completing approximately 3.5 kilometres of surface geophysics to highlight potential target locations. The area was subsequently drilled with 14 diamond drill-holes from which coal samples were collected and analyzed.

- **1989 - Shell Canada/Crowsnest Resources Ltd.** completed an exploration program consisting of drilling and surface geophysics on the Telkwa North coal licences, and reflection seismic exploration within the Pit #3 area of the Telkwa South licences. In addition a large-diameter coring program was undertaken specifically targeted at obtaining a bulk sample from the Pit #7 resource area.

The conventional exploration drilling program included 31 bore-holes, 18 of which were rotary drill-holes, and the remaining 13 continuous core diamond drill-holes. Coal samples for analyses were collected from all holes which intersected significant coal units although only cored bore-holes were provided a full analyses. Recovered rotary chip samples were not considered representative. North Telkwa surface geophysics included approximately 15.4 kilometres of geophysics shared between the Pit #7 resource area, the Pit #8 proposed waste dump area and the proposed infrastructure facilities location.

Upon completion of the conventional exploration program four previously drilled sites in the Pit #7 area were selected as locations for large-diameter (6 inch) core-holes. From these a bulk sample from 7 seams was extracted and provided a full analysis.

As part of a joint investigation managed by the Coal Mining Research Company of Devon, Alberta, 4 seismic lines totalling 4.9 kilometres were laid out and a reflection seismic exploration program completed. The area chosen for the investigation was within the Pit #3 resource area where reasonable drill-hole control had previously been established.

- **1989 - The Geological Survey of Canada**, as part of a province-wide study of coal quality, drilled 9 core-holes for a combined total length of 280 metres in the vicinity of the old Bulkley Valley Collieries site near Goathorn Creek. Two of the holes were drilled in the vicinity of the historic Avelling Mine. All coal intersections were sampled and subsequently analyzed.

- **1992 - Manalta Coal Ltd.** of Calgary, Alberta acquired the Telkwa Coal licences on May 1st of 1992 from Shell Canada/Crowsnest Resources Ltd.. Later that year Manalta Coal conducted an exploration program which included 3.6 kilometres of surface geophysics, a regional airborne magnetic survey review and 43 drill-holes. The surface geophysics and 39 of the 43 holes drilled were located on the Telkwa North licences, while the remaining 4 drill-holes were completed on the south side of the Telkwa River in the Tenas Creek area.

Of the 43 bore-holes completed 19 were diamond core-holes, 3 were rotary core-holes and 21 were drilled utilizing conventional rotary drilling techniques. All holes completed in the Tenas Creek area were of the rotary variety although one was rotary cored through its coal measures. All significant coal seam intersections from cored drill-holes were sampled and analyzed.

Coincidental with the exploration drilling program representatives from the British Columbia Ministry of Energy, Mines and Petroleum Resources (MEMPR), and the Institute of Sedimentary and Petroleum Geology (ISPG) were on site to conduct coalbed methane desorption tests on selected Telkwa coal samples. The study conducted by the MEMPR and the ISPG was part of a regional study of methane desorption in British Columbia coalfields.

- **1993 - Manalta Coal Ltd.** completed an exploration program consisting of 53 drill-holes shared between the Telkwa North and Telkwa South coal licences. In addition a geotechnical and surficial geology program was completed by Piteau Engineering on behalf of Manalta Coal Ltd. which included rock strength testing on selected cores, approximately 19 kilometres of surface geophysics and 10 till sample sites. All surficial geology studies were completed within a proposed tailings pond investigation area located near the Pit #7 and #8 Resource areas.

The Tenas Creek exploration area on the south side of the Telkwa River was the focus of 26 drill-holes, targeted at obtaining additional coal quality information and further delineation of the field's limits. Also within the Telkwa South coal licences, 5 drill-holes, all of which were cored, were completed within the Pit #3 Resource Area to obtain additional coal quality information.

Exploration completed on the Telkwa North coal licences consisted of 2 drill-holes within the limits of the Pit #8 Resource Area, 11 drill-holes dedicated to further exploration of the Pit #8 coal trend beyond the pit limits, and 9 reconnaissance drill-holes completed proximal to the Pits #7 and #8 Resource areas.

Of the 53 bore-holes completed in 1993 11 were diamond-drilled core-holes, 10 were rotary core-holes (including one 1992 drill-hole which was

cored in 1993) and 33 were drilled utilizing conventional rotary techniques. All significant coal seam intersections from cored drill-holes were sampled and subsequently analyzed.

- **1994 - Manalta Coal Ltd.** completed their third annual exploration program, consisting of geological surface mapping and the completion of 56 rotary drill-holes, 8 of which were cored at least partially. Work was undertaken on both sides of the Telkwa River, although dominated slightly by drilling activities on the southern coal licences where 32 drill-holes were completed.

Of the 32 drill-holes completed on the Telkwa South coal licences 13 were dedicated to further exploration of the Tenas Creek resource area, while 19 exploratory drill-holes were completed to evaluate the coal-bearing potential of the Tenas Creek West coal licences. Drilling on the Telkwa North licences included 14 exploratory drill-holes within the MCL (Whalen) Freehold Block, 8 within tentative wastedump areas between Pit #8 and Whalen Block, and 3 drill-holes completed proximal to the Pit #7 resource area. All cored coal seam intersections were sampled and subsequently analysed.

1.6 ACKNOWLEDGEMENTS

The work undertaken for the Telkwa geological study was carried out by various contractors and consultants under the management and supervision of Manalta Coal Limited's staff. This report was prepared by Mr. A. Ledda of Manalta Coal Ltd. with input from the following groups:

- Chemex Labs Ltd. for geochemical analyses.
- Drs. Barry Ryan and Alex Matheson of the British Columbia MEMPR.
- Loring Laboratories Ltd. for coal quality analyses.

- Norecol, Dames and Moore for geochemistry technical support.
- Piteau Engineering Ltd. for tailings pond geotechnical studies.

Mr. Angelo Ledda of Manalta Coal Ltd. has received a Bachelor of Science Degree in Geology (1986) from the University of Calgary as well as a Diploma in Petroleum Technology; Geology (1982) from the Southern Alberta Institute of Technology (S.A.I.T.). Since graduation with his B.Sc. he has been employed as an exploration and development geologist with Gulf Canada Resources Ltd., taught evening classes in the Petroleum Technology; Geology program at S.A.I.T., and is currently an Senior Project Geologist with Manalta Coal Ltd.

Mr. Angelo Ledda is a Professional Geologist, registered with the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA). His 9 years of work experience as a geologist includes some work within the oil and gas industry although the majority of his experience has been within the coal industry on deposits situated throughout western Canada. Much of his coal experience lies within studies conducted in the Bowser Basin, including the Klappan, Groundhog and Telkwa Coalfields.

2.0 GEOLOGICAL WORK

On the basis of geological work carried out in previous years by Manalta Coal Ltd. and various other groups, the 1993/94 exploration programs conducted by Manalta were designed to further delineate high potential mining targets and to initiate reconnaissance exploration of other areas. They were also intended to provide additional data on the geology, reserves and coal quality of those potential mining targets. Licence blocks affected by the 1993 and 1994 exploration programs are illustrated on Figure 2.1.

2.1 SCOPE OF WORK

Work completed during the 1993 field exploration program included 53 exploration drill-holes, the investigation of a potential tailings pond site, and reclamation. The entire exploration program spanned two months from late August to late October, 1993. The tailings pond investigation consisted of 10 shallow test-holes and approximately 19 kilometres of surface geophysics. Surface geophysics work took place coincidentally with drilling activities while reclamation continued until adverse weather halted reclamation efforts.

Work undertaken during the 1994 exploration program included geological surface mapping, the completion of 56 exploration drill-holes, and reclamation. Geological mapping progressed throughout the latter half of July while drilling activities spanned from mid-August to mid-October, 1994. Reclamation efforts took place coincidentally with drilling activities and continued, virtually uninterrupted, to early November.

2.1.1 Surface Geophysics

Surface geophysics were utilized by Piteau Engineering Ltd. on behalf of Manalta Coal as a tool to investigate the surficial geology as it pertains to

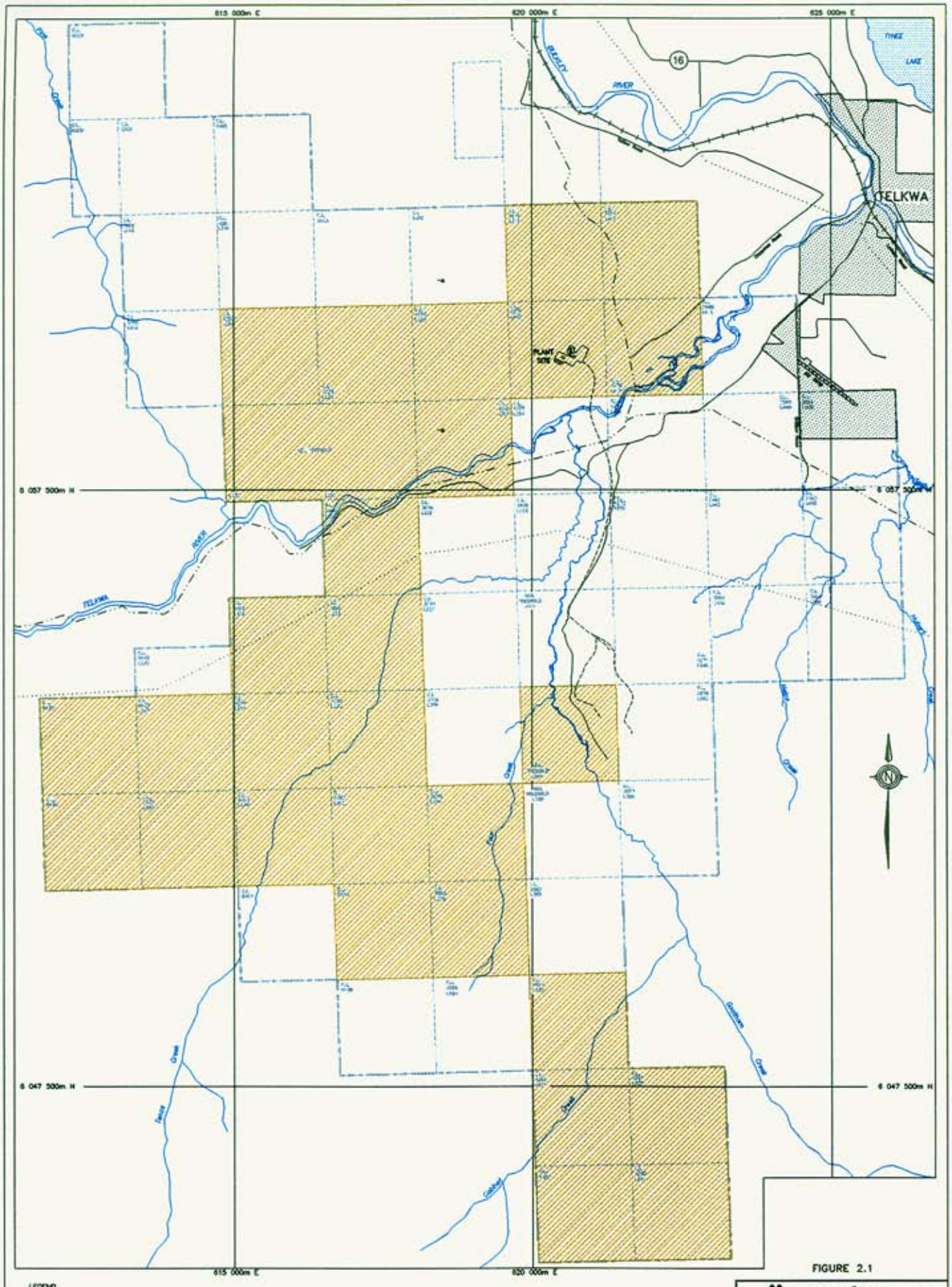

615 000m E
620 000m E
625 000m E
6 057 500m N
6 047 500m N
TELKWA
PLANT SITE
16
TYHEE LAKE
TELKWA RIVER
615 000m E
620 000m E
6 057 500m N
6 047 500m N
LEGEND
ROAD
GAS PIPELINE
COAL LICENCE BOUNDARY
POWERLINE
COAL LICENSE
1993/94 EXPLORATION AREA
1000 0 1000 2000
METRES
manalta coal ltd.
TELKWA
COAL LICENSE EXPLORATION MAP
1993/94 EXPLORATION PROGRAMS
Dwn. by D.H.M.
Date SEPT. 1994
Chk'd by A.L.
File no. 42087-H

FIGURE 2.1

suitability for a tailings pond location. Specifically the objectives of the study were to describe unconsolidated overburden characteristics and thickness, bedrock characteristics, and depth to groundwater. Affected licence blocks included CL4276, CL4277, CL8210 and CL8211, where 21 kilometres of brush-line were cut and surface geophysics completed. Specific methods of geophysical investigation included electrical conductivity, magnetometer, very low frequency electromagnetics, direct current resistivity and seismic refraction. Details and results of the tailings pond investigation are presented within the report prepared by Piteau Engineering Ltd., specifics of which are included as Enclosure 5. Locations of the geophysical lines are included within the Telkwa North/South Geology maps, Enclosure 4.

2.1.2 Drilling

The exploration component of the 1993 field season consisted of 11 continuous core diamond drill-holes, 10 rotary core-holes (including one core from a 1992 bore-hole) and 33 conventional rotary drill-holes, for a total of 5,769 metres drilled. During 1994 56 drill-holes were completed, of which 48 were drilled utilizing conventional rotary techniques and 8 rotary cored, for a cumulative 1994 total of 5,826 metres.

All drill-holes, summarized for 1993 on Table 2.1, and for 1994 on Table 2.2, were geophysically logged upon completion and surveyed prior to site reclamation. Piezometers were installed at three 1993 drill-hole locations in order to monitor groundwater movement within specific stratigraphic horizons. No piezometers were installed during 1994. To date, including 1993/94 drilling, 416 drill-holes have been completed on the Telkwa Property since 1979 (Enclosure 6).

Wireline as well as conventional coring techniques were employed during

the exploration programs. Diamond drill-holes were continuously cored, extracting 7.62 centimetre diameter (HQ) core from the top of competent strata through the entire length of the hole. On occasion, like diamond drilled core-holes, rotary wireline core-holes were also continuously cored throughout their entirety. Normally, however, a conventional rotary pilot hole was drilled initially at the site location and subsequently a second adjacent hole was drilled, where selected coal units were cored. Normally rock units between core intervals were conventionally drilled. At rotary core locations 10.0 centimetre diameter core was recovered. Core recoveries from both coring methods were excellent, generally ranging from 80% to 100%.

As part of the surficial geology investigation of the potential tailing pond location 10 drill sites were selected and drilled, and the surficial geology described. At these locations a diamond drill with a tri-cone bit was used to drill to bedrock or to a maximum depth of 8.2 metres.

For both the 1993 and 1994 exploration programs a Failing 1250 and an Ingersol Rand TH60 truck-mounted drilling rig were used to complete the rotary component of the program while an Acker Diamond Drilling Rig completed all diamond drill-holes. McAuley Drilling Co. of Spruce Grove, Alberta and Cora Lynn Drilling of Strathmore, Alberta completed the rotary component of the program while J.T. Thomas Diamond Drilling of Smithers, British Columbia completed all diamond drilling requirements as well as the tailings pond investigation drilling.

_E 2.1 TELKWA 1994 DRILL - HOLE SUMMARY

Drill-hole #	Site #	Total Depth (m)	Logs run	Casing (m)	Overburden thknss (m)	Resource Area	# of coal samples	A.R.D. holes (samples)	Date Drilled	Driller	Comments
T94R-01	25	83.78	GDRCDp	2.6	3.05	Tenas Ck.	---	---	Aug. 17	McAuley	On west fault block.
T94R-02	27	38.95	GDRC	1.5	0.10	Tenas Ck.	—	—	Aug. 17	Cora Lynn	Volcanics through to T.D.
T94R-03	26	84.79	GDRC	1.6	0.61	Tenas Ck.	—	—	Aug. 18	Cora Lynn	
T94R-04	21	74.66	GDRCDp	5.9	9.15	Tenas Ck.	—	---	Aug. 18	McAuley	
T94R-04C	—	64.87	GDRC	10.0	9.15	Tenas Ck.	17	---	Aug. 19	McAuley	
T94R-05	23	121.61	GDRCVDp	6.1	3.96	Tenas Ck.	---	—	Aug. 19	Cora Lynn	Not the #1 Seam coals.
T94R-06	22	162.76	GDRCVDp	2.2	0.46	Tenas Ck.	—	—	Aug. 20	Cora Lynn	Not the #1 Seam coals.
T94R-07	24	120.67	GDRC	9.2	6.10	Tenas Ck.	—	---	Aug. 20	McAuley	
T94R-08	20	144.50	GDRCVDp	18.4	17.68	Tenas Ck.	---	—	Aug. 22	McAuley	Not the #1 Seam coals.
T94R-09	30	145.89	GDRVCDp	55.8	55.00	Tenas Ck.	---	—	Aug. 22	Cora Lynn	Volcanic rocks below O/B to T.D.
T94R-10C	19	89.60	GDRCVDp	6.7	6.10	Tenas Ck.	21	—	Aug. 23	McAuley	Cont. cored from 52.84 to T.D. Geoph log prbl
T94R-11	29	72.60	Nil	Nil	67.90	Tenas Ck.	—	—	Aug. 23	Cora Lynn	Volcanics below O/B to T.D.
T94R-12	18	94.50	GDRCVDp	21.3	19.51	Tenas Ck.	—	—	Aug. 24	McAuley	
T94R-13	28	41.89	GDRC	12.1	12.10	Tenas Ck.	---	---	Aug. 23	Cora Lynn	Volcanics below O/B to T.D.
T94R-14	31	155.49	Nil	Nil	153.35	Tenas West	—	---	Sept. 29	McAuley	Don drilled to 110 m; O/B still and abndnd.
T94R-15	53	33.50	Nil	24.4	>33.30	Tenas West	---	—	Aug. 26	Cora Lynn	Flowing hole. Plugged Sept. 20. No redrill for n
T94R-16	34	110.00	Nil	Nil	97.56	Tenas West	---	—	Aug. 26	McAuley	Volcanics below O/B to T.D.
T94R-17	49	80.60	GDRC	12.8	11.50	Tenas West	---	---	Aug. 26	Cora Lynn	Volcanics below O/B to T.D.
T94R-18	45	112.60	GDRC*	Nil	51.52	Tenas West	—	—	Aug. 27	McAuley	Log to 30m only. Sed rx to 102.7.
T94R-19	44	61.80	GDRC	12.2	11.60	Tenas West	---	—	Aug. 27	Cora Lynn	Volcanics below O/B to T.D.
T94R-20	41	115.62	GDRCVDp	30.0	26.00	Tenas West	---	---	Aug. 28	Cora Lynn	Sed rx to 50.9; rewrkd volc to 90.4; volc rx.
T94R-21	40	80.00	Nil	Nil	57.10	Tenas West	—	---	Aug. 29	Cora Lynn	Volcanics below O/B to T.D.
T94R-22	39	60.98	Nil	15.2	35.06	Tenas West	---	—	Aug. 29	McAuley	Rewkd volcs to 38.4 (3.3m); volc rx to T.D.
T94R-23	51	157.13	GDCVRDp	12.0	7.10	Whalen	---	—	Aug. 31	Cora Lynn	
T94R-24	3	121.45	GDCVRDp	29.2	20.73	Whalen	—	—	Aug. 31	McAuley	
T94R-24C	---	92.83	GDRC	30.2	20.73	---	11	—	Sept. 5	McAuley	
T94R-25	54	102.76	GDCVRDp	19.7	17.30	North Whalen	---	—	Sept. 1	Cora Lynn	Volcanics @ 59.2m to T.D.
T94R-26	56	82.68	GDRC	12.2	6.40	North Whalen	—	—	Sept. 1	McAuley	Volcanic rx below O/B to T.D.
T94R-27	55	150.54	GDRCVDp	17.1	17.68	North Whalen	—	—	Sept. 3	McAuley	
T94R-28	10	133.67	GDRCVDp	12.6	9.30	North Whalen	---	---	Sept. 2	Cora Lynn	
T94R-29	2	152.90	GDCVRDp	4.3	2.70	Whalen	---	---	Sept. 4	Cora Lynn	Seams #2 to 5?
T94R-29C	---	110.06	GDCVRDp	4.8	—	—	23	---	Sept. 7	McAuley	Geophysical log from 86.0 metres.
T94R-30	6	61.00	GDRC	28.6	27.13	Whalen	---	—	Sept. 4	McAuley	Volcanic rx below O/B to T.D.
T94R-31	7	201.40	GDCVRDp	7.0	6.40	Whalen	---	---	Sept. 5	Cora Lynn	
T94R-32	8	136.40	GDCVRDp	12.8	9.70	North Whalen	—	---	Sept. 7	Cora Lynn	Volcanics @ 118.4 metres.
T94R-33C	12	76.80	GDCVRDp	16.9	16.50	Pit #7	21	32	Sept. 9	McAuley	ARD hole.
T94R-34	9	155.74	GDCVRDp	12.8	5.70	North Whalen	---	---	Sept. 8	Cora Lynn	
T94R-34C	---	121.45	GDCR	6.0	5.70	—	24		Sept. 17	McAuley	Geophysical tool problems; adequate log.
T94R-35	11	115.18	GDCVRDp	35.5	32.90	Pit #7 Wstdmp	---	—	Sept. 13	McAuley	Volcanics @ 99.8 metres.
T94R-35C	—	88.85	GDCR	31.4	32.90	—	20	—	Sept. 16	McAuley	
T94R-36	1	194.56	GDCVRDp	21.4	17.6 / 20.7	Whalen	---	—	Sept. 14	Cora Lynn	#1 Seam.
T94R-37	5	88.41	Nil	Nil	71.65	Whalen	—	—	Sept. 14	McAuley	Volcanic rx below O/B to T.D.
T94R-38	4	177.40	GDCVRDp	25.9	25.90	Whalen	—	---	Sept. 16	Cora Lynn	
T94R-39	F	134.15	GDCVRDp	4.5	3.35	North Whalen	---	—	Sept. 17	McAuley	
T94R-40	52	99.00	GDCVRDp	9.6	8.30	Whalen	—	—	Sept. 17	Cora Lynn	Volcanics from 38.9m to T.D.
T94R-41	D	146.19	GDCVRDp	14.8	13.10	Whalen	---	—	Sept. 18	Cora Lynn	Seam #2 - 11 coals / or #1 coals?
T94R-42	A	132.53	GDCVRDp	14.6	12.20	Whalen	—	—	Sept. 20	Cora Lynn	
T94R-43	Watrwl	97.50	GDCVRDp	11.6	15.24	Pit #7 East	---	—	Sept. 20	McAuley	
T94R-44	B	145.73	GDCVRDp	6.1	5.20	Whalen	---	—	Sept. 21	Cora Lynn	
T94R-45	C	156.83	GDCVRDp	17.0	15.50	Whalen	—	—	Sept. 22	Cora Lynn	
T94R-46C	E	202.54	GDCVR	55.6	54.70	Whalen	12	73	Sept. 26	McAuley	Cored through #1 Seam. ARD hole.
T94R-47	38	43.30	Nil	Nil	25.30	Tenas West	—	—	Sept. 25	Cora Lynn	Volcanic rx below O/B to T.D.
T94R-48	43	79.22	GDCVR	20.1	12.4/15.6	Tenas West	---	---	Sept. 26	Cora Lynn	Volcanic rx below O/B to T.D.
T94R-49	50	72.79	GDRC	12.3	12.20	Tenas West	---	—	Sept. 26	Cora Lynn	Volcanic rx below O/B to T.D.
T94R-50	48	66.27	GDRC	4.5	1.00	Tenas West	---	—	Sept. 27	Cora Lynn	Interbedded volc/congl to TD.
T94R-51	42	72.22	GDRC	12.8	10.60	Tenas West	---	---	Sept. 28	Cora Lynn	Volcanic rx below O/B to T.D.
T94R-52	46	78.66	GDRC	14.7	12.20	Tenas West	—	—	Sept. 29	Cora Lynn	Volcanic rx below O/B to T.D.
T94R-53	32	144.80	Nil	Nil	135.60	Tenas West	—	—	Oct. 1	McAuley	Volcanic rx below O/B to T.D.
T94R-54	36	95.00	Nil	Nil	73.00	Tenas West	---	---	Sept. 30	Cora Lynn	
T94R-55	35	79.20	Nil	Nil	66.40	Tenas West	---	---	Oct. 2	Cora Lynn	
T94R-56	33	156.00	Nil	Nil	>155.00	Tenas West	---	---	Oct. 4	McAuley	Lost circ. @ 155.0m. Abndnd before bdrk conta
T93R-52	---	54.00	Nil	Nil	41.30	Tenas West	—	---	Oct. 2	Cora Lynn	Re-drill of 93 drill-hole.
TOTALS:		6727.20					149	105			
								18	outcrop samples		
								123			

TOTAL: Diamond - 0.00
Rotary - 5880.20
Rot core - 847.00
6727.20

Telkwa North: 3635.68 metres
Telkwa South: 3091.52 metres
6727.20

where: G = Gamma Log
D = Density Log
C = Caliper Log
V = Verticality Log
Dp = Dipmeter Log

TABLE 2.2 TELKWA 1993 DRILL - HOLE SUMMARY

Drill-hole #	Site #	Total Depth (m)	Logs run	Casing (m)	Till thknss (m)	Seams intersected	# of samples	A.R.D. holes (samples)	Date Drilled	Driller	Comments
T93R-01	214	42.7	GDVC	5.6	1.66	Pit #3	—	—	Sept. 1	McAuley	
T93R-01C	-	34.5	GDC	5.6	1.83	—	6	—	Sept. 2	McAuley	Seam #3 & #2.
T93R-02	108	80.5	GDVCDp	2.1	1.66	Tenas Ck.	—	—	Sept. 2	Cora Lynn	Seam #1 main.
T93R-03	110	100.8	GDVC	6.1	4.42	Tenas Ck	—	—	Sept. 5	McAuley	
T93R-04	103	89.0	GDVC	3.7	2.13	Tenas Ck	—	—	Sept. 3	Cora Lynn	N/C.Hazelton vole bsmt hole.
T93R-05	113	92.4	GDVC	5.5	3.66	Tenas Ck	—	—	Sept. 4	Cora Lynn	
T93R-06	112	55.8	GDC	2.1	1.22	Tenas Ck	—	—	Sept. 4	Cora Lynn	
T93R-06C	—	31.6	GDC	5.5	1.22	—	27	—	Sept. 11	McAuley	
T93R-07	114	128.9	GDVC	15.2	9.76	Tenas Ck	—	—	Sept. 5	Cora Lynn	
T93R-07C	—	114.3	GDVC	24.4	9.76	—	25	—	Sept. 12	McAuley	
T93R-08	—	43.0	GDC	2.3	1.83	Tenas Ck	—	—	Sept. 5	McAuley	Fault repeat of c,1U,1,1La,1Lb
T93R-08C	—	17.4	GDC	1.8	1.80	—	19	—	Sept. 6	McAuley	
T93R-09	115	171.3	GDCV	2.7	1.22	Tenas Ck	—	—	Sept. 6	Cora Lynn	No main seams?
T93R-10	105	61.0	GDCVDp	6.1	3.35	Tenas Ck	—	—	Sept. 7	McAuley	Fault repeat coals?
T93R-11	107	73.3	GDCV	18.3	16.16	Tenas Ck	—	—	Sept. 7	McAuley	
T93R-11C	—	55.2	GDVCDp	18.3	16.16	—	20	—	Sept. 8	McAuley	
T93R-12	116	128.9	GDVC	16.3	15.55	Tenas Ck	—	—	Sept. 9	Cora Lynn	
T93R-13	109	140.8	GDVC	24.4	23.80	Tenas Ck	—	—	Sept. 10	Cora Lynn	N/C. Hazelton Vole bsmt @ 64m
T93R-14	106	109.7	GDVCDp	6.1	3.66	Tenas Ck	—	—	Sept. 10	McAuley	N/C. Vole bsmt th/out hole.
T93R-15	122	42.7	Nil	Nil	>46.3	Tenas Ck	—	—	Sept. 10	Cora Lynn	Abnd. 42.7m outwash deposits
T93R-16	118	36.6	GN	Nil	>36.6	Tenas Ck	—	—	Sept. 11	Cora Lynn	Logged thru stem. Outwash n/a
T93R-17	119	128.9	GDVC	5.2	3.96	Tenas Ck	—	—	Sept.12	Cora Lynn	Methane producing hole.
T93R-18	120	183.8	GDVC	25.6	24.39	Tenas Ck	—	—	Sept. 14	Cora Lynn	Methane producer. No #1 coals
*T92R-40C	—	35.4	GDC	18.3	8.50	Tenas Ck	10	—	Sept. 14	McAuley	Cored 1992 hole.
T93R-19	121	122.0	GDVC	11.0	8.84	Tenas Ck	—	—	Sept. 15	Cora Lynn	N/C. Vole rx th/out.
T93R-20	131	46.3	Nil	24.4	>46.3	Tenas Ck	—	—	Sept. 15	McAuley	Abnd. 42.7m outwash deposits
T93R-21	20	140.8	GDVC	3.4	2.74	Pit 8 South	—	—	Sept. 16	Cora Lynn	Seams #2 to 11.
T93R-22	28	176.8	GDVC	18.3	16.16	Pit 8 South	—	—	Sept. 16	McAuley	Seams #2 to 11
T93D-22	28	207.3	GDVC	18.0	16.16	Pit 8 South	29	67	Sept. 28	J.T. Thomas	Geotech hole. #2 - 11 sms. ARD
T93R-23	19	165.2	Nil	—	33.84	Pit 8 South	—	—	Sept. 17	Cora Lynn	No Coal
T93D-23	19	149.4	GDVC	36.6		Pit 8 South	15	47	Sept. 27	J.T. Thomas	Geotech hole. #1 seams. ARD
T93D-24	39	45.7	GDC	1.5	1.50	Pit #8	—	8	Sept. 18	J.T. Thomas	Geotech intrusive hole. ARD.
T93R-25	21	185.9	GDVC	12.8	7.01	Pit 8 South	—	—	Sept. 20	McAuley	One seam; 113-117m?
T93R-26	23	86.0	GDVC	31.4	31.40	Pit 8 South	—	—	Sept. 19	Cora Lynn	#2 seam.
T93D-27	27	115.8	GD	73.2		Pit 8 South	15	10	Sept. 23	J.T. Thomas	Twinned T79R-10 hole.
T93R-28	22	146.9	GDVC	18.3	13.11	Pit 8 South	—	—	Sept. 21	Cora Lynn	Double piezo hole
T93R-28P	22	71.9	GDC	11.3			—	—	Sept. 22	Cora Lynn	Flt btwn R-28 & R-28P. Piezo 2
T93R-29	18	134.1	GDVC	42.7		Pit 8 South	—	—	Sept. 21	McAuley	Double piezo location.
T93R-30	17	134.1	GDVC	24.4	19.21	Pit #8	—	—	Sept. 24	McAuley	Single piezo hole. #1 seams.
T93D-31	26	182.9	GDVC	33.5		Pit 8 South	1	—	Sept. 24	J.T. Thomas	Basal #1 seams; Pit #7?
T93R-32	—	110.6	GDVC	3.5	1.83	Pit #8	—	—	Sept. 25	Cora Lynn	Infill structural hole. Piezo.
T93R-33	16	152.4	GDVC	6.1	2.44	Pit #8	—	—	Sept. 26	McAuley	N/C. On other side of fault?
T93R-34	37	165.2	GDVC	39.9	36.89	Exploration	—	—	Sept. 27	Cora Lynn	Expln hole. Thin dirty seams.
T93R-35	24	110.0	GCVDDp	42.7	38.11	Pit 8 South	—	—	Sept. 28	McAuley	Seams #8 to 2
T93R-36	32	138.0	GC	5.4	4.57	Plant Site	—	—	Sept. 26	Cora Lynn	Minor coal. No H2O; no density.
T93R-37	36	137.8	GDC	6.1	4.27	Exploration	—	—	Sept. 29	Cora Lynn	Thin coals.
T93D-38	29	137.2	GD	18.3		Pit #7	19	—	Sept. 29	J.T. Thomas	Sm #1 coals. Logged thru stem.
T93R-39	33	110.3	GDVC	8.8	8.84	Plant Site	—	—	Sept. 30	Cora Lynn	Thin coals.
T93R-40C	211	65.6	GCVD	6.1		Pit #3	36	—	Sept. 30	McAuley	
T93R-41C	201	141.7	GDVC	5.5		Pit #3	37	—	Oct. 1	McAuley	
T93R-42C	203	75.3	GDC	15.3		Pit #3	15	—	Oct. 4	McAuley	
T93R-43C	208	41.0	GDC	5.2		Pit #3	13	—	Oct. 5	McAuley	
T93D-44	—	122.0	GDVC	5.5		Pit #8	46	40	Oct. 1	J.T. Thomas	Infill structural hole.
T93D-45	123	143.0	GDVC	42.5	39.50	Tenas Ck	12	—	Oct. 2	J.T. Thomas	Not the #1 seam coals?
T93R-46	34	41.1	GDC	18.0	16.16	Plant Site	—	—	Oct. 2	Cora Lynn	Vole rx @ 25m.
T93D-47	104	179.0	GDDp	12.2		Tenas Ck	3	—	Oct. 5	J.T. Thomas	Logged thru stem. Dp log to 80
T93R-48	35	137.0	GDVC	6.0	5.79	Plant Site	—	—	Oct. 2	Cora Lynn	#1 seam coals.
T93R-49	101	116.8	GN	12.2	11.28	Tenas Ck	—	—	Oct. 4	Cora Lynn	Vole bsmt rx below coal.
T93D-50	130	87.8	Nil	—	>87.8	Tenas Ck	0	—	Oct. 3	J.T. Thomas	Outwash sediments th/out 87.7
T93R-51	—	71.3	GDC	5.5	3.66	Tenas Ck	—	—	Oct. 4	Cora Lynn	W of T92R-42. Volcs @ 58.2m.
T93R-52	133	42.7	Nil	—	42.70	Tenas West	—	—	Oct. 5	Cora Lynn	Abnd @ 42.7m OB. Redrill in 94 to 54 m.
T93D-53	—	91.4	GDCV	7.5		Tenas Ck	16	39	Oct. 15	J.T. Thomas	Tenas Ck. ARD hole.
TOTALS:		6526.8					364	211			

TOTAL: Diamond - 1461.5
Rotary - 4453.3 3695.7 (Not incl. pilots for rotary cores)
Rot core - 612.0
6526.8

where: G = Gamma Log
D = Density Log
C = Caliper Log
V = Verticality Log

2.1.2.1 Drill-hole Numbering

Drill-holes completed on the Telkwa Property between 1979 and 1989 were not numbered utilizing a common numbering scheme. As a result, in 1992, all drill-holes completed on the property were renamed to reflect a common system. The original numerical component of the name was retained to avoid confusion but prefixes denoting the year drilled and the type of drill-hole were made consistent. An example of the adopted system would be T85D-502 where:

- T - denotes it as a Telkwa Property drill-hole; TG as a Telkwa Surficial Geology test-hole.
- 85 - classifies it as being drilled in 1985.
- D - denotes it as a diamond drill-hole; R as a rotary.
- 502 - is its original numerical component.

For rotary core-holes a C would follow the numerical component. A complete drill-hole listing is provided within Enclosure 6.

2.1.2.2 Geophysical Logging

When physically possible all exploration drill-holes completed within sedimentary rock were open-hole geophysically logged shortly after drilling was suspended. Where poor downhole conditions were encountered a slimline gamma-density tool was lowered through the drillstem so as to obtain at least one complete geophysical log of the hole. Detail logging (1:20 Scale) was undertaken over significant coal seam intervals only. Surficial geology test-holes were not geophysically logged due to their shallow completion depths nor were some 1994 bore-holes

completed within volcanic bedrock, particularly those containing excessive thicknesses of poorly consolidated Tertiary overburden sediments.

Copies of geophysical logs for each borehole are presented within Enclosure 27. In most cases downhole conditions were satisfactory and the following open-hole geophysical log responses were obtained:

Gamma Ray General	1:100 Scale
Long Spaced Density General	1:100 Scale
Dipmeter General	1:100 (on selected holes)
Caliper	
Deviation	
Gamma Ray Detail	1:20 Scale
Long Spaced Density Detail	1:20 Scale
Bed Resolution Density Detail	1:20 Scale

2.1.2.3 Drill-hole Logging, Sampling and Analysis

All core-holes completed during the 1993 and 1994 exploration programs were logged in detail (Enclosure 7) by geologists on site. In 1993 a total of 364 coal ply samples were collected while in 1994 there were 149 samples recovered. During both seasons rock samples from representative core-holes were also collected for subsequent analyses to determine potential acid rock drainage (ARD) characteristics. Cuttings descriptions from all rotary drill-holes, as described in the field, are found within Enclosure 8. Specific details of analyses conducted and test results are discussed in Section 4.0.

2.1.3 Geological Surface Mapping

Geological surface mapping completed during the 1994 exploration program was concentrated mainly on the Telkwa South coal licences within the incised drainage systems of Cabinet and Webster Creeks, and on areas of high topographic relief where outcrop exposures were unobscured. Coal licences where mapping was undertaken include CL4260, CL4261, CL4262, CL4264, CL4282 and CL8426.

2.1.4 Reclamation

Reclamation activities were undertaken in areas disturbed by recent exploration activities, as well as those areas disturbed by previous years' activities which were considered to require additional work. All disturbed areas were recontoured, reseeded and fertilized using Forestry approved mixtures. Access trails on sloping ground were water barred for erosion control, and additional topsoil was added to areas that inhibited new plant growth. All work was carried out in accordance with the regulations and guidelines of B.C. Forestry. Areas which were not reclaimed in the disturbance year due to the onset of adverse weather were completed the following spring.

3.0 GEOLOGY

3.1 REGIONAL GEOLOGIC SETTING

During Jurassic and Cretaceous time much of the western portion of British Columbia was formed as the result of several terranes that moved slowly toward and eventually collided with the North American craton. The Telkwa coalfield is the product of sedimentation that occurred as one such terrane, the Stikine Terrane, pushed eastward to eventually become sutured to the North American landmass (Richards, 1988).

Successor basins, which formed in response to the approaching terrane, were the focus of rapid sedimentation, subsidence and increased tectonic activity. One such successor basin, the Bowser Basin, had developed during Middle Jurassic time near the present-day location of Smithers. It was a centre of deposition, bounded on the north by the Stikine Arch, on the south by the Skeena Arch and on the east by the early uplifting of the Columbian Orogeny. The Telkwa coalfield developed along the northern flank of the Skeena Arch near the southern limit of sedimentary rocks in the Bowser Basin (Figure 3.1) (Palsgrove and Bustin, 1991).

Deposition of the coal-bearing sediments in the Telkwa area was initiated into the Bowser Basin during the Lower Cretaceous, following uplift and erosion of the Skeena Arch. Although this sedimentation initially came from the south and west, an eastern provenance soon dominated, a response to the increased uplift of the Columbian Orogeny. The result in the Telkwa area is represented by more than 500 metres of coal-bearing strata referred to as the Lower Cretaceous Skeena Group. In the Telkwa coalfield Skeena Group sediments unconformably overlie Jurassic Hazelton volcanics.

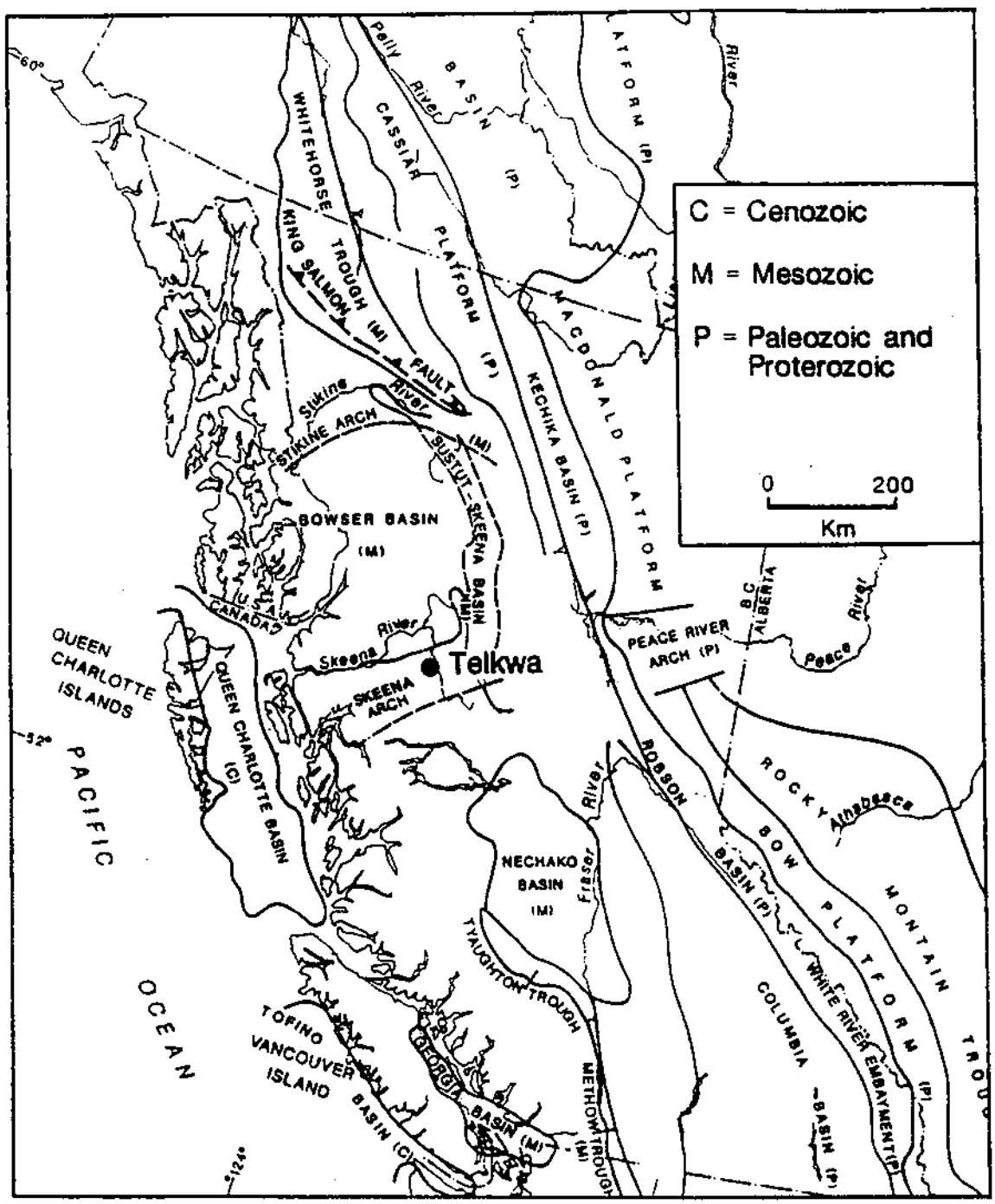


Figure 3.1. Tectonic Elements of British Columbia (R.J. Palsgrove, 1990).

3.2 STRATIGRAPHY

Sedimentation of Skeena Group sediments occurred throughout the Lower Cretaceous, during which time deposition was influenced by two regressive / transgressive episodes. As a result the stratigraphic sequence (Enclosure 9) is divisible into four lithostratigraphic units (Palsgrove and Bustin, 1989) described below. Porphyritic Tertiary and Cretaceous intrusive dykes and sills commonly disrupt local stratigraphy as does a large Tertiary granodiorite plug identified on the northern coal licences.

3.2.1 Unit I

The basal unit, Unit I, was deposited in a fluvial environment on an eroded Hazelton volcanic basement of Jurassic age. In the Telkwa area Unit I may be in excess of 100 metres in thickness and consists mainly of conglomerate, sandstone, mudstone and coal. Sands and gravels were typically deposited in braided channels and bars while mudstones accumulated in floodplains. Coals within this unit, collectively referred to as Coal Zone 1, formed in poorly drained backswamps and are characterized by lateral variation throughout the study area. Deposition of Unit I ended with a marine transgression and deposition of Unit II.

3.2.2 Unit II

Unit II was deposited within a deltaic / shallow marine environment and consists of up to 140 metres of sandstone, silty mudstone and occasional thin coaly mudstone. Sands were deposited in distributary channels and mouth-bars while mudstones and silty mudstones accumulated in interdistributary bays. Thin discontinuous peat beds, none of which are of economic significance, accumulated in local salt marshes.

3.2.3 Unit III

Unit III is indicative of the second regressive episode for the area and represents the deposition of the main coal-bearing stratigraphic sequence. The unit averages 85 metres in thickness and comprises of sandstone, siltstone, carbonaceous mudstone and thick, laterally extensive coal seams. Restricted nearshore marine, tidal flat and coastal swamp environments persisted throughout much of the deposition of Unit III. Sandstone units were deposited within tidal channels while interbedded sandstones and siltstones were deposited nearshore within intertidal environments. Mudstones are representative of tidal flat deposits. Indications are that there was significant marine influence during deposition of the entire unit.

Coal Zones 2 through 11 are represented in Unit III, collectively consisting of up to 17 coal seams of economic significance. The coal zones were likely formed in freshwater peat swamps, located landward of the tidal flat, somewhat isolated from influxes of brackish water. The presence of sulphur in some of the coal seams suggests, however, that the peat was infiltrated periodically by marine water. Thus, the major coal seams are interpreted to have formed from peat accumulated in a freshwater marsh that was proximal to a brackish environment. The Snuggedy Swamp of South Carolina is considered a modern analog for the paleoenvironment in which Unit III was deposited.

3.2.4 Unit IV

Unit IV overlies the coal measures and represents a marine transgression that terminated coal deposition over the study area. The unit exceeds 150 metres in thickness and consists of sandstone overlain by silty mudstone. The basal sandstone is a transgressive lag deposit while the remainder represents deposition within a near-shore, shallow marine environment.

3.3 STRUCTURAL GEOLOGY

Since deposition of the Skeena Group of sediments during the Lower Cretaceous the Telkwa area has undergone at least two episodes of structural significance. The Upper Cretaceous of the Bowser Basin reflects a time of deformation, when high angle faulting and plutonism were occurring eastward within the Omineca Crystalline Belt, and increasing uplift was occurring to the west. This was a result of the suturing of the Stikine Terrane to the North American craton and also the effects of additional terranes approaching from the west. Although folding in the Telkwa area was not as significant as in other portions of the basin, high angle faulting roughly trending in a north-south direction are apparent in the Telkwa coalfield, especially on the south side of the Telkwa River. Porphyritic Late Cretaceous dykes and sills also occur locally within the coal measures.

During the Tertiary much of the area on the north side of the Telkwa River was intruded by a large granodiorite and quartz monzonite intrusion. The igneous body, which vertically intruded the Skeena sediments, complicated the structural geology of the area further. This is especially apparent at close proximities to the intrusive body on the northern coal licences. Structural repercussions in the Skeena sediments appear to be represented by high angle faulting, establishing a mosaic of structural blocks that have been rotated and tilted into a variety of orientations. No specific orientation has been observed to the faulting although faults are apparent in concentric geometries near the intrusive body and also appear to crudely radiate from the intrusive edge. Fault displacements have been observed to range from only a few metres to more than 150 metres.

Although bedding orientations within the Telkwa Property resource areas tend to be fault block controlled, each with independent orientations, dips normally range from 10 to 30 degrees. In the fault blocks associated with the Pit #3 resource area dips are typically 20 degrees to the east, while within the blocks of Pit #7 & #8 they average 17 degrees to the east and northeast respectively. In the Northwest Area, block orientations are to the southeast and southwest, with dips ranging from

10 to 35 degrees. Tenas Creek orientations are consistently easterly dipping, normally ranging from 9 to 22 degrees. Within the MCL Whalen Block orientations vary but typically range from 15 to 25 degrees to the east/southeast.

3.4 DETAILED GEOLOGY

Exploration work completed by Manalta Coal Limited in 1993 and 1994 was distributed somewhat evenly between the North and South Telkwa coal licences. On the north side of the Telkwa River exploration drill-holes were completed within the Pit #7 & #8 resource areas, the MCL Whalen Freehold Block, and the tailings pond investigation site. These drill-holes were dedicated mainly to the further delineation of the Pit #8 coal trend and reconnaissance drilling adjacent to existing resource areas. Work completed in 1993 also included a tailings pond geophysical survey over the tailings pond study area and a shallow surficial geology drill-hole program.

On the south side of the Telkwa River the bulk of drilling occurred within the Tenas Creek resource area to further delineate field limits, and within the West Tenas Creek area where reconnaissance exploration drilling was initiated. Five additional drill-holes, completed in 1993, were drilled within the Pit #3 resource area, also on the south side of the Telkwa River.

The economic coals found represented within the Pits #3, #7, #8, and Northwest resource areas are those of lithostratigraphic Unit III (Seams #2 - 11). In the Tenas Creek, Cabinet Creek and MCL Whalen areas, however, the main seams of interest are those of the Seam #1 coal sequence of Unit I.

The Pit #7 and #8 resource areas have been modelled utilizing the Lynx Mine Modelling System. The resultant models are considered to be an accurate representation of the geological information obtained to date. The 1993/94 exploration programs have resulted in updates to the geological models, most

notably to the southeast end of the Pit #8, where the coal trend has been extended. Additional updates include seam nomenclature of some seams found within Pit #7.

No additional work since 1992 has occurred on the coal licences within the Northwest Area. The area has not been computer modelled to date, as additional drilling is considered necessary to accurately determine its geometry. Minimal work was undertaken within the Pit #3 area in 1993, and time restraints have not yet allowed modelling of the deposit within the Lynx system. The Tenas Creek deposit has also not been computer modelled via the Lynx System as additional exploration is anticipated.

The stratigraphic columns prepared for each of the main resource areas (Enclosure 9) clearly illustrate the typical stratigraphy found within each of the resource areas. It also shows some of the regional variations and trends which occur within seam and interseam lithologies throughout the Telkwa Coalfield. Some of the more notable trends are as follows:

- The coal seams within Lithostratigraphic Unit I, collectively referred to as Seam #1, are separated from the overlying coals of Unit III by up to 140 metres of shallow marine origin sediments. As such the seams have not been intersected by drilling, except on occasion, within most of the resource areas drilled to date. The exception is within the Tenas Creek Resource Area, drilled extensively in 1993 and 1994, where the Unit I coals are the represented target of interest. Correlation of the #1 seams between resource areas is currently unrefined, however, as additional information is required to further determine the consistency and lateral variability of individual seams. Intersections of the #1 seams within the MCL Whalen Block indicate that the seam, at least in this area, is subject to considerable variability, a result of erosional forces by fluvial systems.

- Seam #2 remains consistent throughout much of the property although

thin partings are apparent within the Pit #3 and #7 resource areas. The seam does, however, exhibit some thickness variability over short distances especially within the northwest portion of Pit #8. Seam #2 Upper, which overlies Seam #2, is thin and developed only within the eastern resource areas north of the Telkwa River. Seam #2 Lower, which underlies Seam #2, also occurs on the northern side of the river but remains significant only within the western resource areas.

- Seam #3 remains one of the most consistent seams in the stratigraphic sequence of Unit III. It is found throughout the resource areas which exploit Unit III, and is consistently split into Seams #3 Lower and Upper by a mudstone parting rarely exceeding one metre in thickness.

- Seam #4 is normally well-developed throughout each of the resource areas but is locally absent from a small area in the southeast portion of Pit #8. Seam #4 Upper, which overlies the #4 Seam, is absent from Pit #7 and the eastern half of Pit #8, but occurs throughout the western part of Pit #8, the Northwest Area, and Pit #3. The parting thickness between Seam #4 and #4 Upper increases progressively in a northwesterly direction attaining a maximum thickness of more than 7.0 metres in the Northwest Area.

- Seam #5, a very well-developed seam, is found throughout the property. It splits, however, midway through Pit #8 where it is represented in Northwest area and the west half of Pit #8 as Seams #5 Lower and #5 Upper.

- Seam #5ex is undeveloped throughout most of the property but progressively develops within the Pit #8 resource area, becoming increasingly apparent on the west side of Pit #8. Within the Northwest Area the seam continues to thicken and represents one of the thickest and best developed seams of the area.

- Seam #6 exhibits considerable variability between the resource areas, splitting from a single seam in Pit #3 to as many as 3 seams in Pit #7. Throughout Pit #7, Pit #8 and Northwest Area the seam is represented as #6 Lower and #6 Upper, separated by a parting normally averaging approximately one metre in thickness. In the Pit #7 area Seam #6 Lower is further split by another parting normally not exceeding 0.50 metres in thickness.

- Although generally thin and considered uneconomic throughout most of the resource areas Seam #7 is laterally continuous and shows little variability throughout the coalfield. The exception is within Pit #7 where the seam is absent from the sequence.

- Seam #8, although present throughout most of the resource areas, exhibits considerable variability with respect to seam thickness, often over short lateral distances. Seam #8, and those seams which overly it, are not well represented within the Pit #7 area since most of the upper portion of the Unit III sequence was eroded from that area prior to glaciation.

- Seam #9, due to its variable thickness and poor quality characteristics, is rarely considered of economic significance. The seam is characterized by visible pyrite banding and as a result has higher than average raw sulphur values in comparison to other seams. Like underlying Seam #8 it often exhibits seam thickness variability and lateral discontinuity.

- Seam #10 is a relatively consistent seam, present throughout most of the Pit #3, Pit #8 and Northwest areas. The seam varies in thickness, however, often over short lateral distances.

- Seam #11, the roof of which forms the top of Lithostratigraphic Unit III, is found throughout the Telkwa North resource areas where it is usually a consistent, continuous seam. It does, however, exhibit some regional thinning within the northeast segment of Pit #8.

- Four notable sandstone units have been identified within or proximal to the Seam #2 to #11 coal seam package. The #2 Sandstone, which underlies the #2 and #2 Lower seams represents the thickest, most consistent and predictable sandstone unit of the four. Forming the top of Lithostratigraphic Unit II, it is a massive sandstone in excess of 10 metres in thickness which has been observed to commonly contain pelecypod shells or shell fragment horizons within it. The sandstone unit is most strongly developed on the north side of the Telkwa River.

The #3 Sandstone, stratigraphically located in Unit III between Seams #3 Upper and #4, is present throughout all of the resource areas but remains thickest and best developed within the Pit #3 area south of the Telkwa River. The sandstone unit thins considerably in Pit #7 and continues to thin, becoming finer-grained westward into Pit #8 and Northwest Area.

The #7 Sandstone is situated stratigraphically within Unit III between Seam #7 and #8 and is laterally continuous throughout the resource areas on both sides of the Telkwa River, although is most strongly developed in the Pit #3 area. The unit commonly is interbedded with finer-grained lithologies, most apparent on the north side of the Telkwa River.

The #11 Sandstone, or Unit IV Sandstone as it is sometimes referred to, represents the base of Lithostratigraphic Unit IV and usually directly overlies Seam #11. This marine sandstone is regionally correlatable across the resource areas, displaying only minor variability. The unit does, however, tend to be slightly thinner in Pit #3 than within Pit #8 and Northwest Area.

3.4.1 Pit #3 Resource Area

Between 1979 and 1984 the Pit #3 resource area had been extensively explored resulting in considerable volumes of information accumulated on the area's Unit III coal measure stratigraphy. The seams (#2 - #11 seam package) subcrop along the western edge of the area, roughly paralleling the Goathorn Creek valley. Most of the seams deteriorate easterly, becoming thinner and poorly developed suggesting that locally, during deposition, a restricted nearshore marine environment persisted to the east (Palsgrove, 1990).

The Pit #3 area is characterized by an east-dipping stratigraphy, repeatedly broken by a series of north/south trending normal faults. Regional dips range from 10 to 35 degrees, averaging 20 degrees, while normal fault displacements range up to 20 metres. In 1993, 5 core-holes were completed at selected sites and additional coal quality information from several seams was collected.

3.4.2 Pit #7 Resource Area

In 1993/94 there were few additional drill-holes completed within the limits of the Pit #7 resource area, although several drill-holes were completed proximal to the area. Some of these drill-holes, particularly those occurring stratigraphically down-dip of the Unit III coal measures, intersected the #1 Seam coals of Unit I. In addition, drilling completed within the southeast extension of Pit #8, adjacent to Pit #7, has provided additional stratigraphic information relating to seam relationships between the two resource areas, allowing modifications to correlations to some seams of Pit #7. Significant changes are summarized within Table 3.1.

Table 3.1

Pit #7 Seam Nomenclature - Significant changes in 1993

Pre-1993 Seam Nomenclature		Post-1993 Seam Nomenclature
6UC	---------	6U
6UB	---------	6LB
6UA	---------	6LA
6M	---------	5x
6Lb	---------	5
6La	---------	5T
5R	---------	5R
5	---------	4
3U	---------	3U
3L	---------	3L
2B	---------	2B
2A	---------	2A

To date 19 drill-holes have intersected the Unit III coal measures (Seams #2 - 11) within the Pit #7 area (Enclosure 10). Drill-hole spacing for the area is currently approximately 125 metres. Enclosure 11 presents a summary of all seam intersections and average seam thicknesses encountered within the Pit #7 resource area to date. Individual drill-hole details and seam intersection data is provided within Enclosure 12.

The coal measures trend in a north-south direction and dip east to northeastward until they terminate against a northeast-southwest trending near vertical fault. This normal fault exhibits considerable displacement (approximately 150 metres) juxtaposing thin coal seams possibly of the #1 seams against the Unit III coal seams found in Pit #7. The coal measures also abruptly terminate to the north where Skeena sediments have been intruded by a large Tertiary granodiorite plug. The intrusive truncates the sediments at nearly 90 degrees to bedding and extends beyond Pit #7, further disrupting the coal measures of Pit #8 and Northwest Area. Small-scale faulting has been identified at close proximities to the intrusive contact in other areas and is suspected in Pit #7 as well. The coal seams subcrop to the west and south, as illustrated on cross-sections 7A through 7E (Enclosure 13). Cross-section locations are referenced on the Pit #7 Geology Map (Enclosure 10).

3.4.3 Pit #8 Resource Area

Current exploration for the Pit #8 resource area is such that 55 drill-holes intersect the coal measures of the #2 - #11 seam package of Unit III, providing a drill-hole spacing of approximately 150 metres or less. Drill-hole data has identified that the area consists of two main parallel trending fault blocks which present a repetition of the Unit III coal-bearing sequence (Enclosure 14). Displacement on the normal fault separating the two

blocks ranges from 40 metres near its southeastern end, to 80 metres at its northwestern terminus with the Tertiary intrusive body. Additional normal faulting has been identified by 1993 drilling within the southeast portion of Pit #8. These faults, trending approximately perpendicular to the regional strike of the area, have displacements ranging from 20 to 80 metres. They are known to break and juxtapose the #2 to #11 coal seam package into a series of smaller fault blocks. Several smaller-scale displacement faults have also been identified, normally occurring at close proximities to the intrusive body.

The coal seams subcrop to the southwest and are constrained on the northeast by the granodiorite intrusive. An area of intense faulting and the absence of coal-bearing sediments terminates the Pit #8 resource area to the northwest. Although displaced by normal faulting the coal trend continues to the southeast, and may continue as far south as the Telkwa River, where the trend is presumed fault terminated. Indications are that the coals historically exploited by the Aveling Mine are extensions of the same seam package, suggesting that additional normal faulting may occur beyond the current limits of drill-hole control. Additional exploration is required to further determine the trend geometry in proximity to the Telkwa River.

Bedding orientations throughout the resource area are generally to the northeast as indicated by area cross-sections 8A through 8L (Enclosure 17). Cross-section locations are referenced on the Pit #8 Geology Map (Enclosure 14). Seam intersection data has been summarized within Enclosure 15 while specific drill-hole details and coal quality information are found within Enclosure 16.

3.4.4 Whalen Block Resource Area

Within the Whalen Block exploration activities in 1994 included 14 drill-holes. Drilling in 1994 has indicated the presence of coals, represented from both stratigraphic coal zones, Unit I and Unit III. Exploration also indicated the localized presence of structurally complex areas where additional exploration is required to fully evaluate seam geometries. The geology map for the area, Enclosure 18, illustrates the approximate subcrop position of the #1 Seam based upon findings to date. However, small-scale faulting is suspected throughout the area. Specific drill-hole details for the Whalen Block are provided within Enclosure 19.

3.4.5 Tenas Creek Resource Area

The coal measures of Tenas Creek Resource area (Enclosure 20) are representative of the #1 Coal Zone of Unit I and may be correlatable, although fault displaced, to seams in the vicinity of Cabinet Creek. To date a drill-hole spacing of 500 metres has been established at Tenas Creek and 24 drill-holes have intersected the seam sequence. Exploration in 1993/94 has established field limits for the deposit and has established an understanding of the Unit I stratigraphy and seam quality. A summary of drill-holes and seam intersection data in the Tenas Creek area, including those of Cabinet Creek, is provided within Enclosure 21. Specific drill-hole details and coal quality are presented within Enclosure 22.

The Tenas Creek stratigraphy trends at approximately 145 degrees and dips gently east / northeastward throughout most of the field. However, along the eastern side of the resource area the coals lie within a synform where they are likely broken, dipping steeply southwestward. The coals within the east limb of the synform either subcrop or are terminated at depth against a north / south trending fault which juxtaposes the Unit I coal

measures against volcanics, presumably of the Hazelton Group. Bedding orientations on the west limb range from 9 to 22 degrees, gradually increasing towards the southern limits of control in the resource area. Orientations along the east limb range up to 45 degrees although additional work is required to further define this structure.

Other than occasional erosional channel features which have eroded segments of the coal measures within their areas of influence, the #1 seams are laterally continuous throughout the extent of the field. Further exploration is required to fully determine the erosional impact of these Cretaceous paleochannels. Thin, discontinuous coals have sometimes been found developed within the confines of these channel structures.

At the field's northern limits Tertiary sediments, presumably associated with the glacial paleochannel of the Tenas Creek drainage, abruptly disrupt the local coal measures stratigraphy. Within the confines of the paleochannel a thickly interbedded sand and gravel blanket in excess of 85 metres was deposited, which now overlies the deeply eroded Skeena Group stratigraphy. The field's southern limits are not well understood and additional exploration is required to adequately determine the area's geometry as well as its relationship with the underlying Hazelton Volcanic basement. Tenas Creek coal-bearing sediments lie unconformably over Jurassic Hazelton volcanic rocks.

The typical stratigraphic column for the Tenas Creek area is included within Enclosure 9. Although several seams occur within the Unit I stratigraphy of Tenas Creek most are thin and not of economic significance. Three seams however, currently identified as c-seam, 1-Upper seam, and 1-seam, are consistent in nature and form the mineable component of the Tenas Creek resource. Cross-sections through the area, as referenced on the area geology map (Enclosure 20), are included as Enclosure 23.

3.4.6 Cabinet Creek Area

Field mapping was undertaken in the Cabinet Creek area in 1994. Outcrops were found to exist, almost exclusively within the deeply incised drainage systems of the area, specifically those of Cabinet and Webster Creeks. Although outcrops are dominated by volcanic rock exposures, some coal measures were encountered, particularly at lower elevations along the drainage systems. The area appears to have been affected by considerable structural stresses, as faulting and variability in structural orientation, is apparent.

3.4.7 West Tenas Creek Area

The West Tenas Creek area, explored by reconnaissance exploration drilling in 1994, currently has a drill-hole spacing of 750 to 1000 metres. Drilling to date indicates that most of the area is underlain by volcanics and volcaniclastic sediments, presumably of the Hazelton Group. These basement rocks are, in turn, overlain by thick accumulations of Tertiary sands and gravels up to 165 metres in thickness. No coal-bearing stratigraphy has been intersected to date. The exception is within CL3880, which includes a segment of the Telkwa River which is proximal to known coal measures found within the MCL Whalen Freehold Block.

The poorly consolidated Tertiary overburden blanket remains thickest near the Tenas Creek drainage, thinning westerly to less than 12.5 metres near the western property limits. Field mapping within a deeply incised un-named creek at the western limits of the property has confirmed the presence of volcaniclastic sediments below a shallow mantle of overburben.

3.4.8 Tailings Pond Investigation Site

Work conducted on the tentative tailings pond location was limited to the 1993 exploration program when surface geophysics and drilling were competed over the affected area. No significant coal measures were intersected by drilling in the study area, which is believed to contain the stratigraphic section which underlies the #1 Seam. Surficial geophysics, as well as shallow drilling, has also confirmed the presence of narrow Cretaceous dikes which disrupt the normal stratigraphy of the area. These dikes intersect bedrock at high angles and are presumably related to similar dikes identified along the banks of Goathorn Creek near the current location of the core storage facility.

3.4.9 Northwest Area

No additional work was performed on the Northwest Resource Area in 1993 or 1994. The reader is referred to the 1992 Geological Assessment Report for specifics of the area and a summary of work completed to date.

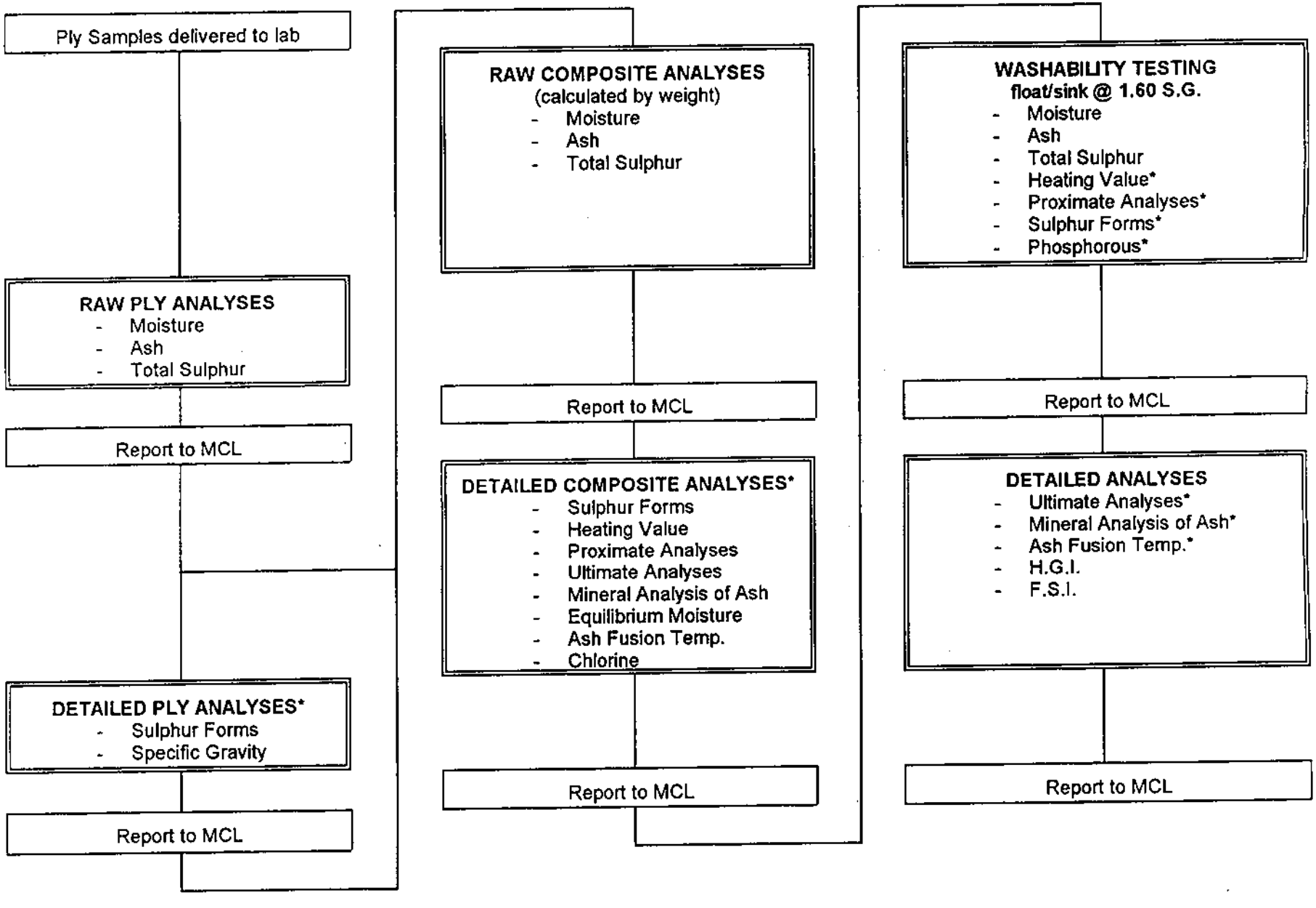
4.0 COAL QUALITY

The evaluation of coal quality for the 1993/94 exploration programs is based upon the analytical results of core obtained from diamond and rotary drill-holes. The primary purpose of the coring programs was to obtain sufficient samples of significant coal seams for reliable determinations of the raw and clean quality characteristics of the Telkwa Coalfield. Analytical data received in 1993 and 1994, as well as that from previous years' analyses, have been compiled and are summarized for the Pit #7, Pit #8, Whalen Block and Tenas Creek resource areas (Enclosures 12,17, 19 and 22 respectively).

Specific lab analyses were performed by Loring Laboratories Limited of Calgary, Alberta. Most samples collected were representative of selected coal lithologies, although some seam roof, floor and parting lithologies were also collected and subsequently analyzed. Specific analyses performed were completed in accordance with the coal quality flowsheet provided as Figure 4.1.

Coal in the Telkwa Coalfield varies from High Volatile A bituminous to semi-anthracite by the ASTM classification of coal rank. The vast majority of the area coals, however, are a High Volatile A bituminous product with RoMax vitrinite values generally ranging from 0.80 to 1.00 percent. Within the coal measures of the Skeena Group sediments, observations are that, coal rank generally tends to decrease slightly for coal units situated higher in the stratigraphic column. Localized occurrences of medium-volatile and semi-anthracite coals are thought to have resulted from either post-Cretaceous heat sources, deeper burial and subsequent uplift of some coal-bearing units, or from localized higher heat flux from the pre-Cretaceous basement (Ryan, B.D., 1992). Increases in coal rank have been observed in coals situated at close proximities to the Tertiary intrusive on the northern resource areas as well as some coals within the Cabinet Creek area.

TELKWA EXPLORATION . ROGRAM, 1992
COAL TESTING



* on selected samples only.

Figure 4.1

4.1 QUALITY CHARACTERISTICS

Coal quality parameters have been determined from core samples recovered since 1979 from each of the resource areas identified thus far in the Telkwa coalfield. The results presented in this report represent a compilation of all analytical results thus far accumulated within resource areas Pit #7, Pit #8 and Tenas Creek. A compilation of analytical data established to date for the Pit #3 resource area is not included in this report as the results of the five additional drill-holes completed in 1993 did not significantly alter the existing Pit #3 database. The reader is referred to previous years' Assessment reports for coal quality details specific to the Pits #1 to #6 resource areas as well as Northwest Area. Composite analytical results for the 1993 Pit #3 drill-holes, however, are presented within Enclosure 24.

Analytical results of all ply samples recovered in 1993 and 1994 are presented within Enclosure 25 while compiled analytical results for seam composites are available for each area, providing details for each drill-hole, within Enclosures 12, 17, 19 and 22.

Analytical quality data resultant from core extracted in 1993 and 1994 have provided additional information to the existing Telkwa seam quality database. Raw ash values for main seams vary widely as might be expected, ranging from 7.85% to over 50.00%. A similar variability exists with respect to the raw sulphur contents of individual seams, with values normally ranging from 0.30% to 7.77%. It has been observed, however, that although the sulphur contents between different seams within the statigraphic column may vary, seam-specific values remain relatively consistent throughout the extent of the field. In contrast, volatile matter, fixed carbon and calorific values normally remain consistent between all Telkwa seams. The exception is within the #1 Seam package of Tenas Creek which characteristically exhibits slightly lower volatile matter percentages than do all other seams in the Telkwa stratigraphy. This is likely due to a slight increase in coal rank for seams located in the lowermost part of the Telkwa stratigraphy, specifically those of Unit I.

5.0 COAL RESOURCES

Quantities of in-situ coal have been determined from drill-hole seam intersection information gathered between 1979 and 1994. Specific resource areas have been identified, each of which represents an independent coal deposit within the limits of the Telkwa Coalfield. Each possesses unique characteristics with respect to deposit geometries and all target the coal measures of either Unit I or Unit III.

Coal resources prepared for this report have been classified according to the Standardized Coal Resource/Reserve Reporting System for Canada compiled by the Geological Survey of Canada (1989). Due to the nature of the Telkwa deposit, the resource areas identified thus far within the coalfield have been classified as *complex* geological deposits. As a result the drill-hole density which currently exists allows the Pit #7 and much of the Pit #8 coal resource to be classified as *measured*, while the Pit #3 area is considered *indicated to measured.* The Tenas Creek prospect has been classified as *indicated,* and still requires additional work to fully establish field limits and deposit geometry. The Whalen Block also requires additional work and has an *inferred to indicated* resource.

5.1 RESOURCE CRITERIA

It is the intent of this study to report the total quantity of significant coal occurring within resource areas identified or further delineated by 1993 and 1994 exploration activities. While this report specifically details the Pit #3, Pit #7, Pit #8, Whalen and Tenas Creek Resource areas, in-situ geological reserve estimates for all Telkwa resource areas are provided on Table 5.1. Quantities reported consider only those seams which are of technically recoverable thickness, and does not consider depth of burial.

Resource estimates have been prepared based upon drill-hole seam intercept information established from geophysical log signatures. Resource areas for which geological computer models were generated include Pit #3, Pit #7 and Pit #8. As

such, total in-situ reserves were determined for these areas via computer modelling software. For the Tenas Creek and Whalen areas, resource estimates are based upon simpler, more direct measurement methods.

Table 5.1 Estimated In-situ Geological Coal Reserve; Telkwa Property

1994 In-situ Coal Reserve:

	Resource Area		Geological Reserve (M. tonnes)			Confidence Level
Telkwa North:	**Pit #7 Area**	--------	4.33		--------	Measured
	Pit #8 Area	--------	18.50		--------	Measured
	Northwest Area	--------	11.06		--------	Indicated & Inferred
	Whalen Block	--------	8.63		--------	Indicated & Inferred
			42.52			
Telkwa South:	**Pit #1,2 Area**	--------	3.37	*	--------	Indicated
	Pit #3 Area	--------	12.86	*	--------	Measured & Indicated
	Pit #4 Area	--------	0.56	*	--------	Inferred
	Pit #5 Area	--------	0.34	*	--------	Inferred
	Pit #6 Area	--------	1.80	*	--------	Indicated
			18.93			
	Cabinet Creek	--------	3.71	*	--------	Inferred
	Tenas Creek	--------	27.37		--------	Indicated
			31.07			
Telkwa Property Total:			**92.52**	Million tonnes		

where: * = Resource area reserve estimates from previous years' Geological Reports

For the Tenas Creek and Whalen areas average seam thickness values were calculated and subsequently the surface area that each seam occupied was measured for each area. The resultant reserve estimates for the Whalen and Tenas Creek resource areas are based upon the following formula:

$$R = A \times Th \times SG$$

where R = Coal Resource (tonnes).
A = Area occupied by a particular seam (m2).
Th = average seam thickness for a particular resource area (m).
SG = the Specific Gravity of a particular seam (g/cm3 = t/m3).

5.1.1 Pit #3 Reserve

The Pit #3 resource area was computer modelled via Eagle Mine Modelling software in 1984 by Shell Canada Ltd. Since acquisition of the property by Manalta Coal Ltd. in 1992 there have been verifications of the Model although to date the area has not been remodelled into a system currently maintained by Manalta.

Exploration drilling completed in 1993 by Manalta in the Pit #3 area did not result in significant changes to the current geological interpretation of the area. As such, in-situ reserve estimates were not regenerated and currently remain at 12,860,000 tonnes.

5.1.2 Pit #7 Reserve

A computer model was generated for the Pit #7 resource area via the Lynx Mine Modelling System in 1992 by Manalta Coal Ltd.. Additional drilling completed in the area in 1994 did not alter the deposit, and consequently the geological model, significantly.

Only seams which attained potentially mineable thickness were modelled, and thus ultimately considered within the reserve calculations of the Pit #7 resource block. Criteria for seam selection was based primarily upon seam thickness; generally seams which exhibited thicknesses of 0.50 metres or greater were included in the volume calculations. Partings with thicknesses exceeding 0.30 metres were considered separable and were not included as part of the seam package. Seams utilized in the reserve calculations, which are equivalent to those modelled, include:

- Seam 2
- Seam 3L
- Seam 3U
- Seam 4
- Seams 5 and 5R
- Seam 6L
- Seam 6U

Seams overlying the #6 coal package were not considered as they were intersected only by one drill-hole and are not adequately represented within the field. The total in-situ coal reserve thus calculated for Pit #7 is 4,327,000 tonnes.

5.1.3 Pit #8 Reserve

Like the Pit #7 area the Pit #8 resource area was modelled via the Lynx Mine Modelling System in 1992. Due to additional drilling in the area in 1993 the Model was subsequently updated to incorporate the additional data.

Pit #8 represents a more complex geological deposit than Pit #7, consisting of two main fault blocks and several smaller fault zones that exhibit minor displacement. In addition the Pit #8 resource area is considerably larger, within which the entire Unit III coal package is well represented. Criteria utilized for reserve estimate calculations are equivalent to those of Pit #7. Seams considered in the reserve calculations, which are equal to those which were modelled, include:

- Seam 2
- Seam 2L where present in significant thicknesses
- Seam 3L and 3U
- Seam 4
- Seam 4U when significant thicknesses were attained
- Seam 5 (which splits to become 5U and 5L westward)
- Seam 5ex where present in significant thicknesses
- Seam 6L and 6U
- Seam 7 in areas where thicknesses met the desired criteria
- Seam 8 in areas where thicknesses met the desired criteria
- Seam 9 in areas where thicknesses met the desired criteria

The reserve estimates are inclusive of all modelled coal seams within the current limits of geological control. Seam extrapolations extend southeastward as far as the Telkwa River valley incision where they are believed to fault terminate. The total in-situ coal reserve thus far established for the entire Pit #8 resource area is 18,499,000 tonnes.

5.1.4 Whalen Freehold Block

Drill-hole seam intersection summaries for the Whalen Block are found within Enclosure 19. Seam surface areas were planimetered from the area geology map (Enclosure 18). Significant folding has not been observed within the area although normal faulting is suspected. Bedding dips average 22 degrees in a northeast direction.

The total in-situ coal reserve for the current explored limits of the Whalen resource area has been estimated at 8,634,000 tonnes for all seams considered mineable. Additional work is considered necessary to further delineate field limits, deposit geometry and ultimately bring the coal reserve to a measured level.

5.1.5 Tenas Creek Area

The Tenas Creek resource area was drilled in 1993 and 1994 allowing field limits to be crudely established for the area. The current level of drill-hole control in Tenas Creek allows its coal reserve classified as indicated.

Tenas Creek drill-hole seam intersection summaries are provided within Enclosures 21 and 22. An average specific gravity of 1.43 was used for the #1 Seam, based upon analytical results from the core-holes completed in the area. Bedding orientations throughout most of the Tenas Creek deposit range from 9 to 22 degrees, dipping northeasterly.

The total in-situ coal reserve identified for Tenas Creek Area is 27,366,000 tonnes, based upon the 3 potentially mineable seams; c-seam, 1U-seam and 1-seam. Additional work is required to fully delineate field limits, establish the deposit geometry, and determine recoverable coal quantities.

6.0 COSTS INCURRED

Details of costs incurred during the 1993 and 1994 exploration programs are provided within the Cost Summary Report (Enclosure 26). The summary presented represents the total expenditures to date relating to the Telkwa Project 1993/94 exploration activities.

7.0 SUMMARY

The Skeena Group sediments of the Telkwa Coalfield is an erosional remnant of Lower Cretaceous sedimentary rock deposited along the southern flank of the Bowser Basin. Throughout the Lower Cretaceous sedimentation occurred during which time deposition was influenced by two regressive / transgressive episodes. As a result the stratigraphic sequence is divisible into four lithostratigraphic units, Units I through IV. The lithologies within Units I and III are representative of the regressive episodes and, in turn, the periods of significant peat development in the Telkwa area. The coals within Unit I, collectively referred to as Coal Zone 1 are separated from the Unit III coals by as much as 140 metres of mainly marine sediment. Coal seams #2 through #11, represented in Unit III, collectively contribute 20.5 metres of coal to the Unit's 85.0 metre average thickness.

Since deposition the Skeena Group sedimentary package has been modified by faulting and minor folding resultant from continental stresses that persisted throughout much of the Upper Cretaceous and Tertiary. In addition, during the Eocene of the Tertiary Period, an igneous body intruded the Skeena sediments, further disrupting and faulting the sedimentary package. As a result much of the area is characterized by high angle faulting, breaking the area into a mosaic of structural blocks that have been rotated and tilted into a variety of orientations. Each of the resource areas identified to date are representations of such fault blocks.

Several resource areas have been identified in the Telkwa area and since the early 1900s the area has been sporadically mined, exploiting the Unit I and Unit III coals. It was not until the late 1960s, however, that drilling as a means of identifying potential resource areas was utilized. Between 1979 and 1989 Shell Canada/Crowsnest Resources completed several exploration programs, completing 263 drill-holes and highlighting several resource areas, most of which are located on the south side of the Telkwa River.

The Telkwa Property coal licences have been held by Manalta Coal Limited since May 1st, 1992 and since that time Manalta has completed three exploration programs on the property. While several areas of potential economic interest were identified by the

property's previous owners, 1993/94 exploration activities were focused on further delineation of the Pit #7, Pit #8 and Tenas Creek resource areas, and reconnaissance exploration of the Tenas Creek West and MCL Whalen Freehold areas. Between the two annual exploration programs Manalta Coal completed 110 drill-holes and 21 kilometres of surface geophysics. Much of work undertaken by Manalta in 1993/94 was completed on the south side of the Telkwa River in the Tenas Creek area. Coal samples were collected from all cored drill-holes for subsequent analysis as were rock samples from representative cores for ARD testing.

The vast majority of the Telkwa area coals explored to date are a High Volatile A bituminous product by ASTM classification of coal rank. Medium Volatile bituminous as well as occurrences of semi-Anthracite coal are also known to exist. While the majority of Telkwa coals are relatively consistent with respect to raw calorific value, volatile matter and fixed carbon values, variations in raw ash and sulphur values occur between seams. Sulphur content variations between some seams is attributed to periodic infiltrations of marine water into the developing peat swamp, while inundations are thought to have terminated development of some of the coal seams.

Resources calculated for the Pit #7 and Pit #8 Resource Areas by Manalta Coal Limited were completed using computer models constructed via the Lynx Mine Modelling system. For the Tenas Creek Area manual methods for resource estimates were utilized. Estimated in-situ geological coal reserves for the five resource areas detailed in this report total 71.69 million tonnes. In-situ reserves for all resource areas identified thus far within the Telkwa Property limits are estimated at 92.52 million tonnes.

8.0 CONCLUSIONS

Significant reserves of High Volatile A bituminous coal have been identified within the Telkwa Coal Property limits currently held by Manalta Coal Limited. While the primary value of Telkwa coal is as a thermal product, some of its properties allow it consideration as a low grade coking coal. The coal reserve identified thus far within the property licences is represented by the coals associated with Unit I and Unit III, most of which has been identified within resource areas Pit #3, Pit #7, Pit #8, Northwest Area and Tenas Creek.

The coal reserve identified to date is known to lie within individual fault blocks, or Resource Areas, each with independent field limits and deposit geometries. Results from the 1993/94 exploration programs have aided in further definition of the geology of the Tenas Creek, Pit #7 and Pit #8 resource areas, providing additional coal quality information and better understanding of deposit geometries. While the structure encompassing the Pit #7 and #8 resource areas are closed, Tenas Creek field limits have not yet been established at its southeastern end and as a result additional exploration in this area is required. The resource areas identified as Whalen Block and Tenas Creek West were previously unexplored and, in 1993/94, were identified and partially delineated by the years' exploration activities. Additional exploration in the Whalen Block is required to fully evaluate its geometry and resource potential.

9.0 REFERENCES

Hughes, J.D., Klatzel-Mudry, L., Nikols, D.J. (1989): A Standardized Coal Resource / Reserve Reporting System for Canada; *Geological Survey of Canada, Paper 88-21,* 18 pages.

Malott, M.L. (1990): Telkwa Coal North (93L 152); *B.C. Ministry of Energy, Mines and Petroleum Resources,* pages 175-179.

McKinstry, B.W. (1990): Telkwa 1989 Geological Assessment Report; *Unpublished,* 13 pages.

Palsgrove, R.J. (1990): Stratigraphy, Sedimentology and Coal Quality of the Lower Skeena Group, Telkwa Coalfield, Central British Columbia (93L/11); *Master's Thesis, University of British Columbia,* 135 pages.

Palsgrove, R.J. and Bustin, R.M. (1990): Stratigraphy, Sedimentology of the Lower Skeena Group, Telkwa Coalfield, Central British Columbia (93L/11); *B.C. Ministry of Energy, Mines and Petroleum Resources,* Geological Fieldwork 1989, Paper 1990-1, pages 449-454.

Palsgrove, R.J. and Bustin, R.M. (1991): Stratigraphy, Sedimentology and Coal Quality of the Lower Skeena Group, Telkwa Coalfield, Central British Columbia, NTS 93L/11; *B.C. Ministry of Energy, Mines and Petroleum Resources,* Paper 1991-2, 60 pages.

Richards, T. (1988): Geologic Setting of the Stikine Terrane; *Abstracts of the Geology and Metallogeny of Northwestern British Columbia Workshop, Smithers, B.C.*, pages A75-A81.

Ryan, B.D. (1992): Coal Rank Variations in the Telkwa Coalfield, Central British Columbia (93L/11); *B.C. Ministry of Energy, Mines and Petroleum Resources,* Geological Fieldwork 1991, Paper 1992-1, pages 451-460.

Ryan, B.D. (1991): Density of Coals from the Telkwa Coal Property, Northwestern British Columbia (93L/11); *B.C. Ministry of Energy, Mines and Petroleum Resources,* Geological Fieldwork 1990, Paper 1991-1, pages 399-406.

TAESCO Consultants Limited (1985): Telkwa Project, Vegetation - Forestry - Wildlife, *Unpublished,* 129 pages.

Tipper, H.W. and Richards,T.A. (1976): Jurassic Stratigraphy and History of North-central British Columbia, *Geological Survey of Canada,* Bulletin 270, 73 pages.

1

93 L/11 | 1:50,000 | EDITION 2 | 93 L/11

CANADA

Joins 93 L/14

127°30' 25' 20' 15' 10' 05' 127°00'

54°45'

40'

35'

54°30'

Joins 93 L/12

Joins 93 L/10

Joins 93 L/6

TELKWA

COAST LAND DISTRICT RANGE 5

BRITISH COLUMBIA

Scale 1:50,000 Échelle

Miles 1 0 1 2 3 Milles

Metres 1000 0 1000 2000 3000 4000 Mètres

Yards 1000 0 1000 2000 3000 4000 Verges

T.N.

GRID NORTH

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WEST CENTRAL B.C.

TELKWA PROJECT

COAL LAND DISPOSITION MAP

AUTHOR: A.L.	SCALE: 1:50000	DRAWN BY: M.L.E.
DATE: SEPT.,1994	REVISED: 91-06-25	DRAWING No: 42074 B
To Accompany		

2

93 L/11 | 1:50,000 | EDITION 2 | 93 L/11

CANADA

Joins 93 L/14

127°30' 25' 20' 15' 10' 05' 127°00'

54°45' 40' 35' 54°30'

Joins 93 L/12 | Joins 93 L/10

Joins 93 L/6

TELKWA

COAST LAND DISTRICT RANGE 5

BRITISH COLUMBIA

Scale 1:50,000 Échelle

Miles 1 0 1 2 3 Miles

Metres 1000 0 1000 2000 3000 4000 Mètres

Yards 1000 0 1000 2000 3000 4000 Verges

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TELKWA PROJECT

COAL LAND DISPOSITION MAP

AUTHOR: A.L.	SCALE: 1:50000	DRAWN BY: M.L.E.	
DATE: SEPT., 1994	REVISED: 91-06-25	DRAWING No: 42074 A, B	
To Accompany			

3

615 000m E

620 000m E

625 000m E

6 057 500m N

6 047 500m N

NORTHWEST AREA

PIT 8 AREA

PIT 7 AREA

SUBCROP

QUARRY (INTRUSIVE)

VIEWPOINT

1992 GEOPHYSICAL LINES

TAILINGS POND INVESTIGATION AREA

PLANT SITE

MCL FREEHOLD

MCL WHALEN BLOCK

PIT 1/2 AREA

PIT 4 AREA

PIT 6 AREA

PIT 3 AREA

PIT 5 AREA

COAL SUBCROP

TENAS CREEK AREA

CABINET CREEK AREA

Pine Creek

BULKLEY RIVER

TYHEE LAKE

TELKWA

Tatlow Road

Chapman Road

Lawson Road

Skillinor Road

TELKWA RIVER

Hubert Creek

Helps Creek

Four Creek

Goathorn Creek

Tenas Creek

Cabinet Creek

N

LEGEND

- ROAD
- GAS PIPELINE
- COAL LICENCE BOUNDARY
- POWERLINE
- C.L. 8428 — COAL LICENSE
- TERTIARY INTRUSIVE
- RESOURCE AREA – REGION
- STRIKES

1000 0 1000 2000

METRES

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TELKWA

REGIONAL GEOLOGY MAP

Dwn. by:	D.H.M.	Date:	JUNE,1994
Chk'd by:	P.W.G.	File no :	42087 A

4

614 000mE | 616 000mE | 618 000mE | 620 000mE | 622 000mE

6 064 000mN | 6 062 000mN | 6 060 000mN | 6 058 000mN | 6 057 000mN

SANDNER QUARRY

1993 GEOPHYSICAL LINES

TAILINGS POND INVESTIGATION AREA

VIEWPOINT

PLANT SITE

AVELLING COAL MINE
1920–1921, 1940–1945

Coal Seams
0.50m–1.00m

Pine Creek

Bulkley River

Telkwa River

Goathorse Creek

1000 0 1000
METRES

LEGEND:

- COAL LICENCE BOUNDARY
- HAZELTON VOLCANICS
- THRUST FAULT (TEETH ON UPTHROWN SIDE)
- COAL MINE (ABANDONED)
- TERTIARY INTRUSIVE
- GEOTECHNICAL DRILL HOLE
- ROTARY DRILL HOLE
- CORED DRILL HOLE
- NORMAL FAULT (TEETH ON DOWNTHROWN SIDE)

manalta coal ltd.

TELKWA

1994 EXPLORATION
TELKWA NORTH

Dwn. by:	M.L.E.	Date:	MAY,1995
Chk'd by:	A.L.	File no.:	41825 F

615 000mE | 616 000mE | 618 000mE | 620 000mE | 622 000mE

6 057 000mN | 6 055 000mN | 6 053 000mN | 6 051 000mN | 6 049 000mN

TELKWA RIVER

Tenas Creek

Goathorn Creek

McNEILL COAL MINE
Pre.1930

LUSCAR OPEN PIT

B.V.C. No.4 MINE

M.C.L. Core
Storage Facility

1983
Test Pit

B.V.C. No.2 MINE
1943–1951
(90,500T)

B.V.C. No.1 MINE
1930–1943
(60,000T)

B.V.C. No.3 MINE
1950–1951
(23,500T)

SUBCROP

SEAM C
SEAM 1u
SEAM 1

LEGEND

- HAZELTON VOLCANICS
- NORMAL FAULT (TEETH ON DOWNTHROWN SIDE)
- THRUST FAULT (TEETH ON UPTHROWN SIDE)
- EXISTING DRILL HOLE
- COAL MINE (ABANDONED)
- OLD WORKING SITE
- B.V.C. BULKLEY VALLEY COLLERIES
- 1992 DRILL HOLE
- PRE 1992 DRILL HOLE

SCALE 1:10000

1000 0 1000

METRES

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TELKWA

1994 EXPLORATION
TELKWA SOUTH

Dwn. by: G.M.F.	Date: MARCH, 1994
Chk'd by: A.L.	File no.: 41826 B

5

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TELKWA COAL PROJECT
WATER MANAGEMENT OF TAILINGS POND AND PITS 7 AND 8

June 94

PREPARED FOR:

MANALTA COAL LTD.

K193-3773-3

JUNE, 1994

Color Copies

1. DRILLING PROGRAM

A total of ten test holes were drilled in the tailings pond area at the locations shown in Figure 2. A diamond drill with a tricone bit and water was used to drill to bedrock to a maximum of 8 m. Classification of the unconsolidated overburden was based on observations of the colour of the return water, gradation and consistency of the drill cuttings, penetration rate, drill vibration, and drilling difficulty. The results of the test holes are presented in Table 1. Reference should also be made to the nine test pits excavated in the tailings pond area as part of the 1989 investigation reported in 1990 by PEL. The test pit locations are shown in Figure 1.

2. GEOPHYSICS PROGRAM

2.1 INTRODUCTION

The goal of the geophysical investigation was to describe the surficial geology as it pertains to the suitability of the location for a tailings pond. Specifically, the objectives of the survey were to describe:

- unconsolidated overburden thickness and characteristics;
- bedrock characteristics; and,
- depth to groundwater.

Conditions were assessed by means of the following methods of geophysical investigation: electrical conductivity, magnetometer, very low frequency electromagnetics, DC resistivity, and seismic refraction.

TABLE 1

TEST HOLES

Hole 1	
0 to 8.2 m	• Light brown silt with some clay, sand and gravel, cobbles and boulders. • Layered with some clayey zones and other fairly clean, sandy gravelly zones. • 150 mm silty fine sand zone at 3.0 m; less clay below this depth. • Very slow drilling from 3.0 m to 7.3 m. • No clayey lumps, cobbles or boulders below 6.4 m.
Hole 2	
0 to 3.6 m	• Light brown silt with clay and some sand, trace of gravel cobbles and boulders - till. • Grey-brown fine to coarse sand and gravel from 3.0 m to 3.4 m.
3.6 to 8.2 m	• Grey-brown silty fine to coarse sand and gravel with occasional cobbles and gravel. • Occasional layers or lenses of light brown silt.
Hole 3	
0 to 3.6 m	• Brown silty, clayey sand and gravel with occasional cobbly, bouldery zones.
3.6 to 5.8 m	• Grey-brown fine to medium sand with little silt and occasional gravel and cobbles. • Lost circulation at 4.9 m.
5.8 to 8.2 m	• Very hard, slow drilling - no return - possible bedrock/boulders.
Hole 4	
0 to 8.2 m	• Light brown silty sand and gravel with occasional cobbles and boulders and trace of clayey lumps. • Sporadic water return down to depth of 2.4 m. Water was returned below 2.4 m. • Very cobbly and slow drilling from 5.2 m to 5.5 m. • From 7.0 m to 8.2 m, bit is plugging, but relatively easy drilling. Water return is very silty.
Hole 5	
0 to 4.3 m	• Light brown silty clay. Bit plugging sometimes to 2.1 m. • Becoming sandy and gravelly with occasional cobbles below 2.1 m.
4.3 to 7.3 m	• Light brown clayey silty sand with occasional gravel. • Boulder from 7.0 m to 7.3 m.

TABLE 1

TEST HOLES

7.3 to 8.2 m	• Same as above, but clayey lumps not observed.
Hole 6	
0 to 2.1 m	• Light brown silty water return, but no solid cuttings in return. Drilled very easily.
2.1 to 4.6 m	• Light brown silty sand, gravel and cobbles with occasional boulders.
4.6 to 8.2 m	• Grey-brown fine to medium sand with little silt. Sand appears to be grading finer with depth and bit is plugging. • Colour is dark grey-black from 7.6 m to 8.2 m.
Hole 7	
0 to 8.2 m	• Light brown clayey silt with sand and gravel. • Cobbly/bouldery from 1.8 m to 2.4 m. • Very sandy (bit plugging) from 3.0 m to 3.7 m and at 6.4 m. • Hard drilling from 5.8 m to 6.1 m (boulder).
Hole 8	
0 to 3.2 m	• Light brown clayey silty sand and gravel with occasional cobbles.
3.2 to 4.3 m	• Volcanic bedrock.
Hole 9	
0 to 5.8 m	• Light brown clayey silt with sand and gravel and occasional cobbles. • Very cobbly at 1.5 m. • Bit plugging at 1.8 m to 2.1 m (clayey zone). • Grading sandier with fewer cobbles below 2.4 m. • Fine to medium sand at 4.6 m to 5.2 m. Bit plugging at 5.2 m. • Refusal at 5.8 m. Boulder. No cuttings return.
Hole 11	
not drilled	• Hole not drilled. Volcanic bedrock encountered within about 0.3 m of surface when dozer was preparing drill site.

2.2 FIELD METHODS

Grid Layout

Thirteen approximately north/south lines were flagged and cut across the survey area (Figure 2). The lines were spaced from 50 to 100 m apart, and varied in length from about 400 to 1,700 m, for a total of approximately 19 km of cut line. Coordinates along each line were chained and flagged every 20 m. Geophysical field data collection was spatially referenced to these flagged coordinates. Several points along each line were subsequently fixed using GPS (Global Positioning System) and standard surveying techniques as performed by a surveying contractor. These fixed points were then used to place the geophysical survey lines onto a UTM (Universal Transverse Mercator) coordinate system. The baseline for all the cut lines was the road at the southern boundary of the site.

Terrain Conductivity Surveys

Terrain conductivity is defined as the bulk electrical conductivity of the subsurface. Two terrain conductivity devices were used, the Geonics EM31 and EM34. For low terrain conductivity environments (in contrast to sulphide deposits, for instance), these systems are superior to other induction methods in that they digitally output a value of a physical property, terrain conductivity. The purpose of areally mapping terrain conductivity was to permit tentative description of overburden and perhaps bedrock lithology.

The EM31 and EM34 are similar in their basic theory of operation, but differ in their respective depths of investigation. Generally, the depth of investigation of an electromagnetic (EM) device is controlled by:

- The transmitter/receiver intercoil spacing,
- The transmitter frequency, and
- The dipole (or coil) orientation.

Very Low Frequency EM (VLF)

VLF mapping operates on the same principles as other EM mapping techniques. Induced secondary magnetic fields are set up within subsurface electrical conductors such as saturated fractures. The in-phase (dip) and out-phase (quadrature) components of the vertical component of these secondary fields are measured in percentages of the transmitted EM field. Across a conductor's midpoint the dip component "crosses over" from positive to negative percentages. The sharpness of a cross-over depends on a conductor's geometry, depth, conductance, and the transmitted EM field's azimuth and frequency. Unlike the EM31 and EM34, the VLF is only a receiver. The EM field is transmitted from submarine communication towers over a distance of hundreds or thousands of kilometres.

The survey objective was to map geologic lineaments including fractures, faults, and sedimentary/igneous contacts. For these lineaments to be mappable, they must have a significant conductivity contrast due to mineralization, increased porosity, or clay infilling.

The GEM Systems VLF unit was mated to the magnetometer so that the two surveys could be performed in a single site tour. Although the VLF can simultaneously tune into three VLF transmitters from three different azimuths, only the signal from Cutler, Maine, was of sufficient strength to be of use. VLF data were gathered along nine lines spread across the site. A station spacing of 20 m was used.

DC Resistivity Soundings

Resistivity soundings are performed by moving an outer pair of current electrodes about an inner pair of voltage electrodes centred over a fixed point. The further apart the current electrodes are placed, the deeper into the earth the current flows. If one measures the amount of current passed through the earth from a surface power source, the resultant voltage across the two inner electrodes, and the placement locations of the electrodes, then the resistivity of the earth over a specified volume can be estimated. This volume will vary with the geometry of the electrode placements. As a very general approximation, the depth of investigation of resistivity techniques is about equal to half the current electrode spacing (usually noted as AB/2).

2.3 RESULTS

Terrain Conductivity Surveys

EM31 and EM34 data are plotted in Figures 2 and 3. Interpretations are summarized in the composite plot of Figure 2.

A few general trends can be observed. The EM31 data indicate that conductivities increase from west to east. The conductivity range of 0 to 10 mS/m (blue to green) observed in the west is probably due to a combination of shallow volcanic bedrock, coarse-grained colluvium, and areas of elevated relief and consequently greater depth to groundwater. EM31 conductivities of 10 mS/m or less are typical of clean sands and gravels with little silt and little, if any clay. Moving east toward the marsh, and south toward the proposed plant site, shallow conductivities increase to the range of 10 to 20 mS/m (light green to yellow). These conductivities are typical of silty sands and silts, with little to some clay. From the marsh eastward, EM31 conductivities increase to the range of 20 to 45 mS/m (orange to pink). This range represents an increasing percentage of fines. Conductivities exceeding 30 mS/m probably indicate silt to silty clay till or lacustrine deposits.

The alternating EM31 conductivity highs and lows running parallel to the pipeline right-of-way are due to a buried pipeline. Similarly, the north/south and east/west conductivity highs observed in the southeast corner of the EM34 plot are also due to buried pipelines.

EM34 conductivities generally range from 10 to 20 mS/m over the same area in which the more shallow looking EM31 conductivities range from 20 to 45 mS/m. This suggests that the overburden materials become increasingly clean with depth. Using the drilling information as a guide, it appears that the EM31 is responding largely to materials from surface to a depth of 2 to 4 m, while the EM34 is responding to materials below this depth. EM34 conductivities do increase slightly in the northern 400 m of the surveyed area, where they fall in the range of 15 to 30 mS/m.

Magnetometer and VLF Survey

Total field magnetic data are presented in the colour contoured plot of Figure 4. Clearly, there is a significant change in the magnetic character of the bedrock moving toward the east, and occurring approximately along the meridian 621,000 E. Observed outcrops, drilling investigations, increased relief, and increased conductivities suggest that bedrock material to the west is of volcanic origin. It is believed that the volcanic/sedimentary contact can be roughly defined by the 57,540 gamma contour (blue zones). The precise interpretation of this contact is difficult without a better understanding of the general geology of the area. It is unlikely that the contact is sharp (fault-like or the edge of an extrusive body) as the contour lines are widely spaced. It is more likely that the contact represents an increased thickness of sedimentary rocks over volcanic rocks. As overburden materials and sedimentary bedrock are generally indistinguishable using magnetics, it is possible that even in the western portion of the surveyed area, volcanic extrusives may be below shales and sandstones.

In several areas, total field contours are tightly spaced and pod-like (e.g. at test pit #4, west and south of test pit #9, the northwest corner of the survey). Some of these pods line up in roughly east/west linear trends. A possible interpretation of these lineaments is that they are igneous dykes.

Several of these lineaments may be defined by the VLF inphase data of Figure 5. The indicated dykes have been highlighted, taking into account both VLF inphase cross-overs and the magnetic data.

Unfortunately, the VLF data are relatively noisy. This is largely due to the great distance from the VLF transmitter used located at Cutler, Maine, USA, and the difficulty of laying perfectly straight cut lines through the rough terrain at the site.

The booming VLF and multiple magnetic anomalies in the southeast corner of the surveyed area (south of test hole #4) are due to a buried pipeline.

DC Resistivity Soundings

While DC resistivity soundings did provide valuable information supporting the overburden data gathered in the EM surveys, the soundings did not identify the overburden/bedrock contact. The electrical properties of the overburden and bedrock are too similar to be distinguished.

Appendix I displays the results of the seven resistivity soundings. Two plots are presented in each figure. The first plot presents the acquired field data on a log-log plot of apparent resistivity (resistivity values measured at surface versus the "true" resistivity of an actual lithologic feature) versus the half-spread current electrode spacing. Increasing electrode spacing indicates increasing depth of investigation.

A curve lies approximately over each data set. The curve was created from a geoelectric model depicted in the second plot. All layers are modelled as being horizontal and laterally continuous, a necessary assumption that may be a crude approximation.

Immediately evident in each of the seven models is an inability to define the overburden/bedrock contact. This can probably be attributed to a lack of a significant resistivity contrast between the overburden materials and the bedrock. As each of the soundings was carried out to a half-spread of 50 m, the depth of investigation probably reached well into the bedrock. If it is assumed that the resistivity of the igneous bedrock greatly exceeds that of the unconsolidated overburden, the resistivity soundings are probably a good indication of sedimentary bedrock existing to a depth of at least 30 to 50 m beneath each sounding.

Conductivity and resistivity are analogous in that conductivity is the inverse of resistivity. The units of conductivity are mS/m (milliSiemens per metre), and the units of resistivity are ohm-m (ohm-metres). To convert conductivity readings in mS/m to resistivity readings in ohm-m, one simply divides the conductivity readings into 1,000. For instance, 20 mS/m is the equivalent of 50 ohm-m.

Modelled resistivities fell in the range from 20 to 600 ohm-m (1 to 50 mS/m); the predominant range was 50 to 100 ohm-m (10 to 20 mS/m). These observed ranges of resistivity correspond to the conductivities measured by the EM34.

The data are generally scattered, with relatively poor fits to the least square curves. This is not due to instrument noise, but is an indication that the assumption of horizontal, lateral continuity of beds does not necessarily hold. The drilling indicates that considerable heterogeneity exists in the overburden materials.

Seismic Refraction

The seismic refraction data are summarized in Figure 6. What has been mapped is a simple two-layer case of one to two metres of low velocity material (200-300 m/sec) over a refractor of 2,000 m/sec. The first layer is probably dry sand. The second layer is probably saturated sand; the refractor is the water table. No deeper refractor could be observed, even when the seismic source was moved 100 m from the line. This suggests that the saturated overburden and bedrock materials have similar seismic velocities; thus, there is no refraction of the seismic wave front. Although a depth to bedrock cannot be defined, the data indirectly suggest that the bedrock material is sedimentary. Igneous rock would probably have velocities of at least 5,000 m/sec, and therefore would function as an excellent refraction surface.

3. INTERPRETATION

The following discussion is based on the drilling program and interpretation of the different geophysical techniques used to assess the soil conditions across the tailings pond site. The results of the test holes (1993) and test pits (1989) were incorporated as calibration points into the geophysics interpretation.

1. The EM31 data indicate that conductivities increase from west to east. The conductivity range of 0 to 10 mS/m observed in the west is probably due to a combination of shallow volcanic bedrock, coarse-grained colluvium, and areas of elevated relief and consequently greater depth to groundwater. EM31 conductivities of 10 mS/m or less are typical of sands and gravels with little silt and a trace to no clay. It is noted that even minor percentages of silt and clay of 10 to 20 percent or more can result in relatively low levels of hydraulic conductivity.

2. Moving in a southeast direction from the northwest corner of the area, shallow conductivities increase to the range of 10 to 20 mS/m. These conductivities are typical of silty sands and silts, with little to some clay. From the marsh eastward, EM31 conductivities increase to the range of 20 to 45 mS/m. This range probably represents an increasing percentage of fines. Conductivities exceeding 30 mS/m probably indicate silt to silty clay till or lacustrine deposits.

3. EM34 conductivities generally range from 10 to 20 mS/m over the same area in which the more shallow looking EM31 conductivities ranged from 20 to 45 mS/m. This suggests that the overburden materials become less silty with depth. Using drilling information as a guide, it appears that the EM31 is responding largely to materials from surface to a depth of 2 to 4 m, while the EM34 is responding to materials below this depth. EM34 conductivities do increase slightly in the northern 400 m of the surveyed area where they fall in the range of 15 to 30 mS/m.

4. Observed outcrops, drilling investigations, increased relief, and increased conductivities suggest that bedrock material in the western portion of the surveyed area is of volcanic origin. The precise interpretation of this contact is difficult without a better understanding of the general geology of the area. It is unlikely that the contact is sharp or fault-like as the contour lines are widely spaced. It is more likely that the contact represents an increased thickness of sedimentary rocks over volcanic rocks.

5. Several lineaments defined by the magnetic and VLF inphase data may be indicative of roughly east/west trending dykes.

6. Resistivity methods do not appear capable of resolving the overburden/sedimentary bedrock contact. The data indirectly suggest that the bedrock material at each of the sounding sites, to a depth of at least 30 to 50 m, is sedimentary. Modeled resistivities in the overburden fell in a range similar to the observed conductivities as measured by the EM34. The resistivity data are generally scattered, with relatively poor fits to the least square curves. This is probably an indication that the assumption of horizontal, lateral continuity of beds does not necessarily hold. Drilling confirmed that the overburden materials are heterogeneous.

7. Seismic refraction methods do not appear capable of resolving the overburden/ sedimentary bedrock contact. However, the data indirectly suggest that the bedrock material beneath the seismic line is sedimentary.

620500 mE

621500 mE

6 061 000 mN

6 060 000 mN

EM31: 20–35 mS/m
EM34: 15–20 mS/m

Ø RMF (GAMMAS)

EM31:
0–10 mS/m
–100 GAMMAS

–100 GAMMAS

CONTACT IS UNKNOWN

CONTACT IS APPROXIMATE, EXACT NATURE OF

GLACIOFLUVIAL/TILL
SEDIMENTARY

9
0–1.1m: gravel
1.1–2.6m: CLAY AND SILT TILL

8
0–0.7m: SAND, GRAVEL, SILT
0.7–4.6m: CLAY AND SILT TILL

EM31: 0–10 mS/m

11
VR @ 0.3m

EM31: 15–35 mS/m
EM34: 10–20 mS/m

VOLCANIC

LACUSTRINE/TILL
SEDIMENTARY

–100 GAMMAS

7
0–2.5m: SILTY CLAY
2.5–4.5m: CLAY AND SILT TILL

TILL AND COLLUVIUM
VOLCANIC

9
0–6m: clayey silt, sand and gravel

8
silty sand and gravel, trace clay, cobbles, VR @ 3.5m.

EM31: 0–10 mS/m

7
0–8m: clay silt, sand and gravel, cobbles, boulders

–100 GAMMAS

TILL AND COLLUVIUM
VOLCANIC

6
CLAY AND SILT TILL: some sand

4
0–9m: silty sand and gravel, trace cobbles, boulders

6
2–5m: silty sand and gravel, trace cobbles, boulders
5–9m: sand

5
0–4m: silty clay
4–9m: clayey silty sand

TILL
SEDIMENTARY

EM31: 5–15 mS/m

TAILINGS POND OUTLINE

Ø RMF (GAMMAS)

–100 GAMMAS

TILL AND COLLUVIUM

EM31: 15–25 mS/m
EM34: 10–20 mS/m

3
0–4m: silty, clayey sand and gravel.
4–6m: sand, trace gravel, cobbles
>6m: bedrock?

4
0–3m:
CLAY AND SILT TILL:
some sand, little gravel.

2
0–3.1m:
CLAY AND SILT TILL:
some sand, little gravel.

1
0–3m: CLAY AND SILT TILL

5
0–3.2m:
CLAY AND SILT TILL:
some sand, little gravel.

3
0–0.6m:
SILT AND CLAY
0.6–4.7m:
CLAY AND SILT TILL

2
0–4m: silt and clay, some sand, trace gravel, cobbles, boulders
4–9m: sand and gravel

1
0–9m: silt, some clay and sand, trace gravel, cobbles, boulders

GEOPHYSICAL SURVEY BOUNDARY

LEGEND

- VOLCANIC BEDROCK (OVERBURDEN THICKNESS >2m)
- VOLCANIC BEDROCK (OVERBURDEN THICKNESS <2m)
- SEDIMENTARY BEDROCK
- #4 TEST PIT (APPROX. 3 m DEEP)
- 2 DRILL HOLE
- –100 GAMMAS — APPROX. RESIDUAL MAGNETIC FIELD (RMF)
- EM31: 15–25 mS/m — RANGE OF TERRAIN CONDUCTIVITIES
- TILL / SEDIMENTARY — OVERBURDEN AND BEDROCK TYPE

0 100 200 300 400 500m

SCALE 1:7500

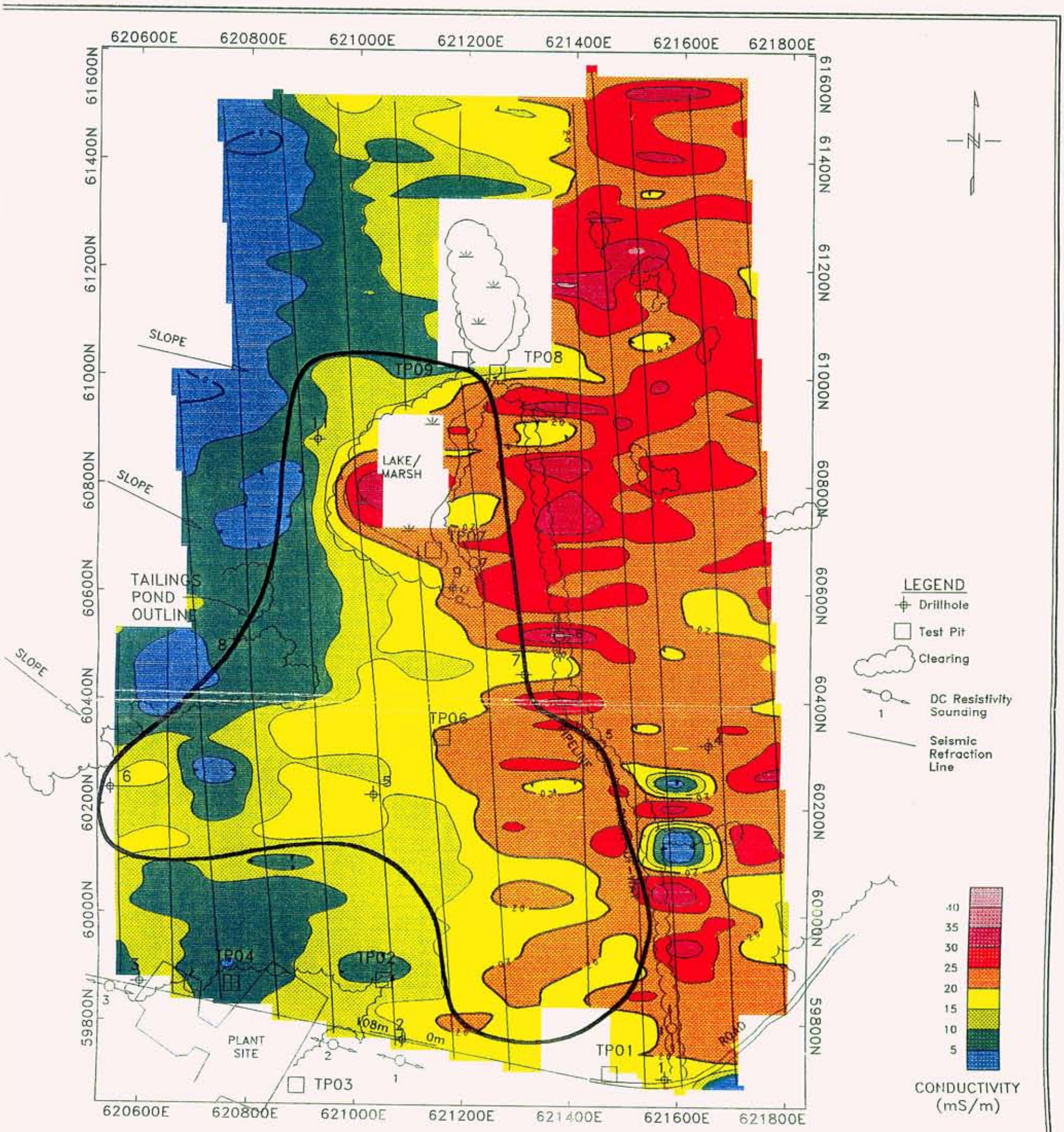
MANALTA COAL LTD.
TELKWA PROJECT

PITEAU ENGINEERING LTD.
GEOTECHNICAL AND HYDROGEOLOGICAL CONSULTANTS
VANCOUVER CALGARY

PROPOSED TELKWA TAILINGS POND
COMPOSITE MAP OF GEOPHYSICAL, AIR PHOTO, DRILL HOLE AND TEST PIT INFORMATION

BY:	DATE:
M.T.	MAR.94
APPROVED:	FIGURE:
	1

FILE: J:\3773-6\FIGURES\GEOPHYS.dwg

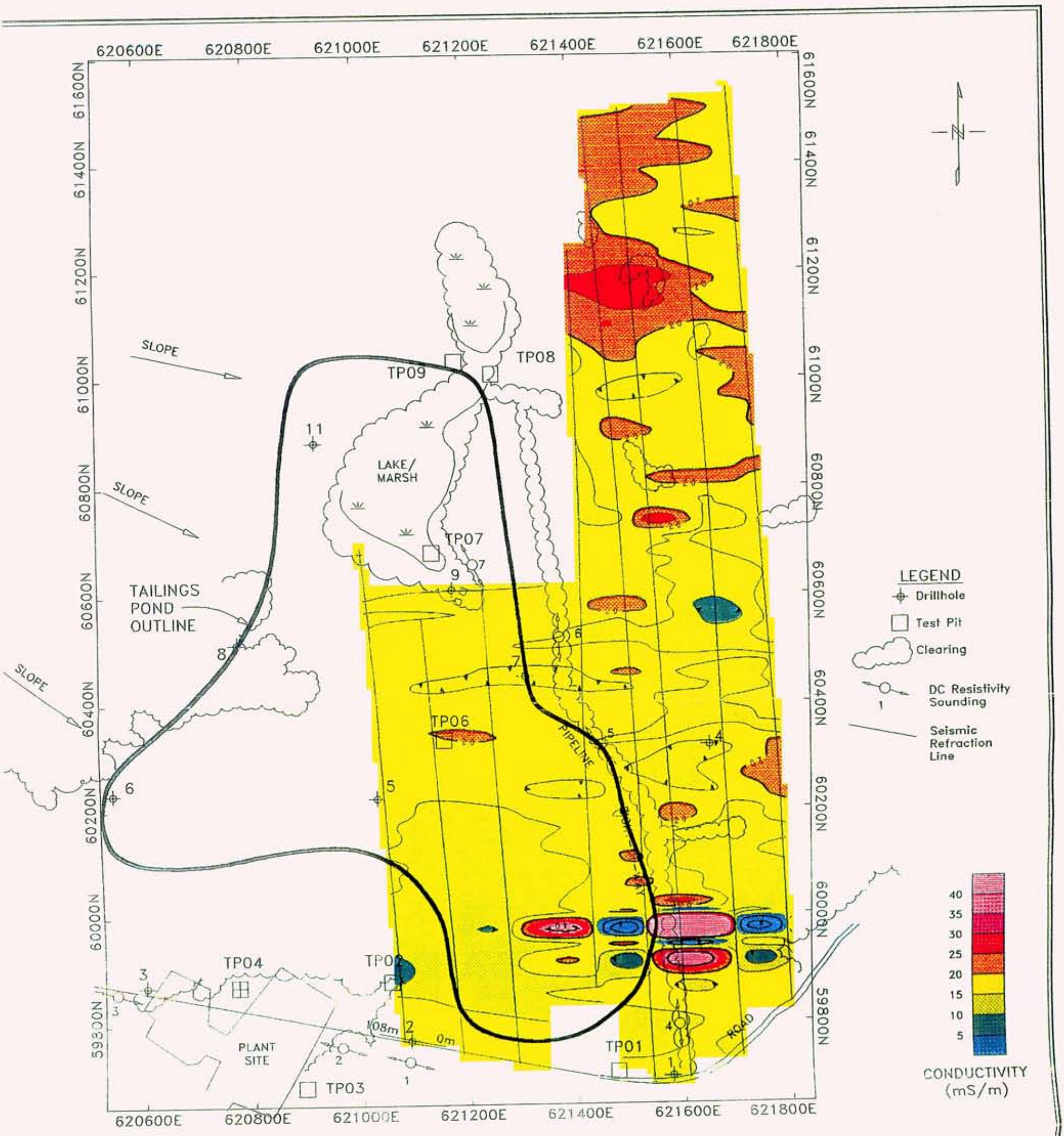


MANALTA COAL LTD.

EM31 TERRAIN CONDUCTIVITY SURVEY
TELKWA, BRITISH COLUMBIA
TAILINGS SITE

Figure 2
VERTICAL DIPOLE WAIST LEVEL
LINE SPACING: 100m STATION SPACING: 5m
SURVEY PERFORMED: SEPTEMBER 14–17, 1993

PITEAU ENGINEERING LTD. *FILE: KI93-3773-6*

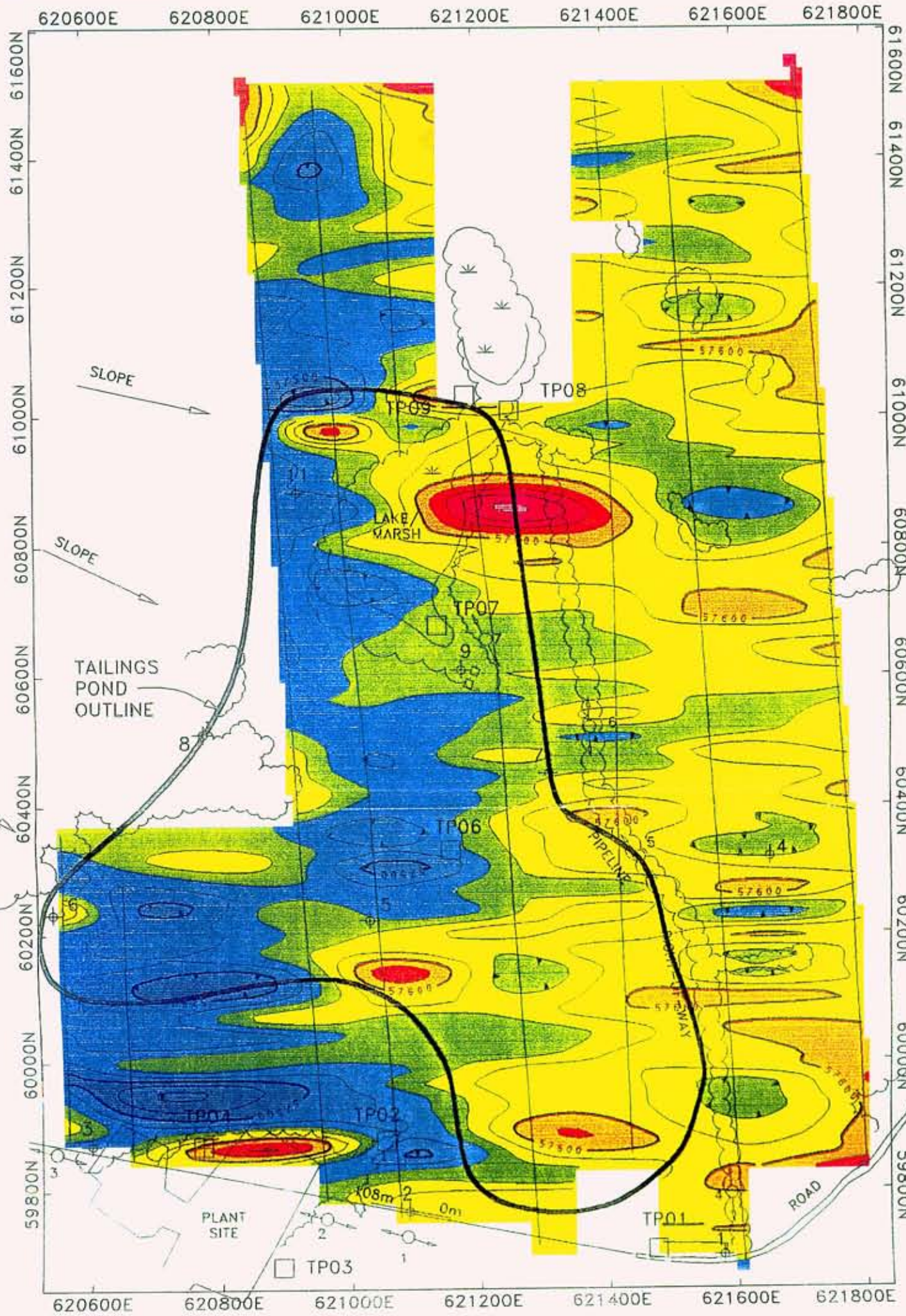


MANALTA COAL LTD.

EM34 TERRAIN CONDUCTIVITY SURVEY
TELKWA, BRITISH COLUMBIA
TAILINGS SITE

Figure 3
VERTICAL DIPOLE COIL SPACING: 20m
LINE SPACING: 100m STATION SPACING: 20m
SURVEY PERFORMED: SEPTEMBER 14–17, 1993

PITEAU ENGINEERING LTD. *FILE: KI93-3773-6*



Scale 1:7500

100 0 100 200

(meters)

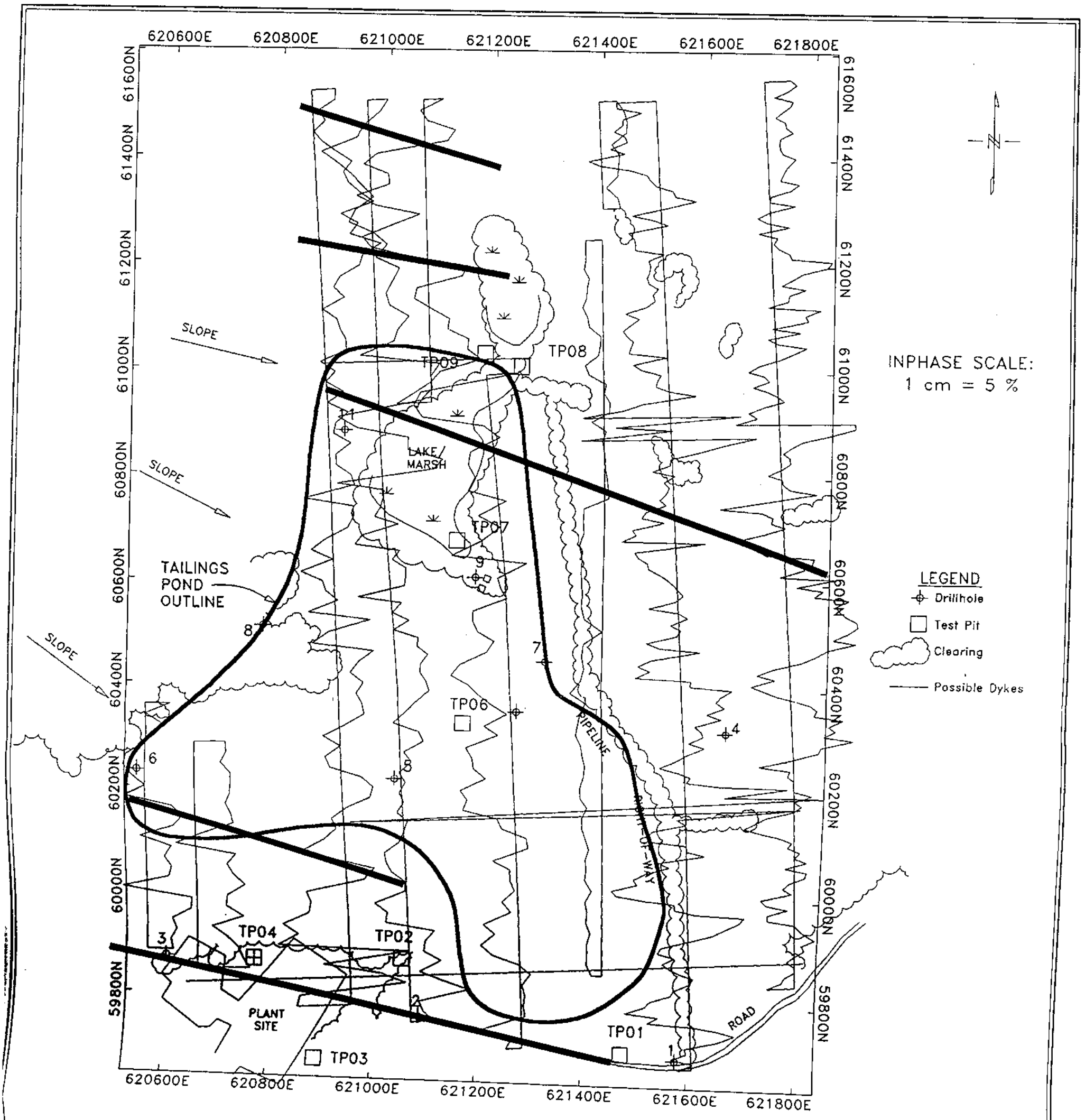
MANALTA COAL LTD.

TOTAL FIELD MAGNETIC SURVEY
TELKWA, BRITISH COLUMBIA
TAILINGS SITE

Figure 4

INCLINATION: 73 deg. DECLINATION: 26 deg.
LINE SPACING: 100m STATION SPACING: 20m
SURVEY PERFORMED: SEPTEMBER 14-17, 1993

PITEAU ENGINEERING LTD. *FILE: KI93-3773-6*

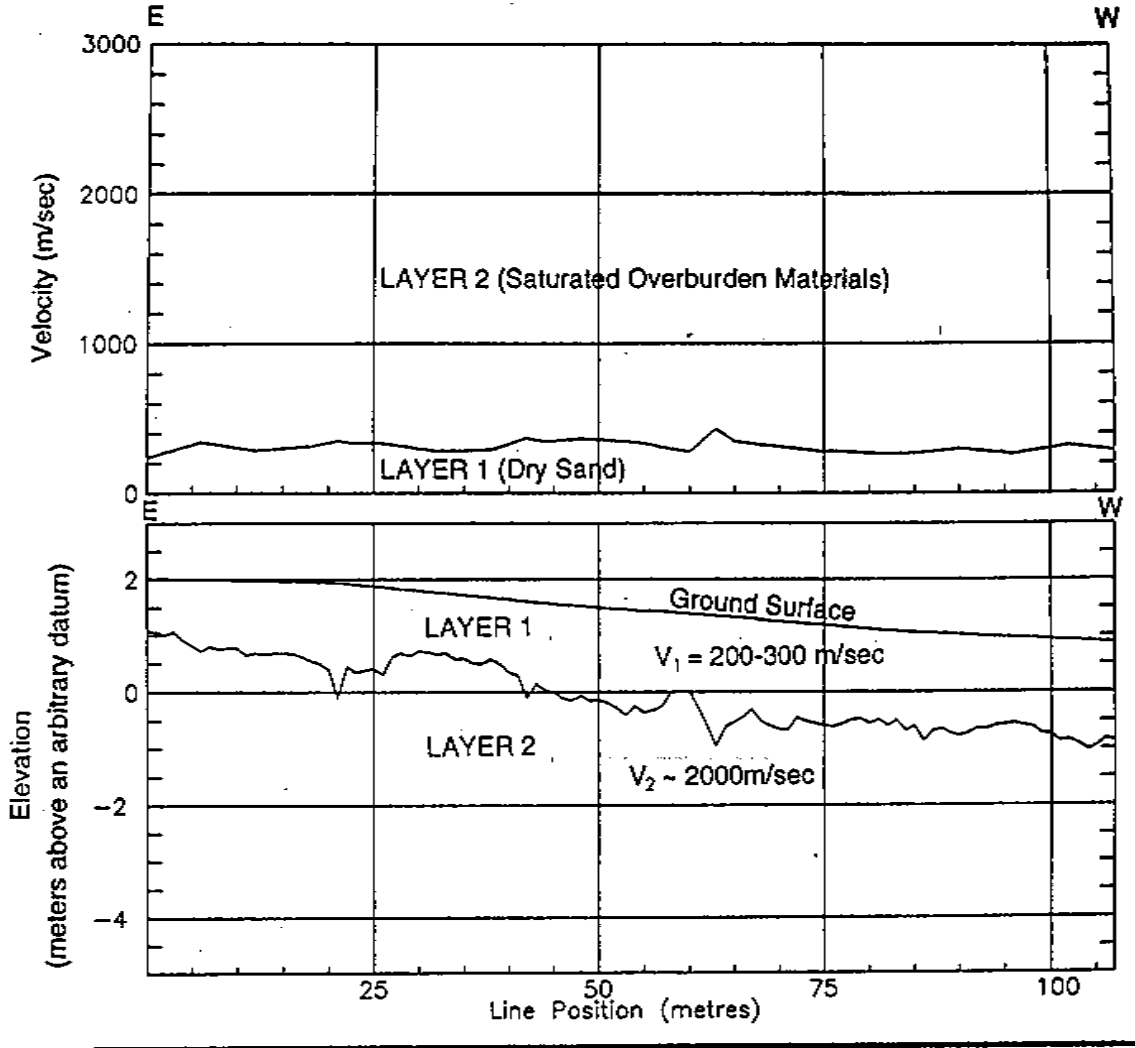


MANALTA COAL LTD.

GSM-19 VLF SURVEY
TELKWA, BRITISH COLUMBIA
TAILINGS SITE

Figure 5
VLF STATION: CUTLER, MAINE
LINE SPACING: 100m STATION SPACING: 20m
SURVEY PERFORMED: SEPTEMBER 14-17, 1993

PITEAU ENGINEERING LTD. *FILE: KI93-3773-6*



MANALTA COAL LTD.
TELKWA PROJECT

PITEAU ENGINEERING LTD.
GEOTECHNICAL AND
HYDROGEOLOGICAL CONSULTANTS
VANCOUVER CALGARY

SEISMIC REFRACTION VELOCITY AND DEPTH ANALYSIS

DRAWN BY:	DATE:
M.T.	JAN.94
APPROVED:	FIGURE:
	6

JOB NO. KI93-3773-6

6

TELKWA PROPERTY; DRILL-HOLE CO-ORDINATE LISTING
(to the end of drilling, 1994)

HOLE #	NORTHING	EASTING	ELEVATION (m asl)	TOTAL DEPTH (m)
T79R01	6055880.20	621340.00	670.48	189.00
T79R02	6054415.00	621393.10	744.08	237.80
T79R03	6054639.90	622372.70	727.64	237.74
T79R04	6057508.50	621491.80	604.70	71.30
T79R05	6062359.40	615618.50	888.81	201.20
T79R06	6062996.00	615952.30	875.09	42.70
T79R07	6062569.20	614517.10	895.26	24.40
T79R08	6062877.50	615725.60	879.62	24.70
T79R09	6062590.00	615817.60	891.40	24.70
T79R10	6058538.00	618143.60	754.13	225.90
T79R11	6058688.20	619564.40	658.89	7.60
T79R12	6059818.70	620761.00	596.91	48.80
T79R13	6054761.20	621457.70	719.08	128.01
T81D112	6052883.11	621815.40	889.34	235.00
T81R101	6055183.96	622157.27	691.31	252.00
T81R102	6056612.00	621600.00	648.00	35.05
T81R103	6056552.00	621250.00	652.50	21.60
T81R104	6054098.67	621352.98	767.52	152.40
T81R105	6052692.25	621675.84	860.33	176.00
T81R106	6052050.00	621800.00	852.00	62.48
T81R107	6054080.06	619774.42	760.60	198.00
T81R-108	6052175.00	618040.00	842.00	169.80
T81R109	6053855.00	619380.00	778.00	30.48
T81R110	6058374.00	617692.00	763.00	61.60
T81R111	6057981.03	616496.76	787.36	182.90
T82D201	6054644.96	620815.84	717.47	245.67
T82D202	6054191.98	621050.24	758.20	300.80
T82D204	6054110.73	622244.34	763.10	400.50
T82D208	6053664.79	620971.55	785.80	319.00
T82D210	6054463.20	620036.61	729.50	258.17
T82D213	6059650.04	617149.22	907.30	169.80
T82D214	6059806.12	618179.73	866.50	303.30
T82D215	6061645.00	615505.00	903.00	209.40
T82D216	6059476.90	618656.75	786.30	137.50
T82D217	6059048.79	618467.99	766.90	84.40
T82D218	6059835.33	618791.87	799.60	102.70
T82D219	6054106.28	621616.72	760.70	349.80
T82D220	6053785.75	621378.68	785.50	325.50
T82D221	6054402.98	620680.55	723.20	273.40
T82D222	6054189.20	621049.60	758.30	76.20
T82D223	6053833.24	621047.29	777.90	233.70
T82D224	6054055.67	620653.00	732.60	249.00
T82D225	6053453.50	621252.28	794.00	282.50
T82D226	6054287.25	619764.13	762.10	215.50

HOLE #	NORTHING	EASTING	ELEVATION (m asl)	TOTAL DEPTH (m)
T82D227	6053452.16	621386.73	797.30	255.00
T82D228	6054243.75	619938.48	750.60	200.30
T82D229	6053457.43	621896.66	806.70	290.00
T82D230	6053895.00	619790.00	764.00	142.30
T82D231	6054313.42	619511.67	762.20	331.00
T82D232	6053798.85	621777.74	779.10	358.50
T82D233	6054270.42	619255.17	770.20	130.00
T82D234	6054453.39	619710.37	751.20	209.40
T82D235	6053794.11	622069.14	782.90	270.30
T82D236	6054777.58	619821.53	733.10	178.90
T82D237	6054858.19	619986.87	730.10	151.00
T82D238	6053803.16	621608.64	783.60	191.00
T82D239	6055035.62	620020.20	725.60	159.40
T82D240	6055453.58	620033.61	711.20	85.60
T82D241	6053154.82	621253.79	816.60	115.00
T82D242	6055016.50	619768.95	732.50	133.00
T82D243	6053109.17	621396.46	828.50	148.50
T82D244	6052607.78	621533.20	838.80	151.40
T82D245	6053094.32	621649.97	859.10	227.00
T82D246	6052344.83	621653.55	840.30	163.67
T82D247	6053110.32	621870.18	860.20	258.60
T82D248	6052041.16	621840.70	852.20	282.50
T82D249	6053128.79	622109.17	867.50	264.30
T82D250	6052083.16	622070.54	867.80	172.50
T82D251	6052867.54	621583.54	871.90	355.70
T82D252	6052072.79	622346.72	887.00	373.98
T82D253	6052593.21	622276.53	903.30	361.40
T82D254	6053837.00	622466.50	785.30	249.00
T82D255	6053462.10	621656.66	802.30	200.00
T82D256	6052584.50	622016.71	890.30	291.60
T82D257	6054640.00	621141.42	728.50	78.30
T82D258	6054415.00	621393.10	744.08	121.90
T82D259	6054413.16	621075.47	747.10	87.17
T82D260	6055019.04	621019.53	696.50	153.31
T82D261	6054451.29	619536.20	755.40	221.58
T82D262	6055043.21	620789.04	689.90	139.29
T82D263	6055520.00	620745.00	680.00	61.00
T82D264	6055487.00	621256.86	688.90	200.00
T82D265	6054627.29	619688.00	737.30	279.10
T82D266	6055282.00	620670.00	688.00	96.14
T82D267	6054091.28	619565.22	762.25	250.00
T82D268	6054396.83	621643.42	745.20	300.60
T82D269	6052240.00	620775.00	814.00	96.00
T82D270	6052615.00	620525.00	804.50	120.70
T82D271	6054751.54	621651.13	721.60	222.00
T82D272	6055142.00	621633.00	707.50	121.92

HOLE #	NORTHING	EASTING	ELEVATION (m asl)	TOTAL DEPTH (m)
T82R203	6047868.00	620675.00	921.00	231.00
T82R205	6048358.00	620667.00	955.00	208.00
T82R206	6048779.00	620279.00	979.00	236.00
T82R207	6049330.00	620137.00	962.00	207.50
T82R209	6053886.04	619618.16	765.20	150.00
T82R211	6062132.00	615560.00	991.00	147.00
T82R212	6061020.00	615370.00	907.00	264.00
T83D301	6054146.91	620956.24	756.90	72.23
T83D302	6054151.04	620895.38	753.40	47.85
T83D303	6054151.61	620835.13	749.80	50.90
T83D304	6054148.99	620924.04	754.90	60.05
T83D305	6054153.50	620775.99	744.00	57.00
T83D306	6054143.56	621111.70	760.10	87.48
T83D307	6054130.70	621230.95	763.40	111.56
T83D308	6054128.22	621353.72	762.00	93.57
T83D309	6054146.39	621015.91	759.90	69.19
T83D310	6054136.31	621170.29	762.10	90.52
T83D311	6054137.65	621140.29	760.70	20.42
T83D312	6053953.25	620924.49	764.90	59.44
T83D313	6054260.08	620909.65	750.60	66.14
T83D314	6054636.91	621010.90	723.90	60.00
T83D315	6054505.98	621254.00	735.00	81.38
T83D316	6054904.29	621086.78	712.80	84.43
T83D317	6054895.25	621290.25	713.70	108.81
T83D318	6055279.67	621015.92	684.60	114.91
T83D319	6053932.07	621256.17	772.40	75.29
T83D320	6053967.33	621517.13	772.00	148.44
T83D321	6053622.96	621505.13	790.10	124.06
T83D322	6053965.56	621669.98	768.80	178.90
T83D323	6053964.75	621903.36	769.70	144.20
T83D324	6053643.33	621221.92	788.50	60.05
T83D325	6053299.16	621242.90	803.10	66.14
T83D326	6053440.50	621075.25	792.80	84.43
T83D327	6053289.00	621075.12	794.10	100.90
T83D328	6052893.00	621385.20	832.60	87.40
T83D329	6052611.75	621778.23	863.50	193.85
T83D330	6052878.71	622027.34	895.60	175.87
T83D331	6052334.66	621888.74	858.30	185.01
T83D332	6053452.43	622160.66	816.50	164.59
T83D333	6053269.95	621759.41	824.50	184.00
T83D334	6053612.21	621772.34	790.60	107.00
T83D335	6053280.35	621502.15	810.60	127.00
T83D336	6054614.08	621381.66	727.70	111.00
T83D337	6054499.75	621528.87	733.30	107.00
T83D338	6054420.45	621894.21	742.30	215.00
T83D339	6054764.62	621806.99	720.60	114.90

HOLE #	NORTHING	EASTING	ELEVATION (m asl)	TOTAL DEPTH (m)
T83D340	6054269.91	621808.38	753.20	187.40
T83D341	6054283.10	621517.66	754.50	167.70
T83D342	6054267.66	621268.28	757.50	130.40
T83D343	6055301.79	621342.27	698.50	172.80
T83D344	6055431.58	621624.49	694.30	148.30
T83D345	6053978.86	619639.05	763.50	134.10
T83D346	6054201.69	619416.16	766.80	126.40
T83D347	6054197.87	619647.63	760.10	104.50
T83D348	6054622.79	619913.93	731.10	132.80
T83D349	6054660.33	620148.38	717.40	129.20
T83D350	6054789.78	620931.49	715.10	62.50
T83D351	6054756.21	621259.18	721.40	111.90
T83D352	6054110.00	621890.00	762.00	148.40
T83D353	6054836.00	621108.00	720.30	142.30
T83D354	6055913.37	622890.41	660.90	162.80
T83D355	6055411.37	622898.28	685.70	110.00
T83D356	6055887.17	622453.74	670.40	127.00
T83D357	6055647.72	621641.53	686.80	112.70
T83D358	6055463.06	622403.53	684.80	108.50
T83D359	6055394.79	621855.85	694.40	136.80
T83D360	6054759.74	622190.14	722.30	165.70
T83D361	6055643.62	621882.97	684.50	154.50
T83D362	6054459.18	622094.53	740.90	189.00
T83D363	6055138.93	621886.45	704.00	150.50
T83D364	6055145.15	622617.92	692.50	107.00
T83D365	6054359.96	622395.49	749.40	163.80
T83D366	6055641.91	622135.11	686.00	151.40
T83D367	6054422.69	622863.66	752.80	116.90
T83D368	6055398.25	622088.73	690.00	120.40
T83D369	6055903.47	621902.38	675.20	108.80
T84D401	6056405.64	622175.42	648.61	114.90
T84D402	6053962.32	622004.85	771.30	163.68
T84D403	6053811.00	621902.14	779.30	157.50
T84D404	6056393.23	621643.49	649.30	96.62
T84D405	6053630.65	621893.43	791.30	238.35
T84D406	6055911.03	621634.53	673.60	84.12
T84D407	6053644.29	621650.60	790.50	200.20
T84D408	6055926.22	622165.17	673.10	114.90
T84D409	6053445.11	621783.12	807.90	136.25
T84D410	6056154.04	622147.71	662.50	84.40
T84D411	6052719.04	621482.40	836.60	74.68
T84D412	6056132.33	621920.09	663.30	50.90
T84D413	6054402.16	620905.39	737.30	105.70
T84D414	6056137.00	621650.51	660.20	102.70
T84D415	6054501.91	620937.59	731.60	72.00
T84D416	6056136.65	621425.92	654.70	84.12

HOLE #	NORTHING	EASTING	ELEVATION (m asl)	TOTAL DEPTH (m)
T84D417	6054507.39	621104.86	739.80	90.53
T84D418	6054234.53	621082.41	756.80	117.96
T84D419	6056329.37	621885.85	654.41	90.00
T84D420	6054388.91	621253.99	748.40	114.91
T84D421	6056427.44	622425.55	647.60	96.62
T84D422	6054630.37	621265.67	726.00	93.57
T84D423	6056681.83	622447.25	649.10	139.29
T84D424	6054758.06	620996.28	718.20	178.90
T84D425	6056684.47	622189.77	638.60	78.33
T84D426	6053944.95	620803.61	756.60	53.90
T84D427	6056456.72	622676.67	661.10	41.10
T84D428	6054500.71	621367.54	735.40	108.80
T84D429	6056680.32	621925.18	637.70	110.00
T84D430	6054621.41	621529.05	725.10	133.20
T84D431	6055268.15	621617.75	702.70	127.10
T84D432	6054613.64	621667.59	728.40	127.10
T84D433	6054627.54	621891.29	727.70	102.11
T84D434	6055488.91	621548.50	688.60	106.00
T84D435	6054877.00	621881.91	717.80	81.92
T84D436	6055271.24	621188.91	694.80	102.70
T84D437	6054897.70	621698.65	715.50	96.20
T84D438	6055041.73	621238.03	708.20	148.10
T84D439	6058000.00	622200.00	599.00	50.30
T84D440	6059637.49	617695.88	891.30	145.00
T84D441	6059599.87	618291.78	839.40	224.70
T84D442	6059822.54	618519.92	830.10	139.30
T84D443	6059544.04	618880.29	770.20	111.86
T84D444	6059854.28	619102.18	765.50	123.70
T85D501	6059570.41	617481.35	896.60	59.50
T85D502	6059436.41	617855.24	863.60	148.25
T85D503	6059065.37	618780.93	735.70	68.66
T85D504	6059690.28	618644.04	804.60	74.97
T86D601	6059815.07	616957.02	923.21	71.49
T86D602	6059280.32	617799.35	848.44	110.95
T86D603	6059284.82	618626.00	772.20	60.00
T86D604	6059944.15	618747.17	812.64	84.43
T88D801	6059396.90	617185.42	888.77	84.73
T88D802	6060252.33	616192.71	930.22	93.40
T88D803	6060341.25	616736.50	973.92	131.10
T88D804	6060041.04	616816.03	939.70	76.80
T88D805	6059912.69	617304.45	933.83	77.20
T88D806	6060713.87	615390.61	899.16	59.00
T88D807	6062397.66	615629.27	889.94	118.80
T88D808	6062571.18	614525.46	895.82	60.96
T88D809	6060976.58	616215.89	976.28	112.78
T88D810	6060622.98	616484.67	999.64	150.00

HOLE #	NORTHING	EASTING	ELEVATION (m asl)	TOTAL DEPTH (m)
T88D811	6060212.91	617102.90	995.31	213.00
T88D812	6060396.82	616582.71	975.14	118.87
T88D813	6060684.82	616346.01	983.04	137.16
T88D814	6059756.62	617604.43	910.13	110.00
T89D907	6059490.95	618700.53	782.52	62.81
T89D920	6060104.79	617060.66	966.95	48.70
T89D921	6060090.04	617202.99	976.29	113.00
T89D922	6059966.20	617001.64	938.33	67.00
T89D923	6059701.20	617353.04	908.30	64.00
T89D924	6059745.62	617505.77	911.77	66.10
T89D925	6059807.78	617760.40	906.30	180.00
T89D926	6060118.50	618536.21	876.30	21.90
T89D927	6059180.29	618699.78	752.58	62.20
T89D928	6059599.62	618749.15	786.80	79.00
T89D929	6059656.49	618587.09	808.88	57.00
T89D930	6060005.37	618698.28	832.68	76.00
T89D931	6059836.07	618879.16	789.93	97.00
T89R901	6059332.54	618991.67	740.80	100.00
T89R902	6059313.15	618804.77	758.53	81.00
T89R903	6059679.29	619097.90	749.66	99.00
T89R904	6060005.24	618795.73	819.30	98.00
T89R905	6059708.99	618667.41	803.15	71.00
T89R906	6059829.11	618739.39	805.85	79.00
T89R908	6059854.86	617492.63	926.59	102.50
T89R909	6060324.71	616912.10	985.46	75.00
T89R910	6060227.50	617023.24	989.09	94.00
T89R911	6060259.36	616606.42	956.64	94.00
T89R912	6060160.75	616737.60	954.00	94.00
T89R913	6059793.07	617185.89	922.86	63.50
T89R914	6059966.07	618250.86	873.12	78.00
T89R915	6059417.58	618116.67	838.26	99.50
T89R916	6059740.06	621143.27	589.81	28.00
T89R917	6060483.30	621041.50	576.30	72.60
T89R918	6060240.00	620543.90	590.20	63.30
T89R919	6059359.10	620230.10	628.00	85.00
T92D01	6061023.33	616413.43	1008.88	143.20
T92D02	6060495.96	616384.31	970.88	155.40
T92D03	6061042.90	616101.85	965.13	152.40
T92D04	6060815.89	616230.92	971.94	191.50
T92D05	6060309.12	617084.51	1006.39	134.10
T92D07	6059989.67	617819.25	936.36	234.70
T92D09	6060042.33	617297.91	969.43	131.10
T92D12	6060315.44	619119.91	826.22	176.83
T92D20	6059692.44	618834.80	783.52	84.50
T92D22	6059980.87	618905.78	799.69	104.61
T92D24	6061109.98	616313.11	993.85	113.80

HOLE #	NORTHING	EASTING	ELEVATION (m asl)	TOTAL DEPTH (m)
T92D26	6061188.15	616476.90	1023.20	152.40
T92D31	6061246.96	616323.35	999.00	121.95
T92D32	6061197.79	616023.92	958.90	146.30
T92D34	6061348.79	615882.90	945.60	121.90
T92D36	6061518.34	616090.86	975.10	70.10
T92D37	6061570.94	616309.26	993.80	76.80
T92D38	6061240.71	615395.99	903.80	42.70
T92D41	6060077.12	616619.90	936.10	53.90
T92R06	6060815.25	616470.62	1012.95	152.40
T92R08	6060521.82	616633.30	1003.02	134.10
T92R10	6060317.15	616453.88	952.94	97.50
T92R11	6060218.83	616850.00	971.34	121.90
T92R13	6059946.29	616943.42	933.98	76.20
T92R14	6059936.08	617163.15	937.87	73.10
T92R15	6059796.04	617093.67	924.22	85.30
T92R16	6059786.08	617410.50	921.29	85.30
T92R17	6059906.16	617644.78	931.25	127.70
T92R18	6059633.81	617356.65	904.74	48.80
T92R19C	6059515.16	617647.29	885.33	67.10
T92R21	6059604.58	617810.40	882.39	134.10
T92R23	6059346.79	617961.49	843.19	164.60
T92R25	6059391.60	617741.39	866.18	79.20
T92R27	6059524.25	618544.12	803.30	48.90
T92R28	6059368.25	618748.78	768.40	60.90
T92R29	6059962.82	618559.11	837.50	48.80
T92R30C	6059032.23	617811.42	812.89	84.20
T92R33	6059014.25	617644.91	824.10	97.50
T92R35	6058956.08	617440.97	830.78	152.40
T92R-39C	6051476.37	616972.88	919.18	62.50
T92R-40C	6051993.42	617016.10	872.07	67.40
T92R-42	6051448.41	616775.28	921.64	28.10
T92R-43	6050522.57	617780.50	969.26	85.30
T93D22	6058866.69	618123.11	778.36	207.30
T93D23	6058597.12	617543.14	792.58	149.40
T93D24	6060475.62	616963.25	1041.43	45.70
T93D27	6058538.86	618127.73	754.60	115.81
T93D31	6058717.61	618212.38	762.55	182.90
T93D38	6058844.12	618374.35	760.86	137.20
T93D44	6059873.66	617400.95	931.52	121.90
T93D-45	6052434.40	617524.48	831.73	142.80
T93D-47	6049932.96	619075.42	949.30	178.90
T93D50	6053073.75	617471.56	807.53	87.80
T93D-53	6050529.20	618159.20	940.10	91.40
T93R01C	6053955.91	621094.01	772.33	34.40
T93R-02	6050443.62	617325.21	1003.53	80.60
T93R-03	6050534.40	618287.70	934.10	100.80

HOLE #	NORTHING	EASTING	ELEVATION (m asl)	TOTAL DEPTH (m)
T93R-04	6049982.73	616727.40	1045.17	89.00
T93R-05	6050894.07	617556.22	962.10	92.40
T93R-06C	6050901.95	617172.91	983.68	55.80
T93R-07C	6051011.07	618156.25	917.71	128.90
T93R-08C	6050222.95	616865.75	1026.60	43.00
T93R-09	6051430.86	617629.87	920.47	171.30
T93R-10	6050006.75	617174.71	1050.78	61.00
T93R-11C	6050004.87	618162.75	1010.25	73.30
T93R-12	6051537.53	618162.66	888.14	128.90
T93R-13	6051271.70	618552.91	888.92	140.80
T93R-14	6049970.54	617700.47	1047.26	110.00
T93R-15	6052496.28	616994.31	834.89	42.67
T93R-16	6052299.33	616769.74	854.68	36.58
T93R-17	6051978.99	617550.52	845.12	128.90
T93R-18	6051994.30	618082.70	846.74	183.80
T93R-19	6050577.42	618817.50	916.34	122.00
T93R20	6053381.16	618004.49	811.05	46.33
T93R21	6059118.12	617949.25	815.79	140.80
T93R25	6059049.62	618071.13	796.46	185.90
T93R26	6058769.48	617831.30	791.75	86.00
T93R28	6058922.25	617974.41	790.32	146.90
T93R28P	6058925.53	617989.10	789.74	71.90
T93R29	6058970.71	617172.80	849.69	134.10
T93R30	6059571.75	616781.37	902.16	134.10
T93R32	6059863.04	617589.84	925.66	110.60
T93R33	6059990.29	616420.40	914.24	152.40
T93R34	6060640.99	620091.01	680.97	165.30
T93R35	6058675.82	617994.53	772.29	110.00
T93R36	6059991.73	620359.90	604.19	138.00
T93R37	6059654.83	619619.85	681.26	137.77
T93R39	6059644.24	620519.48	607.74	110.30
T93R40C	6053831.90	621177.12	778.64	65.60
T93R41C	6053011.60	621521.10	859.65	141.58
T93R42C	6053284.22	621336.90	806.94	75.30
T93R43C	6053613.29	621091.74	787.19	41.00
T93R46	6059531.28	620868.03	593.80	41.10
T93R48	6058991.95	619233.14	673.17	137.00
T93R-49	6049371.32	619464.04	977.17	111.30
T93R-51	6051420.46	616724.64	922.70	71.30
T93R52	6053622.09	616512.54	806.40	41.30
T94R-01	6050496.76	616858.82	1005.34	83.78
T94R-02	6049741.95	618353.71	1063.10	36.95
T94R-03	6050180.64	617850.28	994.51	84.79
T94R-04C	6051583.55	617412.23	897.86	74.66
T94R-05	6051253.57	617502.04	937.28	121.61
T94R-06	6051579.95	617843.02	898.55	162.76

HOLE #	NORTHING	EASTING	ELEVATION (m asl)	TOTAL DEPTH (m)
T94R-07	6051218.76	617933.28	916.61	120.87
T94R-08	6051908.88	617861.54	851.50	144.50
T94R-09	6051723.45	615955.02	889.39	145.89
T94R-10C	6052176.94	617539.23	837.55	89.60
T94R-11	6052223.60	616201.74	873.05	72.60
T94R-12	6052187.01	617237.34	846.22	94.80
T94R-13	6050937.15	616086.32	936.68	41.89
T94R14	6056457.45	617636.85	721.25	155.49
T94R15	6054505.31	616225.71	757.19	33.50
T94R16	6055170.98	615867.00	764.15	110.00
T94R17	6052118.33	615144.12	911.50	80.60
T94R18	6053559.61	615717.12	823.20	112.80
T94R19	6052664.70	614812.99	918.34	61.80
T94R20	6053874.08	614655.79	842.98	115.62
T94R21	6052686.15	612575.92	894.41	80.00
T94R22	6053414.96	613222.78	872.64	60.98
T94R23	6058948.36	615699.33	851.91	157.13
T94R24C	6058481.19	615931.01	819.88	121.45
T94R25	6059225.99	615205.01	866.04	102.76
T94R26	6059788.19	614814.88	862.91	82.68
T94R27	6059560.47	615601.09	877.29	150.54
T94R28	6060120.79	615804.98	897.46	133.67
T94R29C	6058709.39	616396.22	832.07	152.90
T94R30	6058726.50	615182.45	841.92	61.00
T94R31	6058721.40	616988.75	824.17	201.40
T94R32	6059274.85	616799.42	880.85	136.40
T94R33C	6059866.95	618722.79	808.94	76.80
T94R34C	6059719.70	616394.70	901.22	155.74
T94R35C	6058820.77	618709.86	736.37	115.18
T94R36	6058238.39	616674.78	792.61	194.56
T94R37	6057889.78	615293.51	809.09	88.41
T94R38	6057762.73	616218.81	785.67	177.40
T94R39	6059408.82	616352.86	885.22	134.15
T94R40	6058068.18	615787.31	807.52	99.00
T94R41	6058291.23	616205.04	805.48	146.19
T94R42	6058689.73	615831.17	834.51	132.53
T94R43	6060016.00	619231.42	760.16	97.50
T94R44	6058919.70	616202.39	850.82	145.73
T94R45	6058498.64	616545.61	812.07	156.83
T94R46C	6057641.98	616690.45	767.47	202.54
T94R47	6053021.05	612275.31	878.10	43.30
T94R48	6052386.17	613784.03	975.11	79.22
T94R49	6051401.70	614723.03	977.24	72.79
T94R50	6051150.49	613638.38	1028.40	66.27
T94R51	6052976.86	613932.51	918.50	72.22
T94R52	6052019.32	612719.72	955.29	78.66

HOLE #	NORTHING	EASTING	ELEVATION (m asl)	TOTAL DEPTH (m)
T94R53	6055715.55	617427.70	736.87	144.80
T94R54	6054034.73	613697.48	856.76	95.00
T94R55	6054928.69	615225.18	785.47	79.20
T94R56	6055647.50	616742.48	741.85	156.00
OTC9401	6057422.85	616994.47	620.26	0.50

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HOLE # T93R-01C
SITE # 214

PROJECT Tekwa
DATE Sept. 3/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR McAuley Drilling
DRILLER Don & Terry
LOGGING CO. BPB
CASING
LOGGER Al Bretton

COMMENTS: Seams #3 & 2

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
			0.63	19.39	20.02		Coal Loss			
Run #1		Broken	0.25	20.02	20.27	1	Coal	Black		Started run #1 @ 19.5m - 19.8m - sl. dirty
Run #2		Broken	0.16	20.27	20.43	1	Coal	Black		Coal loss @ base
Run #2						-	Sltstn	Dk. grey, massive		Plugged w/in shoe
Run #3		Blocky	0.32	27.22	27.54	3	Coal	Black		Run #3 27.28 - 28.19 - clean 0.95m measured. Pyrite @ top
			0.08	27.54	27.62	2	Coal Loss			
Run #3		V. broken	0.63	27.62	28.25	2	Coal	Black		Clean
			0.08	28.25	28.33	4	Coal Loss			
Run #4		Blocky	0.98	28.33	29.31	4	Coal	Black		Run #4 28.19 - 29.87 - Clean
Run #4		Broken	0.36	29.31	29.67	5		Black		Clean
Run #4	75	Broken	0.29	29.67	29.96	6	Carby sltstn	Dk. green	SSD	Floor. Abrupt contact w. coal

HOLE # T93R-06C
SITE # 112

PROJECT Telkwa
DATE Sept. 11/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR McAuley Drilling
DRILLER Don & Terry
LOGGING CO. BPB
CASING 20'
LOGGER Bob

COMMENTS: Seams #3 & 2

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
Run #1										Run #1 - recovery 2.68m
		Blocky					Dirty coal	Black		Very dirty stringer - no sample
		Blocky					Silty mdstn	Gry, massive		Some small pyrite zones - fractured
		Blocky					Carby mdstn	Bk, massive		Carby
		Blocky					Sltstn	Gry, lam		Bedding angle 95
Run #2		Blocky								Run #2 recovery 1.12m
		Blocky	8.58		8.58	1	Sltstn	Gry, lam		Roof
		Blocky	0.21	8.58	8.79	2	Dirty coal	Blk		More dirty at bottom
		Blocky		8.79		3	Mdstn	Blk, massive		Floor, some carby stringers
			0.10	9.58	9.68		Rock Loss			
Run #3		Blocky								Run #3, recovery 2.75m
		Blocky	10.28		10.28	4	Mdstn	Blk, lam		Roof, .20m taken
		Blocky	0.44	10.28	10.72	5	Coal	Blk		
		Blocky	0.46	10.72	11.18	6	Coal	Blk		Some crumbly and fracture zones
		Blocky	0.58	11.18	11.76	7	Coal	Blk		Dirty near bottom of sample
		Blocky	0.12	11.76	11.88	8	Dirty Coal	Blk		Very dirty
		Blocky		11.88		9	Carby mdstn	Blk		Floor, carby zones
Run #4		Blocky								Run #4, recovery 1.82m
		Blocky					Silty mdstn	Gry, massive		No sample
		Blocky					Silty mdstn	Gry, massive		Fe concreations - no samples
Run #5		Blocky								Run #5, recovery 2.95m
		Blocky					Sltstn	Gry, massive		No sample
		Blocky					Sltstn	Gry, lam		Some fractured zones no sample
		Blocky					Sltstn	Gry, lam		No sample
Run #6		Blocky								Run #6, Recovery 3.40
		Blocky					Dirty sltstn	Gry, thin lam		Some pyrite zones
		Blocky					Carby mdstn	Blk, massive		Pyrite heavy
		Blocky	0.28	18.55	18.83	10	Coal	Blk		Slightly dirty on top sample
		Blocky					Mdstn	Blk, massive		Some carby zones
Run #7										Run #7, recovery 2.82
		Blocky			21.01	11	Sltstn	Blk		Clear break with coal (roof)
		Blocky	0.16	21.01	21.17	12	Coal	Blk		Clean
		Blocky	0.01	21.17	21.18	12	Coal, slightly dirt	Blk		Slightly dirty
		Blocky	0.19	21.18	21.37	12	Coal	Blk		Clean
		Blocky	0.01	21.37	21.38	12	Mdstn	Blk		Pyrite bands within
		Blocky	0.11	21.38	21.49	12	Coal	Blk		Slightly dirty at top
		Crumbly	0.03	21.49	21.52	12	Dirty Mdstn	Blk		Coaly, heavy pyrite
			0.02	21.52	21.54		Coal Loss			
		Blocky	0.11	21.54	21.65	13	Clean Coal	Blk		Dirty to base
		Blocky	0.01	21.65	21.66	13	Coal	Blk		Pyrite bands
		Blocky	0.65	21.66	22.31	13	Coal	Blk		Clean

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
		Blocky	0.01	22.31	22.32	14	Coal	Blk		Pyrite bands
		Blocky	0.56	22.32	22.88	14	Coal	Blk		Clean
		Blocky	0.09	22.88	22.97	15	Mudstn	Blk		Heavy pyrite banding
		Blocky	0.30	22.97	23.27	15	Carby mudstn	Blk		Very coaly
Run #8		Blocky	0.03	23.27	23.30	15				Recovery Run #8
		Blocky					Carby mudstn	Blk		Very coaly
		Blocky					Bent mudstn	Gry		Bentonite
		Blocky					Dirty coal	Blk		Dirty coal
		Blocky	23.90		23.90	16	Mudstn	Blk, massive		Roof of 1 steam
		Blocky	0.11	23.90	24.01	17	Dirty coal	Blk		Very dirty (mdstn partings)
		Blocky	0.17	24.01	24.18	17	Coal	Blk		Clean
		Blocky	0.01	24.18	24.19	17	Carby mdstn	Blk		Carby mdstn
		Blocky	0.58	24.19	24.77	18	Coal	Blk		Clean
Run #9		Blocky						Blk		Recovered 2.98 run #9
		Blocky	0.56	24.77	25.33	19	Clean coal	Blk		Some pyrite
		Blocky	0.01	25.33	25.34	19	Mdstn	Blk		
		Blocky	0.53	25.34	25.87	19	Coal	Blk		Slightly dirty @ base
		Blocky	0.03	25.87	25.90	20	Mdstn	Blk		
		Blocky	0.06	25.90	25.96	20	Dirty coal	Blk		Very dirty
		Blocky	0.41	25.96	26.37	20	Coal	Blk		Some dirty bands
		Blocky	0.01	26.37	26.38	20	Mudstn	Brown		Volcanic ash bands
		Blocky	0.30	26.38	26.68	21	Coal	Blk		Clean
Run #10		Blocky	0.00							Recovery 2.42
		Blocky	0.39	26.68	27.07	21	Coal	Blk		Slightly dirty @ base
		Blocky	0.36	27.07	27.43	22	Coaly mdstn	Blk		Pyrite zones (plebs)
				27.43	27.44		Coal Loss			
		Blocky	0.49	27.44	27.93	23	Coal	Blk		Dirty near base
		Blocky	0.08	27.93	28.01	24	Carby mdstn	Blk		Coaly @ top
		Very broken	0.04	28.01	28.05	24	Bent. mdstn	Blk		
				28.05	28.06		Rock Loss			
		Blocky	0.13	28.06	28.19	24	Dirty coal	Blk		Very dirty
		Blocky	0.17	28.19	28.36	24	Mdstn	Blk		Floor
		Blocky	0.04	28.36	28.40	25	Dirty coal	Blk		Very dirty
			0.63	28.40	29.03	25	Mdstn	Blk		Pyrite blebs
Run #11										Recovery 2.75 - Run #11
			0.04	29.03	29.07	25	Mdstn			Very hard
			0.14	29.07	29.21	26	Dirty coal			
			0.26	29.21	29.47	26	Coal			Clean
				29.47		27	Siltstn			Floor

HOLE # **T93R-07C**
SITE #

PROJECT Telkwa
DATE Sept 12/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR McAuley Drilling
DRILLER Don & Terry
LOGGING CO. BPB
CASING
LOGGER

COMMENTS:

BOX MARK	SCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
Run #1		Broken					Sltstn	Vthin		Run #1 - 272-281' rec. 2.80m
										Rare v. thin fgr.ss lens
		Broken			83.87	1	SS	Silty fg.		Intbd fgr. ss/sltstn 55/45. Roof to "C".
										Thin bivalve horizon @ top (n 5 cm wider w.
										bivalves (oysters) up to 5 cm wide.
		Broken	0.70	83.87	84.57	2	Coal	Black		Clean, sl. dirty @ top
		Blocky	0.01	84.57	84.58	3	Coal	Black		Muddy parting
		Blocky	0.27	84.58	84.85	3	Coal	Black		Clean
		Broken		84.85		4	Mdstn	Br., massive		
							Sltstn	Dk. grey, vthin		Some intbd vf.gr. ss beds
										@ 88.3m bivalve depth horizon up to 1.5cm
										bivalves
							Sltstn			Occ. vfg ss lens, massive
							Carby mdstn			Pyrite bands throughout
			0.40	92.35	92.75	5	Coal			Sl. dirty @ top V. clean @ base
							Mudstn			Pyrite
							Sltstn	Med. grey, vthin		Intbd vfg ss/sltstn (35/65)
		Blocky					Silty mdstn	Med. grey, vthin		Some massive zones v. dense
Run #2					99.90	6	Mdstn	Blk, vthin, mass.	Roof	Carby near bottom. Rec. 2.82
			0.24	99.90	100.14	7	Dirty coal	Black		Mdstn partings
			1.03	100.14	101.17	8	Coal	Black		Clean coal, dirty zone near bottom
			0.31	101.17	101.48	9	Coal	Black		V. clean
			0.03	101.48	101.51		Coal Loss			
Run #3		Blocky	0.26	101.51	101.77	9	Coal	Black		Clean
			0.23	101.77	102.00	10	Coal	Black		Bentonite mud @ base - 5 cm zone
		Blocky	0.94	102.00	102.94	11	Coal	Black		Clean coal very hard
		Crushed	0.38	102.94	103.32	12	Dirty Coal	Black		Very crumbly zone
		Blocky	0.43	103.32	103.75	13	Coal	Black		Clean
Run #4		Blocky	1.07	103.75	104.82	14	Coal	Black		Clean mdstn parting @ 14.33. Rec. 2.44
		Crushed	0.57	104.82	105.39	15	Coal	Black		Crushed @ top
		Blocky	0.23	105.39	105.62	16	Dirty coal	Black		Puroclastic parting 3 cms
		Blocky	0.57	105.62	106.19	17	Coal	Black		Clean - dirty @ top of sample
Run #5		Blocky	0.23	106.19	106.42	18	Coal	Black		Becoming muddy @ base
		Blocky	0.05	106.42	106.47	18	Dirty coal	Black		Very muddy
		Blocky		106.47		19	Carby mdstn	Black		Floor - mdstn 1.91m rec.
		Blocky					Dirty sltstn	Grey		- turning silty @ base
Run #6		Blocky					Sltstn	Grey		Same as above
Run #7		Blocky	110.44		110.44	20	Silty mdstn	Grey		Roof - 2.14m rec.
		Blocky	0.08	110.44	110.52	20	Coaly mdstn	Black		Very coaly 50/50
		Blocky	0.30	110.52	110.82	21	Coal	Black		Mdstn @ top

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
		Blocky	0.23	110.82	111.05	22	Mudstn	Black		Ash layer (pyroclastic)
		Blocky	0.27	111.05	111.32	23	Dirty coal	Black		Very dirty coal
		Blocky	0.98	111.32	112.30	24	Coal	Black		Clean
Run #8		Blocky		111.30		25	mdstn	Black		Turning silty @ bottom - floor

HOLE # T93R-08C
SITE #

PROJECT Telkwa
DATE Sept 12/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR McAuley Drilling
DRILLER Don & Terry
LOGGING CO. BPB
CASING
LOGGER

COMMENTS:

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
Run #1		Broken					Sltstn.	Vthin		Run #1 - 272-281' rec. 2.80m
										Rare v. thin fgr.ss lens
		Broken			3.13	1	SS	Silty fg.		Intbd fgr. ss/sltstn 55/45. Roof to "C".
										Thin bivalve horizon @ top (n 5 cm wider w.
										bivalves (oysters) up to 5 cm wide.
		Broken	0.23	3.13	3.36	2	Coal	Black		Clean, sl. dirty @ top
		Blocky		3.36		3	Coal	Black		Muddy parting
		Blocky	0.59		3.95	3	Coal	Black		Clean
			0.23	3.95	4.18	4	Coal Loss			
		Broken	0.45	4.18	4.63	4	Mdstn	Br., massive		
			0.00				Sltstn	Dk. grey, vthin		Some intbd vf.gr. ss beds
			0.00							@ 88.3m bivalve depth horizon up to 1.5cm
			0.00							bivalves
			0 00				Sltstn			Occ. vfg ss lens, massive
			0.00				Carby mdstn			Pyrite bands throughout
			0.27	4.63	4.90	5	Coal			Sl. dirty @ top V. clean @ base
			0 00				Mudstn			Pyrite
			0 00				Sltstn	Med. grey, vthin		Intbd vfg ss/sltstn (35/65)
		Blocky	0.00				Slty mdstn	Med. grey, vthin		Some massive zones v. dense
Run #2			0.36	8.20	8.56	6	Mdstn	Blk, vthin, mass.	Roof	Carby near bottom. Rec. 2.82
			0.51	8.56	9.07	7	Dirty coal	Black		Mdstn partings
			0.02	9.07	9.09	8	Coal loss			
			0 25	9.09	9.34	8	Coal	Black		Clean coal, dirty zone near bottom
			0.34	9.34	9.68	9	Coal	Black		V. clean
Run #3		Blocky	0.01	9.68	9.69	9	Coal	Black		Clean
			0.52	9.69	10.21	10	Coal	Black		Bentonite mud @ base - 5 cm zone
		Blocky	0.19	10.21	10 40	11	Coal	Black		Clean coal very hard
		Crushed	0.19	10.40	10.59	12	Dirty Coal	Black		Very crumbly zone
			0.03	10.59	10.62	12	Coal loss			
		Blocky		10.62		13	Coal	Black		Clean
Run #4		Blocky			11.42	14	Coal	Black		Clean mdstn parting @ 14.33. Rec. 2.44
		Crushed	0.98	11.42	12.40	15	Coal	Black		Crushed @ top
			0.03	12.40	12.43	15	Coal loss			
		Blocky	1.72	12.43	14.15	16	Dirty coal	Black		Puroclastic parting 3 cms
		Blocky	0.12	14.15	14.27	17	Coal	Black		Clean - dirty @ top of sample
			0.08	14.27	14.35	17	Coal loss			
			0 18	14.35	14.53	17	Coal			
				14.53	14.65	18	Coal loss			
Run #5		Blocky	0.25	14.65	14.90	18	Coal	Black		Becoming muddy @ base
		Blocky	0.00			19	Carby mdstn	Black		Floor - mdstn 1.91m rec.

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
		Blocky	0.00				Dirty sltstn	Grey		- turning silty @ base
Run #6		Blocky	0.00				Sltstn	Grey		Same as above
Run #7		Blocky	0.00			20	Silty mdstn	Grey		Roof - 2.14m rec.
		Blocky	0.00			20	Coaly mdstn	Black		Very coaly 50/50
		Blocky	0.00			21	Coal	Black		Mdstn @ top
		Blocky	0.00			22	Mudstn	Black		Ash layer (pyroclastic)
		Blocky	0.00			23	Dirty coal	Black		Very dirty coal
		Blocky	0.00			24	Coal	Black		Clean
Run #8		Blocky	0.00			25	mdstn	Black		Turning silty @ bottom - floor

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
		Blocky	0.00				Dirty siltstn	Grey		- turning silty @ base
Run #6		Blocky	0.00				Siltstn	Grey		Same as above
Run #7		Blocky	0.00			20	Silty mdstn	Grey		Roof - 2.14m rec.
		Blocky	0.00			20	Coaly mdstn	Black		Very coaly 50/50
		Blocky	0.00			21	Coal	Black		Mdstn @ top
		Blocky	0.00			22	Mudstn	Black		Ash layer (pyroclastic)
		Blocky	0 00			23	Dirty coal	Black		Very dirty coal
		Blocky	0 00			24	Coal	Black		Clean
Run #8		Blocky	0.00			25	mdstn	Black		Turning silty @ bottom - floor

HOLE # T93R-11C
SITE #

PROJECT Telkwa
DATE Sept. 3/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR
DRILLER
LOGGING CO.
CASING
LOGGER

COMMENTS:

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
			0.13	19.83	19.96		Coal Loss			
Run 1		broken	0.58	19.96	20.54	1	coal	black		run 1 = 66.5-68.5 82 cm rec sl dirty strarted in coal
Run 1		broken	0.24	20.54	20.78	2	mudstn	carb brown dark massive		plant debris throughout
Run 2		broken	0.29	20.78	21.07	3	mudstn	carb brown daark		run 2 68.5-73.0 1.45 m rec mudstn a/a
Run 2		blocky	0.06	21.07	21.13	3	mudstn	carb black		very coaly
Run 2		broken	0.73	21.13	21.86	4	coal	black		thin dirty bands near base
Run 2		broken	0.02	21.86	21.88	5	mudstn	brown massive		
Run 2		broken	0.32	21.88	22.2	5	coal	black		
			0.01	22.2	22.21		Coal Loss			
Run 3		broken	0.28	22.21	22.49	5	coal			run 3 73-80 2.11 m rec clean
Run 3		blocky	0.03	22.49	22.52	5	mudstn	carb black		
Run 3		blocky	0.81	22.52	23.33	6	coal	black		clean hard
Run 3		broken	0.06	23.33	23.39	7	mudstn	carb black		40% coal
Run 3		broken	0.02	23.39	23.41	7	coal	black		hard clean
Run 3		broken		23.41		7	mudstn			floor 25 cm taken sl silty esp towards base
Run 4		broken	0.45	39.85	40.3	8	mudstn	carb		run 4 130-136 1.81 m rec roof commen plant debris
Run 4		blocky	0.38	40.3	40.68	9	coal			
Run 4		blocky	0.06	40.68	40.74	9	coal			sl dirty
Run 4		blocky	0.90	40.74	41.64	10	coal			clean
				41.64	41.65		Coal Loss			
Run 5		blocky	0.60	41.65	42.25	11	coal			run 5 136-142 1.85 m rec
Run 5		blocky	0.04	42.25	42.29	12	mudstn	brown massive		pyroclastic ash layer seam 1U/1 parting
Run 5		blocky	0.01	42.29	42.3	12	mudstn	carb black		coaly
Run 5		blocky	0.52	42.3	42.82	13	coal	black		clean
Run 5		blocky	0.02	42.82	42.84	13	coal	black		dirty 40% mudstn
Run 5		blocky	0.66	42.84	43.5	14	coal	black		clean
Run 6			0.42	43.5	43.92	14	coal	black		run 6 142-148 1.85 m rec clean
Run 6			0.05	43.92	43.97	15	coal	black		sl dirtier
Run 6		broken	0.30	43.97	44.27	15	coal	black		clean
Run 6			0.02	44.27	44.29	15	coal	black		sl dirty
Run 6			0.43	44.29	44.72	16	coal	black		clean
Run 6			0.01	44.72	44.73	16	coal	black		dirty band
Run 6			0.61	44.73	45.34	16	coal	black		clean
Run 7		blocky	0.03	45.34	45.37	17	coal			run 7 149-154 1.81 m rec
Run 7		blocky	0.02	45.37	45.39	17	mudstn	brown		
			0.03	45.39	45.42		Coal Loss			
Run 7		blocky	0.45	45.42	45.87	17	coal	black		clean
Run 7		blocky	0.30	45.87	46.17	18	coal	black		clean some pyrite on cleat faces
Run 7		blocky	0.25	46.17	46.42	19	mudstn	carb		v coaly mudstn 40% coal floor
Run 7		blocky					mudstn			floor
Run 7		broken	0.06	47.06	47.12	20	coal			
Run 8		broken	0.12	47.12	47.24	20	coal			run 8
Run 8		blocky	0.03	47.24	47.27	20	mudstn			
Run 8		very broken	0.08	47.27	47.35	20	coal			
Run 8		very broken	0.04	47.35	47.39	20	siltstn			
Run 8		very broken	0.21	47.39	47.6	20	coal			very dirty @ base some pyrite
Run 8		very broken					mudstn	carb		
Run 8		very broken					mudstn			bentonitic mudstn *
Run 8		very broken					mudstn			very coaly mudstn

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
Run 8		very broken					siltstn			

HOLE # T93D-22
SITE #

PROJECT Tellwa
DATE Sept. 3/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR
DRILLER
LOGGING CO.
CASING
LOGGER

COMMENTS:

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
							till			overburden
1/21.34		broken				A067	sltstn	well grey med massive		disem pyrite throughout non calc occ calc concretions near base up to 2 cm diameter
2/24.39		broken				A066	sltstn	well grey med massive		A/A non calc no concretions
3/27.44		broken				A065	sltstn	well grey med massive		A/A
3/30.48		blocky				A064	sltstn	well grey med massive		A/A some qtz & calcite fracture filling non calc disem pyrite
4/33.54		blocky				A063	sltstn	well grey med massive		clean w disem pyrite non calc
		very broken				A062	sltstn	well gray med massive		A/A grading to muddy sltstn near base
						A062	mudstn	silty grey med massive		non calc
5/36.59						A062	sltstn	grey med massive		non calc disem pyrite w/in
6/39.63		broken				A061	sltstn	grey med massive		crushed @ top A/A rare fracture fill calcite & qtz transitional to vfg ss near base
		broken				A060	sltstn	grey med		brecciated intbd fg ss/sltstn (20/80)
	75	broken				A060	sltstn	grey med v thin	SSD	intbd vfg ss/sltst (20/80) wavy bdg some mudstn
		blocky				A060	coal	black		
						A060	sltstn	grey thin	SSD	intbd vfg ss/sltstn/mudstn (30/50/20) convoluted bdg SSD & burrows bioturbation
						A060	ss	vfg grey light thin		interbed ss/sltst (75/25) carb lams
7/45.73	52	broken				A059	sltstn	grey med thin		interbed vfg ss/sltstn (15/85) short fining up sequences
		broken				A059	sltstn	grey med massive		calc toward base short slow fizz
						A058	sltstn	grey med massive		fractured & calcite filled A?A
8/48.78	55	broken				A058	sltstn	grey med massive		A/A faint short fining up sequence
9/51.83						A057	sltstn	grey med massive		A/A disem pyrite non calc
9/54.88	44	blocky				A056	sltstn	grey med massive		faint short fining up sequences non calc disem pyrite
10/57.93		broken				A055	sltstn	carb grye med v thin		A/A but stronger bedded intbed vfg ss/sltstn w carb lams (40/60) non calc
11/60.98		broken				A054	sltstn	grey med massive		faintly bedded
12/64.02		broken				A053	sltstn	grey med massive		A/A disem pyrite non calc
12/67.07	57	broekn				A052	sltstn	grey dark massive		
13/70.12		broken				A051	sltstn	grey dark massive		A/A dirty sltstn non calc
14/73.17		broken				A050	sltstn	grey dark massive		A/A
14/76.22		broken				A049	sltstn	grey dark massive		A/A
15/79.27		very broken				A048	mudstn	gray drk massive		silty mudstn non calc pyrite disem throughout
15		very broken				A047	mudstn	gray dark massive		A/A
16		very broken				A047	mudstn	gray dark massive		pyrite blebs throughout also pyrite halos around coal fragments blebs up to 1.5 cm
		very broken				A046	mudstn			gradational to sltstn towards base
16/82.32		broken				A045	sltstn	grey dark massive		non calc
16		broken				A045	sltstn	grey dark massive		A/A disem pyrite grading to vfgr ss near base
17/85.37						A049	ss	vfg grey med massive		clean hard vfg s & p ss occ thin coal bands w pyrite halos disem pyrite throughout
18/88.41		broekn				A044	ss	silty vfg grey med v thin	SSD	massive @ top intbed vfg ss/sltstn (60/40) minor SSD
18	76	broken				A043	ss	silty vfg grey med v thin		interbed vfg ss/sltstn (65/35) abrupt bdg contacts sharp contact w lower coal disem pyrite throughout w some blebs
18		very broken	0.60	99.30	99.90	1	coal	black		clean but disem pyrite # 11 seam
18		very broken		99.90	99.23	2	coal	black		sl dirty towwards base # 11
		blocky				A042	sltstn	carb black		
		blocky				A042	ss	grey v thin		intbed vfg ss/sltstn (65/35)
19/94.51	66	broken				A041	sltstn	grey med v thin		interbed vfg ss/sltstn (40/60)
19		broken				A040	sltstn	grey med massive		brecciated/broken some mudstn
20/97.56						A040	ss	vfg grey med v thin		interbed vfg ss/sltstn (70/30) common carb lams non calc disem pyrite throughout
20	60	blocky				A039	ss	silty vfg well grey light v thin	SSD	intbed vfg ss/sltstn (70/30) minor SSD abrupt bdg contacts
21						A039	ss	vfg well grey light v thin	SSD	A/A but bivalve shell frags w/in
						A038	ss	silty vfg well grey light v thin	SSD	intbd ss/sltstn A/A (50/50)
21/103.66		very broken				A037	mudstn	grey dark massive		sheared
		sheared				A037	mudstn	grey dark thin		intbd sheared ss/sltstn/mudstn (5/40/55) convoluted bdg
		crushed		105.30	105.62	3	coal	black		#9 seam
				105.62	105.67		Coal Loss			
22/106.70		very broken				A036	mudstn	silty grey dark massive		silty mudstn non calc common pyrite blebs carb @ top
22		very broken				A036	mudstn	carb grey massive		
23		very broken		106.87	107.47	4	coal	black		seam # 9 clean
		crushed		107.47	107.57	5	coal	black		dirty
		very broken		107.57	107.59	5	coal	black		very dirty
		crushed		107.59	108.07	5	coal	black		
		broken		108.07	108.88	6	coal	black		hard clean sl dirty @ base
23		blocky				A035	mudstn	carb grey dark v thin		intbd sltstn/mudstn (20/80) pyrite blebs @ base
23		blocky				A035	mudstn	black		v coaly mudstn
24	68	broken				A034	sltstn	grey dark v thin		mdustn @ top grading to intbd vfg ss/sltstn @ base
24		blocky				A033	sltstn	grey light massive		calc sltstn rapid sustained fizz

BOX MARK	BGA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES	
24		very broken				A033	mudstn	slty grey dark massive			
24/112.80		very broken				A033	sltstn	grey med		calc A/A	
25/115.85	50	broken				A032	ss	vfg grey light v thin	SSD	lntbd vfg ss/sltstn (85/15) minor SSD sommon carb lams Cu gr ss near base	
25/118.90						A031	ss	vfg grey light v thin	blotrd	A/A (70/30) more sltstn @ top	
28/121.95						A030	ss	vfg grey light v thin		A/A non calc no pyrite	
28						A029	ss	vfg grey light v thin		A/A (50/50)	
28		blocky		123.03		7	coal	black		sl dirty	
28		blocky				7	coal	black		clean hard	
27		crushed			123.82	7	coal	black			
		very broken				A028	mudstn	carb grey dark massive			
27/128.05	45	broken				A028	sltstn	grey med v thin		lntabed vfg ss/sltstn (30/70) common carb lams minor SSD	
28/131.10	68	broken				A027	sltstn	grey med v thin		A/A ss/sltstn = (15/85)	
29/134.15		very broken				A026	sltstn	grey med v thin		A/A (5/95) sheared sltstn = very dirty small ant diasem pyrite	
		broken				A026	sltstn	grey med v thin		A/A (5/95)	
						A025	sltstn	grey med v thin		fractured and calcite filled	
29		broken				A025	sltstn	grey med		A/A lntbd ss/sltstn (5/95)	
	63					A025	sltstn	grey med v thin		A/A	
						A024	coal	black		clean hard	
30/137.2		broken				A024	sltstn	grey med v thin		interbad vfg ss/sltstn (10/90) ab-rupt bdg contacts non calc some diasem pyrite	
31						A023	sltstn	grey med v thin		A/A massive & carb @ base	
		blocky		139.78		8	coal	black		top # 6 coal very dirty	
		broken				8	coal	black		pyrite bands throughout dirty @ base	
		broken			139.88	8	coal	black		clean hard	
31/140.24		broken				8	mudstn	brown		carb	
		broken		139.90	140.64	8	coal	black		minor pyrite @ top	
31		crushed		140.64		10	coal	black		clean hard cleated 2 cm mudstn @ top ?	
		blocky			141.40	10	coal	black		clean hard	
31		blocky	1.40	141.10	142.50	11	coal	black		clean hard sl dirty @ top	
31/143.28		blocky	0.24	142.50	142.74	12	coal	black		hard clean	
			0.10	142.74	142.84	12	coal loss				
		blocky	0.08	142.84	142.92	12	coal			sl dirty	
		blocky	0.01	142.82	142.93	12	mudstn	grey light			
		blocky	0.68	142.93	143.61	12	coal	black		sl dirty @ top	
32		crushed	0.34	143.61	143.95	13	coal	black		sheared dirty @ top	
32		crushed	0.03	143.95	143.98	13	mudstn	grey dark massive			
32		crushed	0.19	143.98	144.17	13	coal	black			
			0.02	144.17	144.19	13	rock loss				
		crushed	0.27	144.19	144.46	14	mudstn	carb grey dard massive		sheared	
32		blocky	0.06	144.46	144.52	15	coal	black		v dirty heat	
		broken	0.67	144.52	145.19	15	coal	black		clean	
		broken	0.22	145.19	145.41	15	coal	black		sl dirty	
		broken	0.05	145.41	145.46	15	coal	black		coal w thin ss beds up to 0.5 cm thick	
			0.06	145.46	145.52	15	coal loss				
33/146.34		blocky	0.45	145.52	145.97	16	coal	black		clean hard	
33		broken	1.01	145.97	146.98	16	coal			clean hard	
34		blocky	0.08	146.98	147.06	17	coal	black		sl dirty	
		blocky	0.01	147.06	147.07	17	coal	grey dark		50% coal 50% sltstn	
		blocky	0.45	147.07	147.52	17	coal	black		clean	
		blocky	0.05	147.52	147.57	17	coal	black		sl dirty	
		blocky	0.19	147.57	147.76	17	coal	black			
		blocky	0.01	147.76	147.77	17	coal	brown		thin mudstn banding	
			0.23	147.77	149.00	18	coal loss				
		broken	0.59	149.00	149.59	18	coal	black		clean	
				149.59	149.60	18	coal loss				
33/149.39		blocky	0.47	149.60	149.07	19	coal	black		dirty intbd coaly mudstn up to 1 cm	
		broken	0.04	149.07	149.11	19	coal			clean	
				149.11	149.12	A022	rock loss				
		blocky				A022	mudstn	black		coaly mudstn #6 floor	
		very broken				A022	mudstn	grey dark massive			
		broken	1.28	149.67	150.95	20	coal	black		sl dirty @ top #5 seam	
			0.14	150.95	151.09	21	coal loss				
		very broken	0.33	151.09	151.42	21	coal	black		#5	
		crushed				A021	mudstn	brown light		bent mudstn '	
		very broken				A021	mudstn	carb grey dark massive		grading to sltstn @ base	
						A020	ss	vfg grey med v thin		lntbd ss/sltst 60/40 non calc minor pyrite	
34/155.49	64	crushed				A019	mudstn	grey dark massive		carb	
		very broken				A019	mudstn	grey dark massive		carb diasem pyrite & blebs @ base rapid grad to coal	
35		very broken	1.28	156.44	157.72	22	coal	black		#3u seam	
		very broken				A018	mudstn	gray dark massive		#3 parting pyrite banding @ lower contact with coal	#3L seam
35/158.54		broken	0.29	157.99	158.28	23	coal	black		#3L seam	
		broken	0.14	158.28	158.42	23	coal	black		#3L seam	
		blocky	0.01	158.42	158.43	24	sltstn			#3L seam	
			0.25	158.43	158.68	24	coal loss				

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
		broken	0.72	168.68	169.40	24	coal	black		#3L seam
36/161.58						A017	mudstn	grey dark massive		non calc plant frags
37/164.6		broken				A016	mudstn	grey dark massive		pyrite blebs common carb zones sl coaly
37		broken				24B	coal	black		dirty
37/167.69		very broken				A015	mudstn	silty grey dark massive		non calc
38		broken				A014	siltstn	grey dark massive		dirty
		broken				A013	mudstn	silty grey dark massive		carb roof #2
38		very broken	0.07	169.12	169.19	25	coal	black		hard dirty #2 seam
		blocky	0.28	169.19	169.47	25	coal	black		sl dirty
38		blocky	0.06	169.47	169.53	25	coal	black		pyrite banding throughout
		broken	0.18	169.53	169.71	25	coal	black		dirty
38/170.7		broken	0.56	169.71	170.27	26	coal	black		clean hard
		broken	0.27	170.27	170.54	26	coal	black		A/A
			0.31	170.54	170.85	26	coal loss			
		broken	0.08	170.85	170.93	27	coal	black		sl dirty
		broken	0.01	170.93	170.94	27	ss	grey light		
		broken	0.09	170.94	171.03	27	coal loss	black		clean
			1.10	171.03	172.13	27	coal			
			0.10	172.13	172.23	28	coal	black		dirty mudstn banding
			0.07	172.23	172.30	28	coal loss			
39/173.9			0.97	172.30	173.27	28	coal	black		clean hard
		broken	0.58	173.27	173.85	29	coal	black		abrupt contact w floor
39		very broken				A012	mudstn	carb grey dark massive		mudstn @ top grading down to
39/176.8	60	broken				A012	siltstn	grey dark	SSD	intbd vfg ss/siltstn
40/179.9	47	broken				A011	ss	grey med v thin	SSD	intbd vfg ss/siltstn (60/40) sl calc slow sustained fizz
41		broken				A010	siltstn	grey med v thin		A/A (10/90)
						A010	ss	vfg light massive		
41/182.9						A010	siltstn	grey med v thin		A/A (5/95) some mudstn
42/185	77					A009	ss	fg grey light massive		#2 ss common carb lams
		blocky				A009	ss	vfg grey light massive		
43		broken				A009	coal	black		
		broken				A008	ss	vfg grey light massive		shell frags w/in some fracture fill
		blocky				A007	ss	fg grey light massive		clean s & p ss non calc no visible pyrite
						A007	mudstn	grey light		pcnt mudstn
		blocky				A007	ss	grey light massive		ss A/A
43/192.1	84	broken				A008	siltstn	grey med v thin		intbed vfg ss/siltstn (15/85)
		broken				A008	siltstn	grey med v thin		A/A
						A008	mudstn	silty grey med		
44/195.1		blocky				A005	ss	vfg well grey light massive		occ shell frags non calc
45/198.2		blocky				A004	ss	fg well grey light massive		non calc occ carb lams
46/201.2		blocky				A003	ss	fg well grey light massive		A/A
46/204.3		blocky				A002	ss	fg well grey light v thin		intbed vfg ss/siltstn (75/25) occ coal blebs w assoc pyrite disem pyrite as well
47/207.3	80	blocky				A001	ss	fg well grey light massive		occ carb lams & thin beds of mgss clean TD

HOLE # T93D-23
SITE #

PROJECT Telkwa
DATE Sept. 3/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR
DRILLER
LOGGING CO.
CASING
LOGGER

COMMENTS:

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
			38.58	0	38.58		O/B			till & overburden
1/39.63		very broken				A001	siltst	grey med massive		weathered, dirty, non calc no pyrite
1/42.68		broken				A001	siltst	grey med massive		weathered, dirty, non calc, no pyrite
		broken				A001	siltst	grey med massive		A/A grading to SS near base minor calcite veining
2/45.73		broken				A002	ss	silty vfg grey light massive		Dirty ss s occ carb wisps non-calc calcite fracture fill
2	45	broken				A002	ss	vfg grey light massive		A/A occ carb lams
3/48.78		very broken				A003	siltst	ss grey med massive		calcite fracture fill
		broken				A003	siltst	grey med massive		A/A
		broken				A003	siltst	grey med massive		very fractured calcite fill
		broken				A004	siltst	ss grey med massive		carb lams sandier towards base non calc
4/54.87	45	broken				A005	ss	vfg grey light massive		carb lams @ top occ bivalve up to 3 cm @ 40-53 cm sl calc siltst vthin beds occur near base
5/57.92	70	broken				A006	ss	fg grey light v thin		v thin carb mudst lams w/in non calc
6/60.98		broken				A007	ss	fg grey light lam		clean s & p non calc ss w carb lams occ dirty zones
6/64.02		broken				A008	ss	fg grey light massive		occ carb lams w/in some brecciated & fracture zones
7/67.07		broken				A009	ss	fg grey light massive		A/A sl calc
	68	broken				A010	ss	fg grey light massive		A/A sl calc
		broken				A010	ss	fg grey light massive		A/A brecciated w calcite veining & bivalve shell fragments
	72	broken				A011	ss	fg grey light massive		common carb lams no visible pyrite
8/73.17		broken				A012	ss	vfg grey med massive		occ disturbed carb lams rare bivalves up to 3 cm
		broken				A013	ss	fg grey med massive		A/A silty towards base
		broken				A014	mudstone	grey dark massive		siltst @ top grading to mudstone non calc
		very broken				A015	mudstone	carb grey dark massive		carb mudstone w thin coal bands up to 1 cm
		very broken				A015	mudstone	carb brown dark massive		friable, carb
	80	broken				A016	siltst	grey med		dirty siltst @ top grading down to vfg ss @ base
10/79.27		broken				A017	ss	vfg grey light massive		calcite filled fractures
11/82.32		broken				A018	ss	vfg grey light massive		A/A several fractured brecciated zones
11/85.37		broken				A019	ss	vfg grey med massive		brecciated A/A
12/88.41						A020	ss	vfg grey med		grad to siltst @ base calc slow sustained fizz
13/91.46						A021	siltst	ss grey med massive		A/A sandy siltst transitional to mudst @ 6mes
		blocky				A022	siltst	grey light massive		brecciated siltst
13/94.51		broken				A022	*mudstone*	*grey dark massive*		*silty mudstone non calc*
14/97.56		broken				A023	mudstone	grey dark massive		A/A some calcite filled fractures
		broken				A024	mudstone	silty grey dark massive		A/A silty towards base
		broken				A024	siltst	grey med massive		dirty siltstn
15/100.61		blocky				A025	mudstone	grey dark massive		sl silty mudstone
		broken				A025	mudstone	grey dark massive		A/A
		crushed	0.23	99.98	100.21	1	coal	black		
			0.03	100.21	100.24	1	coal loss			
		broken	0.12	100.24	100.36	2	mudstone	carb brown dark massive		
		crushed	0.42	100.36	100.78	3	coal	black		platy dirty lams near base
16/103.66		broken				A026	mudstone	grey dark massive		
		broken				A027	siltst	grey med massive		grad from mudst to dirty vfg ss
						A027	ss	silty vfg grey med massive		dirty vfg silty ss non calc
			0.16	105.19	105.35	4	coal			clean
			0.03	105.35	105.38	4	coal loss			
18/108.70	67	broken				A028	mudstone	silty grey med massive		
		blocky				A028	mudstone	grey dark massive		abrupt contact w lower coal
		broken	0.48	106.37	106.85	5	coal	black		
		very broken	0.08	106.85	106.93	5	coal	black		dirty coal 40% mudst
			0.35	106.93	107.28	5	coal loss			
		very broken				A029	mudstone	carb black massive		very carb mudst
						A029	mudst	grey dark massive		
17/109.76		very broken				A030	ss	fg grey med massive		brecciated very dirty ss non calc minor mudst
		broken				A030	ss	fg grey light massive		
		very broken				A031	mudst	carb black		
		blocky				A031	mudst	light grey		
		blocky				A031	ss	fg grey light		s & p dirty ss non calc

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
17		broken				A031	mudst	carb black		
18						A031	ss	fg grey light massive		A/A
18		broken				A031	mudst	carb grey dark massive		coaly mudst
18/112.80		broken				A032	siltst	grey med massive		mixed vfg ss/siltst/mudstn
		broken				A032	ss	vfg gray med massive		dirty @ top clean near base
19		broken				A033	ss	fg grey light massive		calc slow sustained fizz carb flakes w/in rip ups
		very broken				A034	mudstone	grey dark massive		
		crushed				A034	coal	black		
						A034	mudst	carb black massive		coaly
		very broken				A034	mudst	grey dark massive		
19		crushed	0.19	117.67	117.88	6	coal	black		sl dirty
19		broken	0.14	117.88	118	6	mudst	carb grey dark		
			0.04	118	118.04	6	coal loss			
20		crushed	0.16	118.04	118.2	6	coal	black		dirty
20/121.95		very broken				A035	mudst	carb gray dark massive		intbd carb mudst/coaly mudst
						A036	mudst	carb grey dark massive		A/A
						A036	mudst	black		very coaly
21/125.00						A036	mudst	grey dark massive		noncalc
						A037	mudst	grey dark massive		A/A
	60	broken				A037	coal	black		dirty
		crushed				A037	mudst	carb grey dark massive		
23/131.10	40	broken				A038	mudst	grey dark massive		non calc sl carb
		very broken				A039	mudst	carb grey dark massive		coaly towards base
		very broken	0.18	131.02	131.2	7	coal	black		dirty platy
		very broken	0.50	131.2	131.7	8	coal	black		crushed @ base
		very broken	0.37	131.7	132.07	9	coal	black		sl dirty
		blocky	0.03	132.07	132.1	9	siltst	carb grey dark massive		
			0.01	132.1	132.11	9	coal loss			
		broken	0.59	132.11	132.7	9	coal	black		
						A040	siltst	carb grey dark massive		fractured
		crushed				A040	mudst	bent grey light massive		bentonuitic mudst
	61	very broken				A040	mudst	brown massive		
24		blocky				A040	siltst	grey light massive		v hard calc rapid sustained fizz
		very broken				A041	mudst	silty grey med massive		carb near base non calc
		very broken	0.41	134.63	135.04	10	coal	black		
			0.03	135.04	135.07	10	rock loss			
		broken	0.22	135.07	135.29	11	mudst	grey dk massive		
		very broken	0.13	135.29	135.42	11	coal	black		
24		very broken				A042	mudst	carb black massive		floor
24/137.20		broken				A042	mudst	grey dark massive		
						A043	coal			
	68	broken				A043	mudst	grey dark massive		
25		crushed	0.26	137.81	138.07	12	coal	black		dirtier @ top
25		very broken				A044	mudst	grey med massive		
		crushed	0.30	138.57	138.87	13	coal	black		
			0.11	138.87	138.98	13	coal loss			
		broken	0.06	138.98	139.04	13	mudst	grey light		bent
			0.41	139.04	139.45	14	coal loss			
		very broken	1.13	139.45	140.58	14	coal	black		clean hard
		broken	0.25	140.58	140.83	15	coal	black		dirty
	80	broken				A045	mudst	grey med thinly bdd		massive @ top intdb siltst towards base
26/143.25		broken				A045	mudst	silty grey med massive		brecciated w calcite fracture fill @ top
27/146.34		broken				A046	siltst	grey med massive		dirty @ top more siltst towards base brecciated A/A non calc
28/149.39		broken				A047	siltst	grey light massive		bivavles up to 4 cm present ooc TD
				0	1.82					

HOLE # T93D-24
SITE #

PROJECT Tatkwa
DATE Sept. 3/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR
DRILLER
LOGGING CO.
CASING
LOGGER

COMMENTS:

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
box 1		broken	2.00	5		A001	intrusive	grey light massive		Fe stained sl weathered
box 1			0.83			A001	intrusive			non weathered qtz monzonite 35-40% 60-65% minerals (qtz 65% feldspar 33% mafics <2%)
box 2			1.61		20	A001	intrusive			Fe stained sl weathered
box 2			2.14	20		A001	intrusive			Fe stained sl weathered
box 2			0.82		30	A002	intrusive	grey light massive		non weathered
box 2			1.12	30		A002	intrusive			v sl weathered some Fe stained
box 3			1.12			A002				weathered alteration & Fe stain @ fractures faces
box 3			0.78		40	A002				fracture & 9 cm Fe stain zone @ base 2 cm from fracture most alteration
box 4			3.10	40	50	A002	intrusive			weathered except @ fracture zones where 10 cm on either side Fe stained & 1 cm v weathered
			2.93	50	60	A003	intrusive			A/A one fracture zone @ base feldspars show most weath. thoughout (up to 2 cm xls)but esp weath. @ fracture zone
box 5			1.40			A003				A/A unweathered zone
			0.41			A004				fractured Fe stained & weathered
			1.27		70	A004	intrusive			non weathered fracture @ base
box 6			3.35	70	80	A004				A/A some fracture zones
box 7			3.05	80	90	A005				A/A
			1.75			A005				Fe stained & weathered feldspark thoughout
box 8			4.07		110	A006		massive		mainly unweathered except @ fracture zones
			1.95	110		A007				weathered Fe stained & fractured
box 9			1.15		120	A007				unweathered
box 9			3.03	120	130	A007				mixed fractured Fe stained & unweathered
box 10			3.12	130	140	A008				A/A
box 11			2.85	140	150	A008				mainly unweath w some fractured weathered zones 30% ground mass 70% minerals up to 1/5 cm

HOLE # T93D-27
SITE #

PROJECT Telkwa
DATE Sept. 3/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR
DRILLER
LOGGING CO.
CASING
LOGGER

COMMENTS.

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
			73.17	0	73.17		till			casing
1/76.22	51	very broken	2.94		76.11		sltst	grey med thin		intbd vfg ss/sltst (45/55)
		very broken	1.00		77.11		sltst	grey med thin		intbd vfg ss/sltst (45/55)
2	52	very broken	3.21		80.32		ss	slty vfg		intbd vfgr ss/sltst (65/35) abrupt contacts
3		broken	0 32		80.64		ss	fg grey light massive		
3/82 30	54	broken	1.20		81.84		sdtstn	vfg grey med vthin		intbd vfg ss/sltn (15/85)
3		broken	3 52		85.36		ss	slty vfg grey light vthin		intbd vfg ss/sltn (15/85) with mudstn buyers
4		very broken	2.20		87.56	1	sltstn	vfg grey med thin/lam		grad ss/sltstn/mudstn (roof)
4		very broken	0.61	87.56	88.17	2	coal	clean black		sl dirty @ top of sample
4		very broken	0.19		88.36	3	mudstn	grey dark		
4		very broken	0.46		88.82		sltstn	vfg grey med v thin		inter bed vfg ss/sltn (10/90)
5/91.44	55	very broken	2.06		90.88		sltstn	vfg grey med v thin		inter bed ss/sltn (20/80)
5		very broken	2.11		92.99		sltstn	vfg grey med v thin		inter bed ss/sltn (20/80)
6/94.49		broken	1.14		94.13		sltstn	vfg grey med v thin		inter bed ss/sltn (20/80)
6		very broken	2.26		96.39		sltstn	vfg grey light v thin		inter bed vfg ss/sltn (25/95)
6		broken	0.20		96.59		mudst	grey dark		slty
6		broken	0.62		97.21		sltstn	vfg grey med v thin		some mudstn layers
7/100.58		very broken	3.14		100.35		mudstn	slty grey dark		interbed sltstn/mdstn (25/75)
7		very broken	0.60		100.95		mudstn	slty grey dark		interbed sltstn/mdstn (25/75)
8		very broken	0.90		101.85	4	sltstn	vfg grey light v thin		turning mudstn @ base calcitic zone roof
		crushed	1.00	101.85	102.85	5	coal	black		clean
8/103.66		broken	0.46	102 85	103.31	5	coal	black		clean
		crushed	1.91	103.31	105.22	6	coal	black		clean w occ sl dirty bands
		crushed	0.36	105.22	105.58	7	coal			partings w/in sltstn/mudstn
9/106.71		crushed	1.02	105.58	106.6	8	coal			sl dirty banding
		crushed	1.33	106 6	107.93	9	coal			clean
		very broken	0.22	107.93	108.39	10	mudstn	carb massive		
		crushed	1.66	108.39	110.05	11	coal	black		clean
		crushed	0.42	110.05	110.47	12	coal	black		dirty banding w/in
		broken	0 01	110.47	110.48	13	coal	black		v dirty
		broken	0.01	110.48	110.49	13	mudstn	grey		
				110.49	110 76	13	coal loss			
		crushed	0 32	110.76	111.08	13	coal	black		
			1.22	111.08	112.3	13	coal loss			coal loss not recovered
11/115.85		crushed	0.40	112.3	112 3	14	mudstn	grey dark		
		crushed	2.65	112.7	115.35	15	coal			
				115.35						no more core recovered coal from above sloughing in on drillstem

HOLE # T93D-31
SITE #

PROJECT Telkwa
DATE Sept. 3/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR
DRILLER
LOGGING CO.
CASING
LOGGER

COMMENTS.

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
			33.53	0	33.53		till			casing to 33.53m - overb
1		broken	0.05				coal	black		clean
1		broken	0.28				mudstn	grey dark		carby mudstn
1/36.58		broken	2.07				mudstn	sklty grey med		mudstn vfg sltstn @ base
1		broken	0.61				mudstn	slty grey med		mudstn vfg sltstn @ base
1		very broken	1.03				sltstn	vfg grey med vthin		interbed mudstn/sltstn (40/60)
2		very broken	0.33				sltstn	vfg grey med		interbed mudstn/sltstn (40/60)
2		very broken	0.14				mudstn	slty grey med massive		vfg sltstn @ top
2		very broken	0.49			1	coal	black		clean
		very broken	2.41				sltstn	vfg grey light v thin		
2		broken	1.05				sltstn	vfg grey light v thin		deformed zones
3/42.67	51	broken	0.66				sltstn	vfg grey light v thin		interbed ss/sltstn (20/80)
3	45	broken	1.06				sltstn	vfg grey light v thin		interbed ss/sltstn (20/80)
3	vert	very broken	0.66				sltstn	vfg grey light v thin		interbed ss/sltst (40/60)
3	46	very broken	1.38				sltstn	vfg grey light v thin		interbed ss/sltst (40/60)
3		very broken	1.54				sltstn	fg grey med v thin		interbed ss/sltstn (50.50) more ss @ base
4/48.77	53	broken	1.42				sltstn	vfg grey med v thin		interbed ss/sltstn (20/80)
4		broken	1.69				sltstn	vfg grey med v thin		interbed ss/sltstn (20/80) with mudstn lenses
5		very broken	1.42				ss	slty fg well grey light massive		some sltstn lenses < .5 cm
5		very broken	3.28				ss	slty vfg well grey light v thin		interbed ss/sltstn (55/45) more slty @ base
6/54.86		very broken	1.57				sltstn	vfg grey dark lam		some calcite zones
6		very broken	2.53				sltstn	fg grey light v thin		
7	51	very broken	4.10				sltstn	vfg grey med v thin		interbed ss/sltstn (10/90)
8/64.00		very broken	0.65				sltstn	vfg grey med v thin		interbed ss/sltstn (10/90)
8		broken	3.04				sltstn	vfg grey med v thin		interbed ss/sltstn (10/90) soem calcite zones
8		broken	0.07				mudstn	slty grey dark massive		
9/70.10		very broken	2.51				sltstn	vfg grey med v thin		interbed mudstn/sltstn (20/80)
9		very broken	1.45				sltstn	vfg grey dark v thin		interbed mudstn/sltstn (10/90)
10/73.15		very broken	1.77				sltstn	vfg grey dark v thin		mudstn parting 10cm @ top of sample
10		blocky	2.46				sltstn	ssvfg grey med v thin		interbed ss/sltstn (10/90)
11	50	broken	3.98				sltstn	ss vfg grey dark v thin		interbed ss/sltstn (10/90)
12		broken	0.66				sltstn	ss vfg grey dark v thin		interbed ss/sltstn (10/90)
12/82.30		broken	2.71				ss	*slty vfg well grey light massive*		*fine grain constant some carby lenses*
12		broken	1.23				ss	slty vfg grey med massive		fine grain constant some carby lenses
13		blocky	3.87				sltstn	fg grey dark massive		pyrite zones @ 2.5m area
13										
14			4.27				sasn	vslty vfg well grey med massive		occ sltst & carb wisps w/in rare bivalves up to 3 cm
15			4.21				ss	vfg well grey med massive		A/A bivalves up to 10 cm ostrea? thickwalled & creuuleted shell transitional to sltstn
16/100	46		4.12				ss	vslty vfg will grey med massive		A/A bivalve death horizon @ 3.2 to 3.4 m
17			4.08				ss	vfg well grey med massive	ssd	A/A bivalves rare occ carb lams
18	49		4.33				ss	vfg will grey med massive	ssd	siltier near base sltstn & carb lams more commen
19			1.98				sltstn	grey med massive		some mudstn
19/112.8			2.35				ss	slty vfg well grey med massive	ssd	common faint sltst/carb lams
20			1.10				sltstn	grey med massive		

HOLE # **T93D-31**
SITE #

PROJECT Telkwa
DATE Sept. 3/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR
DRILLER
LOGGING CO.
CASING
LOGGER

COMMENTS:

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
20			2.24				mudstn	silty vfg well grey dark massive		silty @ base
21			4.46				siltst	grey dark massive		fractured @ top vfg ss zones
22			4.28				sltstn	grey dark massive		A/A
24			8.35				sltstn	grey dark massive		A/A some pyrite assoc w coal frags
25			4.20				sltstn	grey dark massive		A/A with pyrite in carby zones
26			0.20				mudstn	grey dark massive		turning silty @ base
26			3.59				sltstn	grey dark massive		some calcite zones
27/143.26			1.53				sltstn	grey dark massive		A/A
28			2.93				ss	vfg grey light massive		silty @ top shell gragments w/in near base
28			3.25				siltst	grey med massive		
			1.34				sltstn	grey med massive		A/A
			0.08				mudstn	grey light		bent
			2.45				sltstn	grey med massive		
30			3.86				sltstn	grey med massive		grading to vfgr ss near base
31			4.02				ss	vs vfgr grey med massive		rare bivalves occ gastropods up to 2 cm
32			4.07				ss	vfgr grey light massive		A/A occ bivalves up to 10 cm
			1.27				ss	vfgr		A/A
33	46		2.87				ss	fgr grey light massive		occ vfg ss/siltst/carb lams w/in minor ssd
34			3.90				ss	fg will grey light massive	ssd	A/A some vfg w/in
			4.34				ss	fg well grey light massive	ssd	A/A no vfg carb wisps
37/182.9	45		4.48				ss	fg well grey light massive	ssd	A/A

HOLE # T93D-38
SITE #

PROJECT Telkwa
DATE Sept. 3/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR
DRILLER
LOGGING CO.
CASING
LOGGER

COMMENTS.

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
				0	18.3		overburden			
3	65	blocky					ss	fg well grey light massive		broken @ top non calc & no pyrite clean s & p ss
		blocky					ss	vfg well grey med massive		weakly bedded ss/sltst (75/25)
6/39.6	70	blocky					ss	fg well grey med massive		occ sltst & carb thin beds/lams non calc no pyrite
/39.6		blocky					ss	fg well grey med massive		A/A minor thin coal up to 1 cm @ top bivalves up to 5 cm @ base
		blocky					ss	vfg well grey med massive		overall fining up seq vfg to sltst @ base
11/64.0		broken					mudstn	grey dark massive		mudstn to silty mudstn sl sh sheared @ times occ bivalves w/in up to 4 cm
		broken					sltstn	grey med massive		clean hard occ bivalves A/A
		blocky					coal	black		
		broken			69.89	1	sltst	grey med massive		massive sandy sltst w occ bivalves/shell fragments A/A abrupt contact w lower coal roof 25 cm sampled
13		blocky	0.21	69.89	70.1	2	coal	black		dirty bands towards base
		broken	0.58	70.1	70.68	3	mudstn	grey dark		carb @ top
13		broken	0.58	70.68	71.26	4	coal	black		dirtier towards base
			0.02	71.26	71.28	4	coal loss			
13		very broken		71.28		5	mudstn	grey dark		carb mudstn @ top floor
	72	broken					mudstn	carb grey dark		A/A
							sltst	grey med massive		carb & occ vfg ss lams
15							mudstn	grey med thin		interbed mudst/sltst/vfg ss (60/35/<5) non calc
		blocky					ss	carb mg grey light v thin		coal rip-ups w/in bds @ top
		very broken					sltstn	grey med v thin		grad from mudstn @ top to intbed vfg ss/sltst @ base
		broken					ss	mg grey light v thin		fining up overall fg ss @ top w carb & sltstn lams grading to massive mg ss w occ carb lams @ base clean hard s & [ss
							mudstn	grey dark massive		sl carb abrupt contact w ss
		very broken					mudstn	carb black		v coaly mudstn n 35% coal
		crushed	0.19	84.86	85.05	6	coal	black		
			0.58	85.05	85.63	6	coal loss			
		crushed					mudstn	black		coaly mudstn
		broken					mudstn			carb w thin coal beds
		broken					coal			very dirty @ base
		broken					mudstn	carb grey dark massive		
		broken					coal	black		
17		very broken					mudstn	carb grey dark		
		crushed	0.38	89.69	90.07	7	coal	black		dirty crushed
18		broken					mudstn	grey dark		
		blocky					coal			n 50% mudstn
		blocky					coal			
18		blocky					mudstn			n 60% mudstn j 40% coal
19		blocky					sltstn	grey med massive		carb mudstn @ top grad to sltstn to vfg ss @ base
	70	blocky					ss	mg grey light massive		overall fining up fg ss @ top 7 m-cg ss @ base common carb lams & occ coal rip-ups
21		blocky			101.21	8	sltstn	grey med massive		non calc no pyrite some samples
		blocky	0.02	101.21	101.23	8	mudstn	carb black		roof
		very broken	0.03	101.23	101.26	9	coal loss			dirty coal w common dirty thin beds
			0.39	101.26	101.65	9	coal			
		very broken	0.10	101.65	101.75	10	mudstn	grey med		bent slightly
		broken	0.53	101.75	102.28	11	coal	black		
		broken	0.41	102.28	102.69	11	coal	black		very hard sl dirty esp near base
			0.11	102.69	102.8	11	coal loss			
			0.04	102.8	102.84	12	rock loss			
21		broken	0.09	102.84	102.93	12	mudstn	black		very carb
		broken					sltstn	grey med massive		muddy @ top
		blocky					ss	fg grey light massive		
							sltstn	grey light		
							mudstn	carb black		coaly
							sltstn	grey med massive		
							ss	vfg well grey med v thin		intbed ss/sltst (90/10)
							sltstn	grey dark massive		

							ss	vfg well grey med v thin	A/A ss (90/100
							mudstn	grey med massive	
		very broken	0.20	108.95	109.15	13	coal	black	clean hard
		very broken	0.04	109.15	109.19	13	sltstn	grey	
		broken	0.20	109.19	109.39	13	coal	black	clean
			0.03	109.39	109.42	13	coal loss		
		broken	0.07	109.42	109.49	14	mudstn	black	very carb
			0.08	109.49	109.57	14	coal loss		
23		blocky	0.29	109.57	109.86	14	coal	black	very dirty coal
			0.00				sltstn	grey thin	intbed vfg ss/sltst/carb mudstn 920/50/30) coals up to 10 cm
		blocky	0.00				coal	black	clean hard
		blocky	0.00				sltstn	grey med massive	dirty sltstn
	71		0.00				ss	fg grey light massive	clean s & p ss v tare carb lams
			0.00				sltstn	grey med thin	intbed ss/sltst/mudstn (25/45/30)
		broken		118.14	118.41	15	mudstn	carb black massive	very carb
		broken		118.41	118.73	16	coal	black	
				118.73	118.85	16	coal loss		
		broken		118.85	118.91	17	mudstn	black	very coaly
		broken		118.91	118.95	17	coal	black	clean
		broken		118.95	119.03	17	coal	black	sl dirty
		broken		119.03	119.32	17	coal	black	clean
				119.32	119.4	17	coal loss		
		broken		119.4	119.55	18	coal	black	dirty
		broken		119.55	119.65	18	coal	black	clean
				119.65	119.68	18	coal loss		
		broken		119.68	119.78	18	mudstn	black	
		broken		119.78	119.9	18	coal	black	dirty
				119.9	119.95	18	coal loss		
		broken		119.95	119.96	18	sltstn	black	
		broken		119.96	120.25	18	coal	black	dirty bands throughout
		broken		120.25		19	mudstn	carb	
25/121.96							sltstn	grey massive	grading down to vfg ss
							sltstn	vfg grey med massive	v c g rained @ base 10 cm
							mudstn	carb black	coaly mudstn
		blocky					mudstn	grey light massive	bentonitic mudstn well mixed hard & well consolidated
		blocky					mudstn	carb grey dark massive	minor bent influence
27/128.0		blocky					mudstn	grey med massive	bent mudstn ash particles throughout forming thin beds
		blocky					ss	sg tan massive	volcaniclastic bed cg in appearance bent mudstn w volc frags throughout
							ss	vfg tan massive	muddy @ top overall fining up volc rock fragments forming fg vcg ss A/A frags up to lam
		crushed					mudstn	black	coaly mudstn
29/137.2		broken					sltstn	grey med massive	TD

HOLE # T93R-42C
SITE #

PROJECT Telkwa
DATE Sept. 3/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR
DRILLER
LOGGING CO.
CASING
LOGGER

COMMENTS:

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
Run 1		crushed					mudstn	carby brown		carby mudstn - might be floor rec 0.46
		crushed					siltstn	vfg grey med massive		vfg siltstn (no sample)
Run 2		broken	0.04	15.45	15.49	1	mudstn	carby brown	*	roof? mudstn (carby) parting rec 0.80
			0.07	15.49	15.56	2	coal loss			
		broken	0.86	15.56	16.42	2	coal	clean black		clean coal v hard
			0.14	16.42	16.56	3	rock loss			
Run 3		broken	0.43	16.56	16.99	3	siltstn	muddy vfg grey med massive		siltstn parting rec 2.10
			0.43	16.99	17.42	3	rock loss			
			0.05	17.42	17.47	4	coal loss			
		broken	0.76	17.47	18.23	4	coal	clean black		clean coal v small pyrite bands
		broken								bottom of sample calcite @ top
		broken		18.23		5	mudstn	carby brown	*	Floor - more carby @ top of very bottom 0.20 m taken pyrite zone
Run 4		blocky					ss	vfg well grey med thin		interbed ss/siltstn 70/30 rec 1.87
		blocky					siltstn	fg grey dark v thin		interbed ss/siltstn 20/80
Run 5		broken					ss	vfg well grey med v thin		interbed ss/siltstn 70/30 rec 2.32
Run 6		broken					ss	vfg well grey med v thin		A/A some pyrite plebs rec 2.15
Run 7		broken					ss	vfg well grey med v thin		A/A 60/40 rec 0.94
Run 8		broken					ss	vfg well grey med v thin		A/A rec 2.65
Run 9	58	blocky					ss	vfg well grey med v thin		A/A 70/30 rec 2.90
Run 10		blocky					ss	vfg grey light v thin	*	roof vfg ss A/A rec 2.26
		broken	0.49	33.42	33.91	6	coal	clean black		small parting 3 cm @ top
		broken								dirty @ base of sample
		broken					siltstn	vfg well grey med v thin	*	floor interbed siltstn
Run 11		broken			35.12	7	siltstn	vfg well grey med v thin	*	roof A/A 0.20 m taken rec 2.15
		broken	0.15	35.12	35.27	8	coal	dirty black		dirty coal
		broken	0.33	35.27	35.60	9	coal	clean black		clean some small dirty zones
			0.15	35.60	35.75	9	coal loss			
			0.53	35.75	36.28	9	coal			
		broken		36.28		10	mudsstn	coaly brown	*	floor carby @ top 0.20 m taken
Run 12		blocky					siltstn	dirty vfg grey med v thin		dirty @ top rec 2.10
		blocky					mudstn	carby brown	*	roof mudstn
Run 13		blocky			39.13	11	mudstn	carby brown		rec 2.88
		broken	0.46	39.13	39.59	12	coal	dirty black		small parting mudsstn 0.05 m @ base
Run 13		blocky		39.59		13	siltstn	dirty gray med v thin	*	floor .020 m taken vfg siltstn
Run 14		crushed					siltstn	vfg grey med thin		interbed ss/siltstn 20/80 rec 2.18
		crushed								turning dirty @ base
		crushed	0.20	43.47	43.67	14	coal	black		dirty coal (core loss)
			0.29	43.67	43.96	14	coal loss			
		crushed					mudstn	brown		coaly mud parting
			0.62	44.22	44.84	15	coal loss			
Run 15		broken	0.20	44.84	45.04	15	coal	black		clean coal
		broken					siltstn	dirty vfg grey med		dirty @ top no sample
		broken					siltstn	vfg gray med v thin		interbed ss/siltstn 30/70
Run 16	52	blocky					siltstn	fg grey med v thin		A/A 20/80 rec 2.60
Run 17		blocky					siltstn	vfg grey dark lam		lam siltstn some carby area rec 2.60
Run 18		blocky					siltstn	vfg gray dark lam		A/A rec 2.07
Run 19		blocky					ss	vfg well grey med massive		massive ss rec 1.87
Run 20		blocky					ss	vfg well grey med massive		A/A rec 2.50
Run 21		blocky					ss	vfg well grey med massive		A/A rec 3.04
Run 22		blocky					ss	vfg well grey med massive		A/A rec 3.08
Run 23		blocky					ss	vfg well grey med massive		A/A some pyrite & calcite bands rec 2.14
Run 24		blocky					ss	vfg well grey med massive		A/A some green colour rec 1.58
Run 25		blocky					ss	fg well gray light v thin		more course than above rec 2.85
		blocky					ss	vfg well gray light massive		numerous pyrite zones associated with carby zones
Run 26		blocky					ss	vfg well gray light massive		ss A/A pyrite calcite rec 3.08

HOLE # T93D-44
SITE #

PROJECT Telkwa
DATE Sept. 3/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR
DRILLER
LOGGING CO.
CASING
LOGGER

COMMENTS:

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
							overburden			
		very broken					siltstn	grey med massive		
							ss	fg grey med massive		clean s & p ss overall fining up sequence
4	68						ss	fg grey light v thin	SSD	intbed fg ss/siltst (85/15) common carb lams dissem pyrite
		broken					coal	black		clean hard
		broken					mudstn	grey med massive		
		blocky					mudstn	carb black		coaly N 40% coal
		blocky	0.26	20.05	20.31	1	coal	black		dirty
4		broken	0.20	20.31	20.51	1	coal	black		clean
		broken	0.07	20.51	20.58	1	coal	black		very dirty platy
5		broken	0 13	20.58	20.71	1	coal	black		sl dirty
		broken		20.71		2	mudstn	grey med massive		
		broken			25 29	3	siltstn	grey med massive		muddy siltstn plant frags throughout roof 25 cm taken
			0.42	25.29	25 71	4	coal	black		clean
			0.15	25.71	25 86	5	coal	black		sl dirty
		very broken	0.29	25.86	26.15	5	coal	black		occ dirty bands up to 1 cm
		blocky	0 01	26.15	26.16	5	mudstn	black		very carb
		blocky	0 02	26.16	26.18	5	coal	black		
6		broken		26.18		fir. 6	siltstn	grey dark massive		floor (25 cm) sampled dirty
7			0.03	26.74	26.77	7	coal	black		very dirty pyrite banding w/in
		broken	0.30	26.77	29.07	7	coal	black		clean except for common pyrite banding near top
7	70	blocky			31.08	roof 8	siltstn	grey med massive		some intbed vfg ss (N10%) dissem pyrite throughout roof
		blocky	0.15	31.08	31.23	9	coal			
		blocky	0.02	31.23	31.25	9	mudstn	carb black		
		very broken	0.22	31.25	31.47	10	coal			
		blocky	0.02	31.47	31.49	10	coal			pyrite thin bands
		broken	0.93	31.49	32.42	10	coal			sl dirty zones .01 cm mudstn @ base
		broken	0.28	32.42	32.7	11	coal	black		clean
8/33.5		crushed		32 7		12	mudstn			carb @ top floor
			0.00				ss	carb grey		coal rip ups throughout dirty
			0.00				mudstn	grey dark massive		coaly @ base
			0.00				siltstn	grey dark massive		dirty
			0.00				coal	black		
	70		0.00				ss	silty vfg grey med v thin		intbed vfg ss/siltst (70/30) siltier @ top & gradational to siltst near base
13/54.9			0.00				siltstn	grey med v thin		intbed vfg ss/siltst (20/80)
					56.63	13	siltstn	grey med v thin		A/A some taken @ base
			0.06	56.63	56.69	13	mudstn	grey dark		very carb mudstn roof
		blocky	0.25	56.69	56.94	14	coal	black		pyrite banding up to 0.5 cm
		blocky	0.22	56.94	57.16	14	coal	black		clean
13/57.9		crushed	0.33	57.16	57.49	14	coal	black		clean
		broken	0.02	57.49	57.51	15	mudstn	grey light		
14		broken	0.63	57.51	58 14	15	coal	black		clean
		broken		58.14		16	mudstn	grey dark		floor plant debris throughout
		broken			59.87	17	mudstn	grey dark		roof 25 cm sampled A/A
			0.06	59.87	59.93	18	coal	black		pyrite banding throughout *
14/61		broken	0.57	59.93	60.5	18	coal	black		clean hard *
			0.05	60.5	60 55	18	coal loss			
			0.06	60.55	60 61	19	coal loss			
		broken	0.60	60.61	61.21	19	coal	black		clean hard sl dirtier @ top
				61.21		20	mudstn	carb grey dark		floor 25 cm sampled
		broken					mudstn	carb black		intbed thin coals (up to 5 cm) & coaly/carb mudstn
		broken					siltstn	grey med massive		
16/67.1		very broken					mudstn	carb grey dark massive		platy

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
							mudstn	grey dark		
							mudstn	black		very carb N 35% coal
		broken	0.08	67.61	67.69	21	coal	black		clean
			0.20	67.69	67.89	21	coal loss			
		broken	0.22	67.89	68.11	21	coal	black		sl dirty pyrite banding @ base
		broken	0.08	68.11	68.19	21	coal	black		
		blocky					siltstn	grey dark massive		dirtier @ top
	70	blocky					siltstn	grey dark v thin		intbed vfg ss/siltst (25/75)
		blocky					ss	vfg grey light v thin		A/A (80/20) roof
		blocky	0.24	73.05	73.29	22	coal	black		clean
			0.33	73.29	73.62	23	mudstn	carb grey dark massive		
			0.03	73.62	73.65	23	rock loss			
17		broken	0.26	73.65	73.91	24	coal	black		occ pyrite sl dirty
17		blocky	0.39	73.91	74.3	25	coal	black		clean hard
18			0.42	74.3	74.72	26	coal	black		occ dirty banding
18			0.01	74.72	74.73	26	mudstn	brown massive		
18		broken	0.84	74.73	75.57	27	coal	black		dirty zones
			0.43	75.57	76	28	mudstn	grey dark		
			0.04	76	76.04	28	rock loss			
			0.06	76.04	76.1	28	mudstn	black		coaly
			0.09	76.1	76.19	29	coal	black		dirty
			0.63	76.19	76.82	29	coal			
			0.99	76.82	77.81	30	coal	black		
			0.03	77.81	77.84	31	coal loss			
			0.15	77.84	77.99	31	coal	black		intbed dirty coal/clean coal occ carb mudstn (80/10/10)
			0.13	77.99	78.12	32	mudstn	carb black massive		floor
19/79.3	71	broken	0.65	78.12	78.77	33	mudstn	carb grey dark massive		plant debris throughout roof sampled
		broken	0.87	78.77	79.64	34	coal	black		
			0.09	79.64	79.73	34	coal loss			
		blocky	0.01	79.73	79.74	34	coal	black		dirty @ floor contact
		broken	0.50	79.74	80.24	35	mudstn	carb grey dark massive		prtlng
				80.24	80.3	35	rock loss			
			0.38	80.3	80.68	36	coal	black		sl dirty pyrite banding
			0.64	80.68	81.32	37	coal	black		clean pyrite banding
		very broken		81.32		38	siltstn	grey med		some intbed vfg ss/siltstn (20/80)
21/88.4		broken					siltstn	grey med massive		mainly massive siltstn ss/siltstn = (20/80) roof sampled
21		blocky			88.18	39	mudstn	silty grey dark massive		silty @ top plant debris
		blocky	0.15	88.18	88.33	40	coal	black		pyrite banding dirty
			0.07	88.33	88.4	40	rock loss			
		blocky	0.02	88.4	88.42	40	siltstn	grey med		
		broken	0.33	88.42	88.75	40	coal	black		sl dirty throughout
		very broken	0.10	88.75	88.85	41	mudstn	carb black		platy
		broken	0.32	88.85	89.17	41	coal	black		sl dirty
		blocky	0.03	89.17	89.2	41	siltstn	grey		
			0.06	89.2	89.26	41	rock loss			
		blocky	0.82	89.26	90.08	42	coal	black		clean hard
			0.06	90.08	90.14	43	mudstn	carb black		
22		blocky	0.23	90.14	90.37	43	coal	black		sl dirty thin mudstn banding
			0.04	90.37	90.41	43	coal loss			
22/91.5		blocky	0.57	90.41	90.98	44	coal	black		clean hard
		blocky	0.01	90.98	90.99	45	mudstn	grey dark		
22		blocky	0.76	90.99	91.75	45	coal	black		clean hard
22		blocky	0.07	91.75	91.82	45	coal	black		mudstn banding w/in
				91.82		46	siltstn			floor
23/97.6		blocky					siltstn	grey med v thin		intbed vfg ss/siltstn (40/60)
24							siltstn	grey med v thin		A/A (25/75)
29/120.0							ss	fg well grey med massive		occ carb lams bivalves spread throughout the unit up to 6 cm in length #2 ss

HOLE # T93D-63
SITE #

PROJECT Tekwa
DATE Sept. 3/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR
DRILLER
LOGGING CO.
CASING
LOGGER

COMMENTS:

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
							overburden			
1		broken				A001	siltstn	grey dark thin		intbd vfg ss/siltstn (35/65) non-calc no visible pyrite
1		blocky				A001	siltstn	grey light massive		calc (slow sustained fizz)
1/12.2		broken				A002	ss	vfg grey med thin	SSD	intbd vfg ss/siltstn 60/40 minor SSD noncalc
2/15.2	65	broken				A003	ss	vfg grey med thin	SSD	A/A 60/40
		blocky				A003	ss	vfg grey light massive	xbdg	non calc no visible pyrite
3/18.3		broken				A004	siltstn	grey med thin		interbed vfg ss/siltstn (40/60)
4/21.3	63	broken				A005	siltstn	grey med thin		A/A (20/80) no visible pyrite non calc
4/		broken				A006	siltstn	grey med thin		faintly bedded intbd vfg ss/siltst (10/90) no calc
5/27.4		broken				A007	ss	grey med massive		non calc no pyrite visible
6		broken				A008	siltstn	gray med massive		A/A sandy
6/		broken				A008	siltstn	grey med massive		A/A occ bivalves wlin
6/36.5		broken				A009	siltstn	grey med massive		minor pyrite banding assoc with carb/coaly bands
6		broken				A009	siltstn	grey med massive		A/A
6		blocky				A010	siltstn	gray light massive		very slow sustained fizz
7/33.5		blocky				A011	siltstn	grey med massive		occ pyrite with assoc carb blebs
7		blocky				A011	siltstn	grey med massive		A/A
7		blocky				A012	ss	vfg well grey light massive		common pyrite blebs in assoc coaly rip-ups/blebs
7/36.6						A013	mudstn	carb black massive		thin coaly bands throughout occ pyrite banding/blebs
						A013	coal	black		
8	64	broken				A013	mudstn	carb black massive		thin coal & pyrite banding
8/39.6	66	broken				A014	siltstn	grey med v thin		intbed vfg ss/siltstn (10/90) occ pyrite blebs dissem pyrite non calc
		broken				A014	siltstn	grey med massive		occ pyrite blebs
		broken				A015	siltstn	carb grey med massive		A/A but pyrite banding throughout
8		broken				A015	coal	black		pyrite banding dirty @ base
						A016	siltstn	grey dark massive		plant frags minor pyrite
		broken	0.33	40.98	41.29	1	coal	black		sl dirty banding
		blocky				A017	mudstn	carb black massive		very carb
9	67	broken				A017	siltstn	carb grey med v thin		intbed vfg ss/siltstn 10/90 occ carb/coal beds up to 1 cm occ pyrite non calc
		very broken				A018	coal	black		
9		broken				A018	mudstn	black		v coaly
10/45.7		broken				A019	siltstn	grey med massive		sand lams occur toward base
10		broken				A019	siltstn	grey med v thin		intbed vfg ss/siltstn (20/80)
10		broken				A019	siltstn	grey med massive		non calc occ pyrite blebs
		broken				A019	mudstn	carb black massive		
		broken	0.43	46.48	46.91	2	coal	black		
		broken	0.08	46.91	46.99	3	coal	black		dirty minor pyrite banding
		broken	0.27	46.99	47.26	3	coal	black		clean hard
		blocky	0.01	47.26	47.27	3	pyrite	gold		
		broken	0.16	47.27	47.43	3	coal	black		dirty & dissem pyrite throughout
			0.02	47 43	47.45	4	coal loss			
		broken	0.73	47 45	48.18	4	coal	black		clean hard
		blocky				A020	mudstn	black		very coaly
		very broken				A020	mudstn	grey dark massive		sl carb grading to siltstn @ base
		very broken				A021	mudstn	grey med massive		common silty zones non calc
		blocky				A022	siltstn	grey light massive		sl calc
		blocky				A022	siltstn	carb grey dark massive		
11		blocky				A022	siltstn	grey light massive		sl calc
11/51.8		very broken				A023	mudstn	grey dark very thin	SSD	intbed siltstn (mudstn (30/70)
12/54.9		broken				A023	siltstn	grey dark v thin	SSD	A/A but 60/40 becoming sltier towards base
		broken				A024	siltstn	carb grey dark massive		siltstn grading to carb mudstn @ base occ thin coal beds
13		very broken	0.25	56.19	56.44	5	coal	black		sl dirty
		blocky	0 01	56.44	56.45	5	siltstn	brown		
13		blocky	0 07	56.45	56.52	5	coal	black		sl dirty @ top
			0 08	56.52	56.6	5	coal loss			
13/57.9		blocky	0 90	56.6	57.5	6	coal	black		clean hard
		blocky	0.33	57.5	57.83	6	coal	black		A/A
		broken	0.79	57 83	58.62	7	coal	black		
			0.03	58.62	58.65	7	coal loss			
		broken	0.04	58.65	58.69	8	mudstn	grey med		pyroclastic ash layer
			0.03	58.69	58.72	8	coal loss			
13		very broken	0 98	58.72	59.68	8	coal	black		sl dirty & platy @ top 20 cm

		blocky	0.19	59.68	59.87	9	mudstn	black		coaly throughout pyrite banding
14/61.0		broken	0.65	59.87	60.52	10	coal	black		
		blocky	0.13	60.52	60.65	10	coal	black		sl dirty
		very broken	0.95	60.65	61.6	10	coal	black		some crushed zones
		broken	0.17	61.6	61.77	11	coal	black		sl dirty
			0.24	61.77	62.01	11	coal loss			
14		broken	0.02	62.01	62.03	11	sltstn	grey dark		intbed coal/sltstn
			0.04	62.03	62.07	11	coal loss			
		blocky	0.81	62.07	62.88	11	coal	black		hard clean
		blocky	0.08	62.88	62.96	11	coal	black		dirty
		broken				A025	mudstn	black		coaly for 1st 0.05 m
14		broken				A025	sltstn	grey dark massive		non calc muddy @ top disssem pyrite
15		broken				A026	sltstn	grey med massive		dissem pyrite esp @ base non calc
15		broken	0.06	67.35	67.41	12	coal	black		dirty 50% rock
			0.13	67.41	67.54	12	coal loss			
15		broken	0.18	67.54	67.72	12	coal	black		
15		blocky				A027	mudstn	grey dark massive		
						A027	mudstn	carb black massive		coaly plant debris
16/70.1	70	broken				A028	sltstn	grey dark v thin		intbed vfg ss/sltstn 5/95
16		broken				A028	sltstn	carb grey dark v thin		A/A Fe nodules
		broken				A029	coal	black		
		broken				A029	mudstn	carb black		coaly plant debris throughout
		blocky	0.34	71.23	71.57	13	coal	black		common dirty bands occ pyrite banding
16/73.2		broken				A030	sltstn	grey med massive		
16		blocky				A030	sltstn	grey med v thin		intbed vfg ss/sltstn (40/60) non calc
		broken				A031	mudstn	carb black		coaly mudstn
		blocky	0.17	74.4	74.57	14	coal	black		clean hard
		blocky	0.03	74.57	74.6	14	coal	black		pyrite banding throughout
		broken	0.08	74.6	74.68	14	coal	black		clean hard
		broken	0.11	74.68	74.79	14	coal	black		very dirty intbed mudstn
		broken	0.05	74.79	74.84	14	coal	black		
		broken	0.05	74.84	74.89	14	coal	black		dirty
		broken	0.02	74.89	74.91	14	mudstn	black		
			0.11	74.91	75.02	14	coal loss			
		broken	0.13	75.02	75.15	14	coal	black		dirty
		broken				A032	mudstn	black massive		coaly
17/79.3		broken				A032	ss	carb vfg med grey med massive		plant debris
						A032	sltstn			sandy sltstn sl carb non calc
		broken				A032	coal	black		
		broken				A032	mudstn	carb brown massive		volcaniclastic ash layer
			0.05	76.82	76.87	15	coal loss			
		broken	0.57	76.87	77.44	15	coal	black		
						A033	ss	carb grey thin		intbed cgss/vfg ss/sltstn/mudstn (5/60/30/5)
						A034	coal	black		
						A034	mudstn	silty grey med massive		non calc
						A034	mudstn	carb black massive		coaly esp towards base
	79					A035	sltstn	grey med massive		occ vfg ss thin beds up to 1 cm
18		broken				A035	sltstn	grey med v thin		intbed vfg ss/sltst (45/55) non calc no visible pyrite
18/82.3		blocky				A036	ss	cg poor grey light thin		intbed cg ss/fg ss/sltstn 50/30/20 channel leg dep
19/85.4		broken				A037	mudstn	silty grey med massive		non calc no visible pyrite
		broken		84.98	85.34	18	coal	black		dirty @ top
20/88.4	83	blocky				A038	sltstn	grey med v thin		intbed vfg ss/sltst (45/55) non calc no visible pyrite
20/91.5		blocky				A039	sltstn	grey med v thin		A/A (25/75) common qtz & calcite fracture fill TD

HOLE # **T93R-40C**
SITE #

PROJECT	Telkwa	CONTRACTOR	McAuley
DATE	Sept. 29/93	DRILLER	Terry and Don
CORE TYPE		LOGGING CO.	BPB
GEOLOGIST	Angelo	CASING	20'
		LOGGER	

COMMENTS: Coal in casing zone 2'. Run 5 - core jammed in barr. - going to shorter runs

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
Run 1		Broken					Sltstn, fg	Grey, massive		Interbedded mdstn
		Very broken	0.16	9.43	9.61	1	Coal, dirty	Black		Pyrite bands - mdstn partings
Run 2		Blocky					Sltstn, vfg	L/grey, massive		Carby layers & pyrite Bands @ 10 52 Rec 2.4
		Blocky	0.44	10.47	10.91	2	Mdstn	D/grey, massive		Silty @ top of sampled roof
		Blocky	0.78	10.91	11.69	3	Coal, clean	Black		Very clean - bentonitic parting @ bottom
		Blocky	0.34	11.69	12.03	4	Coal			Bentonite parting @ top mdsn @ bottom
										Both partings = 3cm + 2 cm
Run 3		Blocky	0.70	12.03	12.73	5	Coal			Dirty zones - parting @ bottom mdstn
			0.02	12.73	12.75	5	Rock Loss			
		Blocky	0.40	12.75	13.15	6	Dirty coal			Dirty zones @ bottom
		Blocky		13.15		7	Sltstn, vfg	L/grey, thin		Floor - mdstn @ top 5 cm - 20 taken
										intebedded sltstn/mdstn @ base
Run 4	70	Blocky					Sltstn, fg	L/grey, thin		Interbd ss/sltstn 20-80 rec. 2.44m
Run 5		Crushed					Sltstn, fg	L/grey, thin		A/A 30 - 70 rec. 2.30m
		Crushed					SS, fg	L/grey, massive		Well cemented - very hard
Run 6		Broken					SS, fg	L/grey, thin		Intebd ss/sltstn 60-40 rec. 1.66
										crushed or fractured @ base
		Broken					SS, fg	L/grey, thin		A/A
		Broken					Sltstn, fg	D/grey		Very fractured - crushed zone - calcite zone
		Broken					SS, fg	L/grey, thin		Interbd ss/sltstn 60/40
Run 7	78	Blocky					SS, vhard, fg	L/grey, thin		A/A 70/30 - some fractures, rec. 2.06m
										Some carby layers < 1 cm cont. leaf imp.
Run 8		Blocky					SS, vfg	L/grey, thin		A/A 50/50
		Crushed					Coal, dirty	Black		Dirty coal - no sample taken
		Broken					Mdstn	Black		Carby mudstn
		Blocky					Sltstn, fg	L/grey, vthin		Interbd sltstn/mdstn 80/20
Run 9		Blocky					Sltstn, vfg	L/grey, vthin		A/A 80/20
		Blocky					Sltstn, vfg	Grey, massive		Vthin bedding @ base
										Fractured zone @ 28.85 - mdstn filled
Run 10					29.39	8	Sltstn, vfg	D/grey, massive		Roof - vfg sltstn
			0.96	29.39	30.35	9	Coal	Black		Dirty zones - some pyrite @ base
				30.35		10	Sltstn, vfg	L/grey, vthin		Floor - mud @ top .20 taken
Run 11							Sltstn, vfg	L/grey, vthin		Fractured zone - some calcite filled - rec. 1 34
										Some muddy layers
Run 12							Sltstn, fg	M/green, thin		Interbd ss/sltstn 20/80
							SS, fg	M/green,thin		Interbd ss/sltstn 70/30
			0.15	34.34	34.49	11	Coal, dirty	Black		Dirty zones
			1.04	34.49	35.53	12	Sltstn, vfg, dirty	L/grey, massive		Roof, mdstn @ base .20 taken
			0.06	35.53	35.59	12	Rock Loss			
			0.20	35.59	35.79	13	Coal, dirty	Black		Top of coal zone pyritic

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
			0.70	35.79	36.49	14	Dirty sltstn, vfg	L/grey, massive		Roof of 2 seam - .20 taken
			0 13	36.49	36.62	14	Rock Loss			
			0.79	36.62	37.41	15	Clean Coal	Black		Clean bentonitic parting @ top 1 cm
										Mdstn parting @ base lens
			0.28	37.41	37.69	16	Mdstn	Brown		Mdstn parting - pyrite blebs throughout
			0.03	37 69	37.72	17	Coal Loss			
			0.79	37.72	38.51	17	Coal	Black		Clean - mdstn parting 2 cm @ base
Run 14				38.51		18	Sltstn, vfg	D/grey, massive		Floor - vfg sltstn .20 taken - Rec. 1.90
							Sltstn, vfg	D/grey, vthin		Crushed zones - calcite @ base
Run 15							Sltstn, vfg	D/grey, vthin		Interbd ss/sltstn 10/90 - rec. 1 55
							Sltstn, dirty, vfg	D/grey		Very fractured zone
										Bentonitic mdstn parting @ base
Run 16							Slstn, vfg	L/grey, massive		Fractured zones
							Slstn, vfg	L/grey, massive		Solid v. hard
							Slstn, vfg	L/grey, vthin		Interbd ss/sltstn 10/90
Run 17							Sltstn, vfg	L/grey, vthin		A/A
							Sltstn, vfg	L/grey, massive		Sltstn with mdstn parting 8 cm @ base
							Sltstn, vfg	L/grey, vthin		Interbd ss/sltstn 5/95
Run 18							Sltstn, vfg	L/grey, vthin		A/A 40/60
Run 19					49.93	19	Sltstn, vfg	L/grey, vthin		Roof, intbd ss/sltstn 40/60 mdstn @ base
										Sample = .20m
			0 92	49.93	50.85	20	Coal, clean	Blk		Pyrite band @ top of sample 7 cm
Run 20			0.72	50.85	51.57	21	Coal, clean	Blk		Small mdstn parting near base - rec 2 20
										2 cm.
			1.48	51.57	53.05	22	Coal, clean	Blk		Small mdstn parting .02 from top
Run 21			0.09	53.05	53.14	23	Coal, dirty	Blk		Very dirty @ base - rec. 2.10
			0.71	53.14	53.85	24	Sltstn, vfg	D/grey, vthin		Parting
			0.23	53.85	54.08	25	Sltstn, carby, vfg	D/grey, vthin		Coaly sltstn
	21	Blocky	0.88	54.08	54.96	26	Coal, clean	Black		Clean coal
			0.11	54.96	55.07	27	Coal loss			
	22	Broken	0.52	55.07	55.59	27	Coal, clean	Black		A/A - Rec. 1.60
		Broken	0.39	55.59	55.98	28	Coal, dirty	Black		Very dirty - mdstn parting @ base
			0.05	55.98	56.03	28	Coal Loss			
		Broken	0.70	56.03	56.73	29	Coal, clean	Black		Clean coal
	23	Broken	0.58	56.73	57 31	30	Coal, fractured	Black		V. fryable
			0.12	57.31	57.43	30	Coal loss			
		Broken	0.82	57.43	58.25	31	Coal, clean	Black		Clean coal
		Broken	0.10	58.25	58.35	32	Mdstn	Grey		Bentonitic mdstn parting
		Broken	0.50	58.35	58.85	33	Coal, clean	Black		Clean Coal
			0.25	58.85	59.10	33	Coal loss			
			0.31	59.10	59.41	34	Coal loss			
	24	Broken	0 87	59.41	60.28	34	Coal, dirty	Black		Mdstn laminate - rec. 2.80
		Broken	0.02	60.28	60.30	34	SS	Black		
		Broken	0 40	60.30	60.70	34	Coal, dirty	Black		Very dirty
		Broken					Rocks	Black		
		Broken	0.30	61.13	61.43	35	Coal, dirty	Black		Very dirty
			0.06	61.43	61.49	36	Coal loss			
	25	Broken	0.45	61.49	61.94	36	Coal, dirty	Black		Very dirty
										Did not sample floor.
										Core barrell left in overnight

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
										Sltstn - interbd ss/sltstn Floor

HOLE # **T93R-41C**
SITE #

PROJECT	Telkwa	CONTRACTOR	McAuley
DATE	Sept. 30/93	DRILLER	Terry and Don
CORE TYPE		LOGGING CO.	BPB
GEOLOGIST	Angelo	CASING	20'
		LOGGER	

COMMENTS: Run 14 - 1' left down hole on Run 13 - got .28 m of it on 14 for total of 2.70m

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
Run 1		Blocky					Sltstn, fg	M/grey, vthin		Fe stained in fractures rec. 1.30
										Interbd ss/sltstn 20/80
Run 2		Blocky					Sltstn, fg	M/grey, vthin		A/A ss/sltstn 40/60
Run 3		Crushed					Sltstn, fg	L/grey, massive		
Run 4		Blocky					SS, fg	L/grey, thin		Interbd ss/sltstn 70/30
Run 5		Broken					SS, fg	L/grey, thin		A/A ss/sltstn 60/40
Run 6		Blocky					SS, fg	L/grey, thin		A/A
Run 7		Crushed					SS, v.hard	L/grey, massive		Very hard ss - in crushed zone - calcite
Run 8		Blocky					SS	L/grey, thin		Interbd ss/sltstn 60/40
Run 7		Blocky					Sltstn, fg	L/grey, thin		Interbd A/A 30/70
										Some mudstn lams
Run 8		Blocky					SS, vfg	M/grey, thin		Interbd ss/sltstn 60/40
										Some carby lams
Run 9		Blocky					SS, vfg	M/grey, thin		A/A
Run 10		Blocky					SS, vfg	M/grey, vthin		Interbd ss/sltstn 20/80
		Blocky					Sltstn, vfg	L/grey, massive		Very hard coarse ss
		Blocky					SS, v.hard, fg	M/grey, thin		Interbd ss/sltstn 20/80
Run 11		Blocky					Sltstn, vfg	M/grey, massive		Very hard zone @ bottom l/grey
		Blocky					Sltstn, vfg	M/grey, thin		Mudstn lams
Run 12		Blocky					Sltstn, vfg	M/grey, thin		Interbd ss/sltstn 20/80
Run 13		Blocky					Sltstn, vfg	M/grey, thin		A/A
		Blocky					Sltstn, vfg	M/grey, thin		Vfg sltstn
		Blocky					Sltstn, vfg	D/grey, massive		Calcite bands
		Blocky					Sltstn, vfg	L/grey, massive		Vfg sltstn
Run 14		Blocky					Sltstn, vfg	D/grey, massive		A/A Calcite @ top
							SS, v.hard	D/grey, massive		Very hard well cemented
							Sltstn, vfg	L/grey, massive		
							Sltstn, fg	L/grey, massive		Calcite fill and top of sample
Run 15		Stick					SS, vfg	M/grey, thin		Interbd ss/sltstn 60/40 - Rec 2.30
										Turning silty @ bottom
Run 16	78	Broken					Sltstn, vfg	D/grey		Sltstn, v/hard zone - rec 1.86
							Sltstn, fg	M/grey, thin		Bedding lam @ bottom
Run 17		Broken					Sltstn, fg	M/grey, thin		A/A
							Sltstn, vfg	D/grey, massie		
Run 18		Broken					Sltstn, fg	M/grey, thin		Fg sltstn
							Sltstn, fg	M/green, massive		0.03 zone calcite hard
							Sltstn, fg	M/grey, thin		
Run 19		Blocky			50.72	1	Sltstn, fg	M/green, massive		Roof - fg sltstn (green)
										Carby lenses - pyrite assoc
		Crushed	0.26	50.72	50.98	2	Coal, dirty	Black		Dirty coal - clean contact

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
			0.04	50.98	51.02	2	Coal loss			
Run 20		Broken	0.38	51.02	51.40	2	Coal, dirty	Black		Some pyrite banding
		Broken					Sltstn, dirty vfg	D/grey vthin		Interbd sltstn/mdstn floor - not sampled
		Broken					Sltstn, vfg	M/grey, vthin		
Run 21	82	Blocky					SS, vfg	L/grey, thin		Interbd ss/sltstn 70/20
Run 22		Blocky					Sltstn, fg	M/grey, vthin		Turning massive at base
		Broken	0.20	57.08	57.28	3	Mdstn, coaly	Black		Mdstn - coal roof
Run 23		Broken	0.95	57.28	58.23	4	Coal, clean	Black		Some small pyrite zone @ top 8
			0.02	58.23	58.25	4	Coal loss			
		Broken	0.02	58.25	58.27	4	Mdstn, coaly	Black		Coaly mdstn @ base
		Broken		58.27		5	Sltstn, fg	M/grey, vthin		Floor - took .20m
Run 24		Broken					Sltstn, fg	M/grey, vthin		A/A
		Broken			59.69	6	Mdstn, coaly	Black		Roof - coaly mud
		Broken	0.73	59.69	60.42	7	Coal, clean	Black		Small pleb of pyrite @ top 2 cm.
		Crushed	0.63	60.42	61.05	8	Coal, clean	Black		A/A - small pyrite zone
			0.03	61.05	61.08	8	Coal loss			
Run 25		Broken	0.74	61.08	61.82	8	Coal, clean	Black		Small pyrite band @ base
		Broken		61.82		9	Sltstn, dirty, vfg	L/grey, vthin		Floor - mud @ top - silty @ bottom
		Broken					Sltstn, vfg	L/grey, vthin		Some mdstn lenses
Run 26		Blocky					Sltstn, fg	L/grey, vthin		Interbd ss/sltstn 20/80
		Blocky					SS, fg	M/green, massive		
		Blocky					Sltstn, fg	M/grey, vthin		Interbd ss/sltstn 20/80
Run 27		Blocky					Sltstn, fg	M/grey, vthin		A/A 30/70
		Blocky					SS, vfg	M/grey, massive		
	80	Blocky					Sltstn, fg	M/grey, vthin		Inerbd ss/sltstn 30/70
Run 28		Blocky					Sltstn, fg	M/grey, vthin		A/A 40/60
Run 29		Blocky					Sltstn, fg	M/grey, vthin		A/A
										Pyrite and calcite zone near base
Run 30		Blocky			75.80	10	SS, fg	M/green, thin		Roof ss/sltstn 70/30
		Blocky	0.51	75.80	76.31	11	Coal	Black		Dirty @ top, small pyrite
			0.06	76.31	76.37	11	Coal loss			
		Crushed	0.80	76.37	77.17	11	Coal			Bentonitic at bottom 3 cm
		Blocky	0.54	77.17	77.71	12	Coal, clean	Black		Vhard clean coal
Run 31		Broken	0.81	77.71	78.52	13	Coal, clean	Black		A/A
		Broken		78.52		14	Sltstn, vfg	M/grey, vthin		Floor .29 taken sltstn - dirty @ top
Run 32		Blocky					Sltstn, vfg	M/grey, vthin		Interbd sltstn a/a
		Crushed	0.14	81.58	81.72	15	Coal, clean	Black		Coal stringer
Run 33		Blocky	0.00				Sltstn, vfg	D/grey, vthin		Interbd ss/sltstn 10/90
Run 34		Blocky			86.20	16	Sltstn, vfg	D/grey, vthin		Roof a/a dirty @ bottom
		Blocky	1.28	86.20	87.48	17	Coal, clean	Black		Small < 1 cm - mdstn @ top
			0.12	87.48	87.60	17	Coal loss			
Run 35		Broken	0.10	87.60	87.70	18	Coal, dirty	Black		Bottom of last sample
		Broken	0.67	87.70	88.37	19	Sltstn, vfg	M/grey, massive		Parting
		Broken	0.77	88.37	89.14	20	Coal	Black		Dirty @ top - pyrite banding
										Bentonitic and bottom 3 cm
		Broken		89.14		21	Sltstn, vfg	M/grey, massive		Floor. Dirty @ top - 20 cm taken
Run 36		Broken					Sltstn, vfg	M/grey, massive		A/A
		Broken					Mdstn, coaly	Black		Mdstn
		Broken					Sltstn, vfg	M/grey, massive		Vfg sltstn
		Broken					Mdstn, coaly	Black		Mdstn

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
		Broken					Siltstn, vfg	M/grey, massive		Vfg siltstn
		Broken					Coal, dirty	Black		Stringer - no sample
		Broken					Siltstn, vfg	M/grey, massive		
Run 37		Blocky					Mdstn	Brown		Mdstn, some carby zones
		Blocky					Siltstn, vfg	M/grey, lam		
Run 38		Blocky			94.32	22	Siltstn, vfg	M/grey, lam		Roof, silty - .20m taken
		Blocky	0.59	94.32	94.91	23	Coal, clean	Black		Some pyrite banding @ bottom
		Blocky		94.91		24	Siltstn, vfg	M/grey, vthin		Floor - 20m taken
Run 39	78	Blocky					Siltstn, fg	M/grey, thin		Interbd ss/siltstn 40/60
Run 40		Blocky					Siltstn, fg	M/grey, thin		a/a some calcite zones
		Broken					SS, vfg	M/grey, thin		Numerous concretions
Run 41		BLocky					SS, vfg	L/grey, thin		Interbd ss/siltstn 70/30
										pyrite blebs - in top half
Run 42		Blocky					SS, vfg	L/grey, thin		A/A ss/siltstn 70/30
Run 43		Blocky					SS, vfg	L/grey, thin		A/A calcite and pyrite zones
Run 44		Broken					Siltstn, vfg	L/grey, massive		Above coaly zone
		Broken	0.20	111.20	111.40	25	Coal, dirty	Black		Very dirty, small stringer
			0 12	111.40	111.52	25				
		Blocky	1.02	111.52	112.54	26	Siltstn	L/grey		Dirty @ base turned to mdstn near coal
			0.00							20m taken
		Blocky	1.02	112.54	113.56	27	Coal, clean	Black		Clean coal, small pyrite band near top
			0.04	113.56	113.60	27	Coal loss			
				113.60		28	Siltstn, vfg	L/grey, vthin		Floor siltstn
Run 45		Broken					Mdstn, silty	D/brown		Above stringer not sampled
		Broken	0.28	114.16	114.44	29	Clean coal	Black		Small coal zone
		Broken					Siltstn,fg	L/grey, massive		Between small coal - not sampled
		Broken	0.37	114.78	115.15	30	Coal, clean	Black		2 cm bent band in middle
		Broken					Siltstn, fg	L/grey, massive		
Run 46		Broken					SS, fg	L/grey, massive		
	78	Broken					Siltstn, fg	L/grey, vthin		Interbd ss/siltstn 40/60
	45	Broken					Siltstn, fg	L/grey, vthin		Folded zone, vertical bed
	77	Broken					Siltstn, fg	L/grey, vthin		Vfg siltstn/ss (60/40)
Run 47		Crushed					Siltstn, fg	L/grey, vthin		A/A
		Crushed					Mdstn	Brown		Coaly mudstn
		Crushed	0 30	118.81	119.11	31	Coal, dirty	Black		V. dirty some washout
			0 06	119.11	119.17	31	Coal loss			
		Crushed					Siltstn, dirty, fg	L/grey		Some calcite
Run 48		Crushed	0.48	120.52	121.00	32	Siltstn, dirty, fg	L/grey		Roof? A/A
			0.35	121.00	121.35	32	Coal loss			
			0.48	121.35	121.83	33	Coal loss			
		Crushed	0 42	121.83	122.25	33	Coal, dirty	Black		
Run 49		Broken					Mdstn, silty	Brown		Floor?
		Broken					Siltstn, vfg	L/grey, vthin		Pyrite blebs
		Broken	0.20	123.67	123.87	34	Coal, clean	Black		Small coal zone
							Siltstn, vfg	L/grey, massive		Vfg siltstn
Run 50		Broken			124.82	35	Siltstn, vfg	L/grey, massive		Roof - A/A .20m taken
		Broken	0.55	124.82	125.37	36	Coal, clean	Black		Very clean coal
		Broken	0.00			37	Siltstn, vfg	L/grey, vthin		Floor, 20 taken
		Broken	0.00				SS, fg	L/grey, thin		Intbd ss/siltstn (70/30)
Run 51		Blocky	0.00				SS, fg	L/grey, thin		A/A

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
		Blocky	0.00				SS, fg	L/grey, massive		
		Blocky	0.00				Sltstn, fg	L/grey, vthin		Intbd ss/sltstn (40/60)
		Blocky	0.00				SS, fg	L/grey, massive		
		Blocky	0.00				Sltstn, fg	L/grey, vthin		Intbd ss/sltstn (40/60)
Run 52		Blocky	0.00				SS, fg	L/grey, vthin		SS/sltstn (70/30)
Run 53		Blocky	0.00				Sltstn, vfg	L/grey, lam		Some medium lenses
Run 54		Blocky	0.00				Sltstn, fg	D/grey, massive		Sltstn
Run 55		Blocky	0.00				Sltstn, fg	D/grey, massive		A/A

HOLE # T93R - 43C
SITE #

PROJECT Telkwa
DATE Sept 3/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR
DRILLER
LOGGING CO.
CASING
LOGGER

COMMENTS:

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
Run 1		crushed					siltstn	fg grey med thin		interbed ss/siltstn 20/80 rec 0.40
Run 2		broken					siltstn	fg grey med thin		A/A rec 0.91
Run 3		broken					ss	vfg well grey med thin		interbed ss/siltstn 60/40
Run 4	57	crushed					siltstn	vfg grey med v thin		interbed ss/siltstn 20/80
Run 5		crushed					siltstn	vfg grey med v thin		A/A very fractured
Run 6		crushed					siltstn	vfg grey med v thin		A/A very fractured
Run 7		broken					ss	vfg grey med thin		interbed ss/siltstn 70/30
Run 8		crushed					siltstn	fg grey med v thin		interbed ss/siltstn 20/80 rec 1 85
Run 9		broken					ss	vfg well grey med v thin		interbed ss/siltstn 60/40 calcite ion rec 2 10
Run 10		broken					ss	vfg well grey med v thin		A/Aa rec 2.20
Run 11		broken	0.34	19.53	19.87	1	mudstn	coaly brown		2 coal zones (4 cm - 3 cm)
			0.11	19.87	19.98	1	rock loss			
		broken	0.25	19.98	20 23	2	coal	dirty black		dirty coal strings
			0.04	20.23	20 27	2	coal loss			
		broken	0.39	20.27	20.66	3	mudstn	coaly brown		coaly mudstn
Run 12		crushed	0.00				mudstn	coaly brown		A/A no sample rec 1.40
		crushed	0.31	21.9	22.21	4	coal	clean black		dirty @ base & top
		crushed					mudstn	silty grey dark massive		turning silty @ base
Run 13		broken					siltstn	grey light v thin		rec 1.40
Run 14		broken			24.32	5	siltstn	grey light massive	*	roof turning mud @ base rec 1.11
		broken	0.39	24.32	24 71	6	coal	clean black		small dirty zone @ base of sample
Run 15		crushed	0.20	24.71	24.91	7	mudstn	coaly brown		very crushed mudstn parting rec 1.72
			0.10	24.91	25.01	7	rock loss			
			0.08	25.01	25.09	8	coal loss			
		crushed	0.35	25.09	25.44	8	coal	dirty black		dirty coal mudstn bands
		crushed	1.10	25.44	26 54	9	coal	clean black		clean coal
		broken	0.06	26.54	26.6	10	mudstn	silty brown	*	floor mudstn
Run 16		broken	0.58	26.6	27.18	11	siltstn	vfg gray light massive	*	roof or parting siltstn rec 1.48
			0.37	27 18	27 55	12	coal	clean black		very clean coal dirty zones @ top & bottom
			0.01	27.55	27.56	12	coal loss			
				27.56		13	siltstn	grey light massive	*	floor 0.20 taken
Run 17	85						siltstn	fg grey light v thin		interbed ss/siltstn 20/80 some hard bands with calcite
Run 18		broken					siltstn	fg grey med v thin		interbed ss/siltstn 20/80 rec 2.70
Run 19		blocky					siltstn	fg grey dark massive		siltstn rec 2.95
Run 20		blocky					siltstn	fg grey dark massive		A/A rec 2.90
Run 21		blocky					ss	vfg grey light massive		SS

HOLE # T92R-40C
SITE #

PROJECT Telkwa
DATE Sept. 3/93
CORE TYPE
GEOLOGIST Angelo

CONTRACTOR
DRILLER
LOGGING CO.
CASING
LOGGER

COMMENTS:

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
Run #1		Broken	0.36	24.24			Sltstn	D. grey, thin		79.5 - 87.5 Run #1 Rec. 2.02m
										Intbd vfg ss/sltstn 20/80
		Broken	0.59			1	SS	Lt. grey, thin		Intbd m-cgr ss/sltstn (20/80). Fining up overall Erosional
										Contact w. coal
		V. broken	1.07		26.68	2	Coal	Black		Possible loss or expansion
Run #2		Broken	0.99	26.68		3	Coal			87.5-96' Run #2 Rec. 2.5m; Clean, hard
		V. broken	0.07			4	Coal			Shaly Banding
		Blocky	0.41			4	Coal			Clean, occ. thin dirtier coal bands
		Blocky	0.03			4	Coal			Sl. dirty
		Blocky	0.17			4	Coal			Clean, hard
		Blocky	0.02			4	Mudstn	Brown, massive		Pyroclastic ash band
		Broken	0.80		29.27	5	Coal	Black		Pyrite blebs near base up to 2 cm
Run #3										96 - 102.25' Rec. 1.60m
		Broken	0.68			6	Coal	Black		Clean hard
		Blocky				6	Coal	Black		Dirty + Grad. contact w. floor
		Blocky	0.22			7	Carb. mudstn			Floor plant frags.
		Blocky	0.06			8	Coal			Dirty
		Blocky	0.02			8	Mudstn			Coaly
		Blocky	0.02			8	Coal			Dirty
		Blocky	0.31			9	Coal	Black		Sl. dirty
		Blocky	0.25			10	Mudstn	Dk. grey		Floor, v. carby and top 6 cm

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R10C	CONTRACTOR	J. T. Thomas
DATE		SITE #		LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
1		blocky	1.63	52.84			slsn	at top		carb mdsn at base
1		broken	0.06			1	coal	top,bk		seam "c"
2		loose	0.55			1	coal	clean,hard,bk		possible loss
2		blocky	0.02			2	mdsn	parting,br		
2			0.41			2	coal	bk		sl.dirty at top
2		broken	0.03			2	mdsn	br, band		
2		broken	0.73			3	coal	hard, sl. dirty at base, bk		abrupt contact with floor
2										
2			0.61			4	carb mdsn beds	occ. slsn/ss		floor
3		broken	2.73				slsn	massive at top		thinly bdd at base
4		broken	2.7				slsn	thinly intbd.w vfg ss some massive		well cemented slsn beds
5										
5	80	broken	3.07				a/a			
6		broken	0.25				slsn a/a			
6		crumbly	0.13				coal			
6		blocky	2.72				slsn			
7		broken	2.13				a/a slsn/ss			90/10
8		broken	0.31			5	slsn			roof #1U
8		broken	0.06			6	interbdd slsn/coal			(40/60) coal
8		broken	0.2			6	coal	clean		occ dirty bands
8		crumbly	0.04			6	coal	dirty		
8		blocky	0.93			7		clean, hard		
8		blocky	0.94			8		clean, hard		
9		broken	0.14			8	coal	clean, hard		
9		broken	0.07			9	mdsn	bentonitic, tan		
9		broken	0.13			9	coal	sl. dirty		
9		broken	1.26			10	slsn	carb at top + base		occ intbd vfg ss lams dirty th/out
9			0.12			11	coal	v.dirty		roof coal of #1 seam
9			0.55			12	coal	clean, hard		
10		crumbly	1.14			13	coal	clean, hard		v.broken
10		broken	0.05			14	coal	dirty		
10		crumbly	1.02			14	coal	clean, hard		possible coal loss at base 20cm
10		blocky	0.19			15	sl	dirty esp at top		coal
10		blocky	0.02			15				pyroclastic ash layer
10		broken	0.07			15	coal	slightly dirty		
10		broken	0.16			16	coal	clean, hard		
11		blocky	0.66			16	coal	clean, hard. sl dirty at base		rapid gradation to floor (-4cm)
11		broken	0.35			17	carb mdsn	floor, grad to silty mdsn		minor pyrite
11		broken	1.75				silty mdsn	floor con't		
12		blocky	0.3				slsn	roof of 1La		
12		blocky	0.21			18	coal	hard, clean. 1La		
12		broken	0.13			19	mdsn	bentonitic wh/gy		
12		broken	0.7			20	coal	1Lb.		possible loss at base
12			1.46				intbd mdsn			(carb/slsn/ss/coal)
12		blocky	0.17			21	coal			
13		broken	0.27			21	coal	sl dirty		
13		broken	0.26				mdsn	med gy. br ratio		
13		broken	0.06				coaly mdsn	black ratio		
13		broken	0.13				carb mdsn	brown ratio		
13		blocky	1.38				carb slsn	dirty, brown ratio		
14		blocky	2.93				ss/slsn/mdsn	interbedded		35/60/5

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R24C	CONTRACTOR	J. T. Thomas
DATE		SITE #	3	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
1		broken	2.03	79			intbd vfg ss/slsn	(85/15)		rare calc. slsn bands up to 5cm, wavy but abrupt dk/gy slsn intbd filling with water
2		broken	2.83				A/A sl.Pyritized	(90/10)		Fe concretions more common
3		blocky	0.2			1	v.fg ss	massive, clean		roof
3			0.01			1	pyrite blebs			common w/in ss/coal
3		broken	0.02			2	coal			
3		blocky	0.01			2	pyrite band	solid pyrite		
3		blocky	0.05			2	coal	clean, hard		
3		blocky	0.01			2	pyrite/ss band	0.5cm pyrite		
3		broken	0.16			2	coal	dirty bands at top		
3		blocky	0.62			3	coal	clean		sl. dirty at top
3		broken	0.01			4	coal			pyrite blebs common
3		blocky	0.1			4	sl. coal	dirty		
3		broken	0.03			4	coal	dirty		
3		blocky	0.32			4	sl	dirty at top		
3		crushed	0.08			4	coal			
3		blocky	0.38			5	coal			
4		broken	0.34			5	coal			
4		blocky	0.02			6	pyroclastic ash	horizon		
4		broken	0.47			6	coal			occ. pyrite blebs
4		blocky	0.02			7	pyrite as vein	filling th/out coal		
4		blocky	0.05			7	coal	clean, hard		
4		blocky	0.04			7	coal	sl. dirty		
4		blocky	0.08			8	mdsn	v.coaly at top		carb at base
4		blocky	0.73			9	mdsn	massive, floor		
4		broken	0.04			9	carb. mdsn	at top		silty at base
4		broken	0.08			10	coal			
4		broken	0.02			10	mdsn	v.coaly		common pyrite
4		broken	0.1			10	coal			
4		blocky	0.01			10	coal	dirty		
4		blocky	0.13			10	coal	clean, hard		
5		blocky	0.19			10	coal	clean, hard		
5			0.14				mdsn	floor, v.coaly		
5			0.45							
5			0.11			11	coal	sl. dirty		
5			0.23			11	intbd mdsn/coal	interbedded		50/50
5			0.03			11	mdsn banding	coal		
5			0.07			11	coal	dirty		
5			1.88				carb. mdsn	at top		
6			0.1				coaly mdsn			
6			0.96				mdsn	w intbd carb zone		
6			0.21				coarse ss	poorly sorted		fining up
6			0.61				mdst w. c.gr.ss	poorly sorted		
6			0.06				coaly mdsn			
6			0.56				c.gr.ss	poorly sorted		fining up

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R29C	CONTRACTOR	J. T. Thomas
DATE		SITE #	2	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
1	30	broken	1.24		44.52		slsn/mdsn	intbd. carb base		abrupt contact w coal
1	63	blocky	0.6	44.52	45.12	1	coal	clean, hard		rare thin pyrite lams at top 1 0 cm
2	45	broken	1.92	45.12			slsn/ss	intbd 60/40, abrupt bedding contacts		core loss
3		broken	1.68				slsn/vfg. ss A/A	intbd, A./A		core loss. (85/15)
4	45	broken	1.36				A/A 85/15			got core from run 3
5		blocky	2.39		53.08		A/A			occ. pyrite blebs
6		broken	0.52				A/A			abrupt contact w coal
6		blocky	0.43			2	coal	hard, clean		
6		broken	0.05			3	coal			pyrite vein th/out
6		broken	0.22			3	coal			sl. dirtier at base
6		blocky	0.61				mdsn	carb fragments		bioturbates massive
6		blocky	0.04				mdsn	v. coaly		
6		blocky	0.1			4	coal	clean, hard		possible less at base
7		broken	0.05				mdsn	coaly		~35% coaal
7		blocky	0.33				mdsn	carb lower half		
7		blocky	0.04			5	coal			
7		blocky	0.02			5	mudsn parting	coaly		
7		broken	0.23			5	coal	dirty esp at base		
7		broken	0.18			6	mdsn	coaly		
7		broken	0.23			6	mdsn	dirty		pyrite at base
7		broken	0.83				mdsn	carb		thin coal stringers
6		blocky	0.7				mdsn	sl carb.		pyrite blebs at base
8		blocky	0.3				mdsn	v. coaly		
8		broken	0.85				mdsn	carb		
8		blocky, broken	0.17				mdsn	v. coaly		
8		broken, crushed	0.63				mdsn	sl. carb		not carb at base
9		blocky	1.65				mdsn	bioturbated		massive sl. carb
9		blocky	0.17				mdsn	carb		abrupt contact w coal
9		blocky	0.26			7	coal			gradational lower contact into mdsn
9		broken	0.12				mdsn	coaly at top		
9		blocky	0.02				coal	band		
9		blocky	0.32				mdsn			
9		blocky	0.03				mdsn	v. coaly		(~45% coal)
9		blocky	0.11			8	coal	sl. dirty		
9		blocky	0.04			8	coal			w thin mdsn bands
9		broken	0.11			8	coal	dirty		
10		blocky	0.15			8	coal	clean		
10		broken	0.02			8	coal			
10		blocky	0.92			9	coal	clean, hard		
10		broken	0.37			10	coal	v.broken		dirtier toward base
10		broken	1.47				mdsn	l/gy		sl. carb massive mdsn
11		broken	0.92				mdsn			carb towards base
11		broken	0.44				slsn	l/br,hard calc.		massive

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94r29C	CONTRACTOR	J. T. Thomas
DATE		SITE #	2	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
11		blocky	0.03				coal			core loss
11		crushed	0.11				mdsn	crushed		core loss
12		broken	1.76				slsn	coal blebs		rootlets comn th/out
12		broken	0.2			11	coal	dirty		w. pyrite th/out
12		crushed	0.04				mdsn	coaly bands		
13		broken	0.02				mdsn	A/A		
13		broken	0.06				coal	v.dirty		
13		broken	0.64				mdsn	roof		
13		broken	0.04				mdsn	coaly, roof		
13		blocky	0.52			12	coal	clean, hard		minor dirty zones
13		blocky	0.02			13	mdsn parting			
13		blocky	0.31			13	coal	sl. dirty		
13		crumbly	0.18			13	coal	crushed. A/A		
14		broken	0.06			13	coal	clean, hard		dirty at base
14		broken	0.97				mdsn	sl. carb at base		coaly at lower 3cm
14		blocky	0.03			14	coal	dirty		
14		blocky	0.01			14	mdsn parting			
14		crushed	0.23			14	coal	soft platy mdsn		bands at base
14		blocky	0.34			15	coal	clean, hard		
14		blocky	0.05			15	pyroclastic ash	w mixed coal		
14		broken	0.17			15	coal			
14		crushed	0.11				mdsn	(in shoe)		
14		broken	0.07				mdsn	A/A massive		
14		broken	0.13				coal	sl.dirty		
14		broken	0.03				mdsn	carb		
14		blocky	0.01				pyrite	solid		
14		broken	1.16				mdsn	w occ coal bands		massive
15		broken	0.8				mdsn	roof. massive.		occ. pyrite blebs
15		blocky	0.13			16	slsn	dirty		occ. pyrite wisps
15		broken	1			17	coal	clean, hard		
15		blocky	0.6			18	coal	clean, hard, A/A		
15			0.02			18	coal	dirty		trasition to bentonite
15			0.13			19	mdsn	bentanitic, white		
15		crumbly	0.11			19	mdsn	bentanitic, grey		w/in shoe
16		blocky	0.26			19	mdsn	dark grey		
16		blocky	0.86			20	coal	clean, hard		v.rare dirty bands at top, abrupt contacts
16		blocky	0.73				mdsn			
16		blocky	0.07				mdsn	v. coaly		
16		blocky	0.77			21	coal	clean, hard		
16		broken	0.04			21	coal	sl. dirty		transition zone
16			0.13				mdsn	(in shoe)		v. coaly at top
17			0.8				mdsn			
			0.19			22	coal	sl. dirty		
			0.01			22	coal	dirty		
17		broken	0.87				mdsn			
18			0.81			23	coal			

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R29C	CONTRACTOR	J. T. Thomas
DATE		SITE #	2	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
18			1.34				slsn/ss	intbd (80/20)		
19			1.87				slsn/vfg ss	intbd (70/30)		
20	58	broken	2.77				slsn/ss	intbd (55/45), wavy bdg.		rel. sharp bdg contacts, minor ssd
21	85	broken	3				A/A	apparent folding		fold = o/t
22	60	broken	0.32				slsn/ss	intbd, A/A (70/30)		
		blocky	0.16				slsn	calcareous hard		massive
	60	broken	1.32				slsn/ss	intbd (70/30)		
		blocky	0.16				calc. slsn	fractured		
		crumbly	0.37				slsn/ss	intbd		
23	30	broken	2.92				slsn/ss	intbd (75/25)		
24		broken	1				slsn/ss A/A	v.broken, intbd		fractured
24		broken	0.77				ss	v.fractured zone		qtz vein-filling th/out
25		broken	0.36				clac. slsn	hard, massive		minor vfg ss beds
25	67	blocky	2.64				slsn- hard, clean	massive, Fe concretions up to 5cm occ. present		minor pyritized coal spur esp at base
26		blocky	3.07				slsn	sandy, massive		common pyritezed coal spur.
27		blocky	3				fine gr. ss	massive		occ. pyyritized coal spur, v.rare bivalves

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R33C	CONTRACTOR	J. T. Thomas
DATE		SITE #	12	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
1	37	broken	1.97	17		A001	slsn	dk/gy, v.thin bed		intbd.slsn/fgr.ss 90/10 abrupt bdg contacts. v.minor ssd.No pyrite
2	35	v.broken	1			A002	slsn	dk/gy, v.thin bed		A/A
3		v.broken	0.5			A002	slsn	dk/gy, v.thin bed		A/A (95/5)
3		blocky	0.02			A002		white		calcite fracture gill
3	32	broken	1.08			A003	slsn	dk/gy, v.thin bed		intbd slsn/fgr.ss 90/10 A/A
4		broken	1.55			A003	slsn	dk/gy v.thin bed		intbd slsn/fgr.ss 90/10 A/A,short fining up seq w/in,ss intbd.
5	33	v.broken	1.33			A004	slsn	dk/gy, v.thin bed		A/A.non-calc.no pyrite
6		v.broken	0.2			A004	slsn	dk/gy, v.thin bed		A/A.non-calc.no pyrite
6	45	blocky	0.21			A004	ss	c.gr, l/gy, thin bed		cgr.ss w intbd slsn.
6		crushed	0.65			A004	slsn	dk/gy, v.thin bed		non calc.intbd slsn/ss
7	30	broken	0.68			A005	slsn	dk/gy, thin bed		intbd slsn/cgr.ss 70/30 overall fining up,sharp bdg contacts
7	30	v.broken	0.81			A006	ss	c.gr, l/gy,massive		thin slsn beds at top common qtz veining rip ups, no pyrite
8	30	v.broken	0.93			A006	ss	c.gr,l/gy,massive		A/A slsn/ss = (5/95)
8										roof.core loss.
8		blocky	0.29			1	coal	block colour		sl.dirty at top 2 cm
9		broken	0.07			1	coal			loss at top
9		v.broken	0.1			2	mdsn	carb., massive		poss. loss-shear zone
9		v.broken	0.12			2	coal			minor pyrite at base possible loss at top
9	72		1.01			A007	silty mdsn	dk/gy,massive		sl.carb,fractureless no visible pyrite
9		blocky	0.14			3	coal	bk, sl.dirty		occ pyrite vein filling
9		broken	0.23			4	coal	bk, clean, hard		no visible pyrite
10		broken	0.56			4	coal	bk		clean, hard
10		broken	0.02			4	coal	bk		sl,dirty coal
10		crushed	0.11			5	coal	bk		clean, hard
10		broken	0.01			5	slsn	br, massive		
10		v.broken	0.67			5	coal	bk, clean		minor pyrite
11		broken	1.04			6	coal	bk		
11		blocky	0.01			7	coal	bk		dirty band
11		blocky	0.52			7	coal	bk, clean,hard		no visible pyrite
12		blocky	0.47			8	coal	bk, clean, hard		no visible pyrite
12		blocky	0.02			8	coal	bk, sl.dirty		no visible pyrite
12		blocky	0.95			9	coal	bk, clean, hard		no visible pyrite
12	65	broken	0.67			A008	slsn	dk/gy, thin bed		floor.intbd slsn (up to 20cm) vfg.ss (95/5)
12		broken	0.36			A009	slsn	l/gy, massive		calc.v.hard.no pyrite
12		v.broken	0.44			A010	slsn	dk/gy		muddy slsn.carb th/out coal + carb lams
13		broken	0.54			10	mdsn	dk/gy, massive		carb. pyrite banding

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R34C	CONTRACTOR	J. T. Thomas
DATE		SITE #		LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
1	72	blocky	3				fgr.ss/slsn intbd	slsn intbd. = up to 1 cm		abrupt contacts. some Fe stained slsn
2		blocky	0.78				A/A (65/35)	increasing slsn towards base		abrupt contact w coal
2		blocky	0.24			1	coal	clean, hard		sl. dirtier at top
2		blocky	0.03			1	mdsn	carb		massive
2		blocky	0.42			1	coal	clean, hard		abrupt lower contacts
2	73	blocky	0.52				slsn	med brown		massive. pyrite nodules w/in
3		blocky	1.12				slsn intbd	Fe stained zones		minor inbd sfg.ss
3		blocky	0.22				slsn	v.hard, massive		sl.calc. mixed th/out
3		broken	1.4				sfg.ss/slsn	intbd (30/70)		overall coarsing up
3	77	crumbly	0.16				mdsn	silty		
4		broken	2				slsn	intbdvfg.ss/slsn		(30/70) ssd
4		broken	0.06				coal	v.dirty w pyrite banding		transition zone
4		broken	0.49			2	coal			
5		broken	0.36			3	coal			minor pyrite blebs
5		broken	1.04				mdsn	v.broken, silty		carb at base. pyrite
5		broken	0.05			4	mdsn	coaly		pyrite banding th/out
5		broken	0.46			5	coal			dissem. pyrite w/in
6		blocky	0.65			5	coal	clean, hard		
6		blocky	0.01				coal	dirty		pyrite banding
6		blocky	0.13			5	coal			
6		blocky	0.01			5	mdsn parting	brown		
6		blocky	0.76			6	coal	clean, hard		minor pyrite at base
6		broken	0.32			7	coal	broken		
6		blocky	0.05			7	coal	sl.dirty		
6		broken	0.02				mdsn	carb		transition zone. floor
6			0.66				mdsn	carb at top		slsn at base massive
6		blocky	0.14				coal			
6		crumbly	0.02				coal	in shoe		
6		blocky	0.08				mdsn	coaly		(~35%)
7		broken	0.05				mdsn	A/A		(~20% coal)
7		broken	0.22			8	coal	clean		
7	71	crushed	0.48				slsn/mdsn	intbd		(40/60)
7		blocky	0.04				coal			
7		broken	0.73				mdsn	massive		
7		broken	0.4				slsn	massive		calcareous
8		crushed	1.63				slsn	mdsn thin beds at top		grading to sandy slsn at base
9	70	crushed	1.55				vfg. ss/slsn	intbd. (30/70)		more massive slsn toward base
10	60	broken	1.16				vfg. ss/slsn	interlam (10/90)		
11		broken	0.18				slsn	minor inlain ss		
		crushed	0.03				coal	crushed		
		blocky	0.52				volcanic ash	horizon		

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R34C	CONTRACTOR	J. T. Thomas
DATE		SITE #		LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
11		broken	0.58			9	coal	sl. dirty th/out		
11		broken	0.04				mdsn/bentonite	coaly		
11		broken,crushed	0.09				bentonite	tan		poorly consol.
11			0.21				mdsn	carb		
11			0.14				mdsn	massive, sl. carb		
11		broken	0.42				ss	brecciated th/out		qtz + calcite fract. fill
12		blcoky	1.35				mdsn	massive		plant frags th/out
12			0.53			10	coal	minor pyrite lams		dirty on top 2cm
12		blocky	0.09			11	mdsn	massive		
12		crumbly	0.1			11	mdsn	A/A in shoe		thickness = approx
12		crumbly	0.03			12	coal	(in shoe)		approx thickness
13		broken	0.53			12	coal			
13		platey	0.2				mdsn	coaly		(~45% coal)
13		broken	0.33				mdsn	massive		
13		platey	0.14			13	coal	v.dirty		intbd mdsn bands 50%
13		broken	0.2			13	coal	sl.dirty		
13		broken	0.15				mdsn	v.carb		
14	60	broken	1.93				slsn	v.dirty		intbd mdsn and occ. vfg. ss
15		loose	0.07			14	coal			
15		blocky	0.38			14	coal			
15		blocky	0.14			15	bentonitic mdsn			
15		broken	0.18			16	coal	dirty		
15		broken	1.4				mdsn	massive		sometimes silty
15		broken	0.05				coal	(in shoe)		
16		blocky	0.99				coal	occ. pyrite blebs		possible loss at top
16			0.69				slsn	massive		saudier at base
17		broken	1.22				slsn	massive, A/A		sandy
17		broken	1.78				fg. ss/slsn	intbd at top, to intbd fg. ss/slsn		slsn strongly dominant at top, while ss at base
18		blocky	1.46				s and p ss	clean, hard. occ. carb/coaly lams		rare thin slsn beds rip-ups + minor small scale faulting
18		broken,crumbly	0.71				slsn/mdsn	intbd. slsn at top w rare ss lams		base of channel abpve slsn +mdsn at base
18		crumbly	0.15				ss/slsn	intbd		
19		blocky	3				vfg.ss	massive. silty at top + becoming cleaner +sl.		sl. cgr at base. occ. pyritized coal sper in lower half. rare thin coal beds up to 1cm
20		broken	3				coal/carb blebs	massive v.dirty vfg.ss w v.rare coal/carb blebs		occ. slsn zones. no sharp bedding contacts

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R34C	CONTRACTOR	J. T. Thomas
DATE		SITE #		LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
21		blocky	1.49				ss A/A	massive		occ. carb lams
21			0.92				coal	intbd		in beds up to 5cm
21			0.18				mdsn	coaly		
21		broken	0.15				coal	dirty, sheared		
22		broken	0.5				carb mdsn/coal	intd		
		broken	0.2			18	coal	sl. dirty, sheared		
		broken	0.02			18	slsn parting			
		blocky	0.34			18	coal			dirtier than above coal
		broken	0.05			19	mdsn			
		broken	0.35			19	coal	v.dirty (~55%)		common intbd d.coal and mdsn
		crumbly	0.13			19	coal	A/A (in shoe)		
23		broken	0.68			20	coal	sl. dirty		
23		broken	0.04			20	slsn parting			
23		broken	0.34			21	coal	clean, med. hard		sheared
23		blocky	0.1			21	coal	dirty (in shoe)		
24		broken	0.49			22	coal			
24		crushed	0.13			23	mdsn	carb		
24		crushed	0.25			23	coal	sl.dirty, sheared		
25		blocky	0.33			24	coal	sl.dirty		
25		crumbly	0.27			24	coal	sheared		dirty zones
25			0.09				mdsn	v.coaly, massive		(~45% coal)
25		broken	1.59				mdsn floor	silty, sheared		
26		blocky	3				slsn	dirty, massive		

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R33C	CONTRACTOR	J. T. Thomas
DATE		SITE #	12	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
13		blocky	0.24			10	coal	bk		sl.dirty
13		blocky	0.06			10	mdsn	br		volcanic ash.pyrite
13		blocky	0.14			10	coal	bk		dirty at top
13		blocky	0.91			A011	slsn	br		dirty, v.carb
13		blocky	0.11			A011	coal			pyrite bands common
13		broken	0.75			A011	slsn	l/gy, massive		dissem. pyrite w/in
14		v.broken	0.11			A012	coal	bk		dirty
14	68	blocky	0.29			A012	mdsn	massive,carb		coaly esp at top
										pyrite band/blebs at
										base. Non-calc.
		blocky	0.4			11	coal	bk		minor pyrite along face
		blocky	1.1			12	coal	bk		clean, hard
14		blocky	0.4			13	coal	bk		clean, hard
			0.06			13	coal	bk		dirty
14		blocky	0.49			A013	mdsn	carb, dk/gy		floor
15			0.06			A013	mdsn	dk/gy, massive		A/A
15			0.06			A013	mdsn	tan, massive		l/br bentonitic mdsn
15		v.broken	0.15			A013	mdsn	silty		calcite vein filling
15			0.03			A013	coal	bk		
15			0.73			A014	slsn	med. gy v.thin bed		overall fining up
15										sequence.carb mdsn
15										at top intbd vfg.ss
15	72	blocky	1.91			A015	ss	l/gy, v.thin bed	ssd	intbd vfg.ss/slsn 90/10
										carb lams common.
										non-calc. clean,hard
										s+p ss. no pyrite
16		blocky	1.5			A016	ss	v.thin bed	ssd	intbd vfg.ss/slsn 70/30
										bioturbated,non-calc
16		blocky	0.25			A016	ss	massive		dirty ss/coal mixed,rf
16		blocky	0.13			A017	ss	carb, gy		
16		blocky	0.04			A017	coal	bk		
16		blocky	0.02			A017	mdsn	carb, br		
16		blocky	0.11			A017	coal	bk		
16		blocky	0.27			A018	mdsn	gy, v.thin bed		intbd coal/slsn/mdsn/
										minorss, (5/15/75/5)
										pyrite band at base.rf
16		blocky	0.44			14	coal	bk		clean,hard.pyrite band
										at top 5cm.up to 1mm
17		broken	0.44			15	coal	bk		pyrite wisps on occ.
17		broken	0.05			15	coal	bk		dirty
17			0.04			A019	mdsn	carb, bk		coaly
17			0.68			A019	slsn	m/gy, v.thin bed	ssd	intbd.slsn/vfgss 75/25
17		blocky	0.01			A019	pyrite	bk		pyrite band
17		crushed	0.05			16	coal			v.dirty
17		crushed	0.01			16	mdsn	br		
17		broken	0.51			16	coal	bk		
17		crushed	0.22			A020	mdsn	br, massive		
17		crushed	0.33			A020	mdsn	carb, br		coaly, coaly at top

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R33C	CONTRACTOR	J. T. Thomas
DATE		SITE #	12	LOGGING CO.	BP8
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
18		blocky	0.74			A021	mdsn	carb		
18	76	broken	2.12			A022	slsn	m/gy. v.thin bed		intbd slsn/vfg.ss 70/30 overall fining up th/ sequence.ssd at top. Fe rich slsn bands increase toward base
19	78	blocky	2.75			A023	slsn	m/gy. v.thin bed		intbd slsn/vfg.ss 85/15
20		blocky	0.83			A023	slsn	dk/gy, v.thin bed		A/A 95/5. non-calc
20		blocky	0.04			A024	coal	bk		
20		blocky	0.62			A024	mdsn	carb, dk/br		carb.common pyrite blebs up to 3cm.
			0.33							
20			0.16			A024	mdsn	carb. bk		coaly
21		broken	0.14			A024	coal			pyrite blebs th/out
21		broken	1.56			A025	slsn	carb, massive		slsn at top grading to carb muddy slsn at base.pyrite blebs occ.
21		broken	0.06			A025	coal	bk		dirty
	76	blocky	0.3			A025	mdsn	carb, br, massive		slsn.carb.non-calc
21		blocky	0.38			17	coal	bk		dirty bands at top 6cm
22		blocky	0.02			18	coal	bk		
			0.025			18	ash-bent	buff		gas coming out core
			0.9			18	coal	bk		no pyr,clean
22			0.01			19	ash-bent	buff		
		blocky	0.345			19	coal	bk		no pyr, clean
			0.01			19	ash-bent	br		
22		blocky	1.12			20	coal	bk		no pyr, clean
23		blocky	0.39			21	coal	bk, clean,no pyr		sharp contact
		broken	0.68			A026	slsn	gy		carby lams top 1cm
	72	blocky	0.92			A027	slsn	gy, hard		intbd 85/15, bio tur.
		blocky	0.03			A028	ss	gy		v.hard, calcareous
	71	blocky	0.9			A028	ss	gy, hard		inbd 60/40,v.gr sand
24		broken	0.12			A029	ss	br		fine grained
		blocky	0.08			A029	ss	gy		
		v.broken	0.14			A029	ss	br		calc, v.hard
	69	blocky	0.83			A029	slsn	gy, v.thin bed		intbd 80/20
		v.broken	0.13			A029	ss	br		v.hard,calc
	74	blocky	0.61			A029	slsn	gy		intbd 95/5
		broken	0.16			A029	ss	br		fgr.,v.hard,v,calc
		broken	0.27			A029	slsn	gy, v.thin bed		intbd 70/30
		broken	0.05			A029	ss-fine	br		hard, calc
		blocky	0.55			A029	slsn	gy, v.thin bed		intbd 70/30
25		broken	0.07			A030	ss-fine	br, massive		calc, v.hard
25	75	blocky	0.83			A030	slsn	gy, v.thin bed		v.thin cacite band 40
25		blocky	0.02			A030	ss	l/gy		v.hard, v.calc
25		blocky	0.61			A030	slsn	gy, thin bed		intbd 70/30
25		blocky	0.02			A030	ss	l/gy		v.calc, v.hard

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE # ,	T94R33C	CONTRACTOR	J. T. Thomas
DATE		SITE #	12	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
25		blocky	0.5			A030	slsn	dk/gy		intbd 95/5
25		broken	0.06			A030	ss	*l/br*		v.clac, *v.hard*
25		blocky	0.05			A030	slsn	gy		
25		blocky	0.04			A030	ss	gy		calc, hard
25		blocky	0.63			A030	slsn	gy		70/30 intbd
26		blocky	0.43			A031	slsn	gy		70/30 intbd
		broken	0.08			A031	ss	br		v.fine
		blocky	0.22			A031	slsn	dk/gy		
		broken	0.1			A031	ss	br		v.fine
		blocky	1.17			A032	slsn	dk/gt		possible shell frags

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R35C	CONTRACTOR	J. T. Thomas
DATE		SITE #	11	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
1		crushed	0.08				mdsn	coaly		
1		broken	0.11				mdsn	carb		
1		blocky	1.78				mdsn	massive	plant debris	
2		crumbly	0.91				mdsn	A/A	coaly/carb zones	
2		core loss	0.06			1	coal		poss loss at base	
3		broken	0.51			1	coal	hard	transition zone	
3		crushed	0.04				mdsn	carb. floor	plant debris th/out	
3		blocky	1.37				mdns	massive	sl.carb at base	
4		blocky	0.7				mdns	A/A.		
4		blocky	0.03				pyrite band			
4		broken	0.49			2	coal			
4		blocky	0.06				mdsn	carb		
4			0.32				mdsn	silty, massive		
4			0.07				ss	soft		
4		crumbly	0.13			3	coal			
4		crumbly	0.11			3	coal	(in shoe)		
5		blocky	0.58				slsn	massive	plant frags	
5		broken	0.26				slsn	massive.(sl.calc)		
5	61	crumbly	0.95				slsn/ss	intbd (70/30)	ssd	
6		broken	0.61			4	mdsn	silty at top		
6		broken	0.2			4	coal	sl.dirty		
6		blocky	0.05			5	mdsn	parting		
6		broken	0.49			5	coal	dirty at top		
6		broken	0.16				coal	clean		
7		blocky	0.26			5	coal			
		blocky	0.04			6	shale	carb		
		blocky	0.04			6	shale			
		blocky,broken	1.58			7	coal	bands broken, rest blocky		
8		blocky	0.18			7	coal			
		blocky	0.38				mdsn	minor intbds of sh		
	70	broken,crumbly	0.49				sst			
			0.5				sst	minor coaly lens		
		platey	0.24				shale and mdsn	erosional top		
		blocky	0.1				mdsn			
		blocky	0.48				sst-fg			
9		crumbly	0.02				mdsn	l/br		
		blocky	0.35				mdsn	coarsening down		
	70	blocky	0.59				sst	minor intbd mdsn		
		blocky	0.41				mdsn	minor intbd sst		
	70	blocky	0.17				cgr. ss and mdsn	intbd		
		blocky,broken	0.09				shale	l/br		
			0.32							
		crushed	0.05				shale			
		blocky	0.11				mdsn	carb. toward bottom		

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R35C	CONTRACTOR	J. T. Thomas
DATE		SITE #	11	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
10		broken	0.02				coal			
		blocky	0.72				*mdsn*	*coal lenses*		
		blocky	0.35				ss	coarsening down		coal frag
		blocky	0.18				mdsn			
		crushed	0.1				mdsn			
11		blocky,broken	0.32				mdsn			
	70		0.23				mdsn	calc, br		
		blocky	0.23				ss and mdsn	intbd		
		broken	0.03				mdsn	br		
	80	blocky	0.72				ss and mdsn	intbd, w concret.		
		blocky	0.05				ss	br		
		blocky	0.2				ss and mdsn	intbd		
		crushed	0.14				ss and mdsn	intbd		calc. vein w. pyrite
		crushed	0.15				ss and mdsn	intbd		
12		broken,crumbly	0.59				ss and mdsn	intbd		minor calc on frac.
	85	blocky,broken	0.12				ss	calc		
		broken	0.24				mdsn and ss	intbd		calc frac. filling
		blocky,broken	0.54				ss	minor intbd		mdsn at top
	70	blocky	0.18				ss			
13		broken	0.18				mdsn + fg.ss	intbd, br		
	65	blocky	0.36				*ss mgr.-cgr.*			*carb some bed planes*
		blocky,broken	0.19				mdsn + fgr.ss	minor coaly + carb		
		blocky,broken	0.53				mdsn	thin sh in middle		sh beds
		blocky,crumbly	0.73			8	coal			heavy, (high ash)
14		blocky,broken	0.36			9	coal			
			0.06				sh and mdsn	intbd		calcite band at base
		broken,crumbly	0.2				mdsn			
		blocky	0.48				mdsn and ss	intbd		50/50, cff
		broken	0.1				fgr.ss	calc		
		blocky	0.2				ss and mdsn	intbd		
		blocky	0.52				fgr.ss and mdsn	irreg. bedding		cff
			0.18				ss and mdsn	intbd, br		
			0.64				ss and mdsn	intbd, gy		cff
15		blocky,crushed	0.25				mdsn			
		blocky	0.27			10	coal			
		broken	0.08			11	sh and coal	intbd		
		blocky	0.61			12	coal	one shaley layer		
16		blocky	0.23			13	coal			
		blocky	0.04				sh and coal	intbd		
		blocky	0.35				*mdsn*	*many coal frag*		
		blocky	0.13				coal			
		blocky	0.17				mdsn	mandy coal frag		
		cleated	0.05				sh	carb		
		blocky,platey	0.61			14	coal	one thin sh band		
		blocky	1.36				mdsn	massive		many coal frag top 20

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R35C	CONTRACTOR	J. T. Thomas
DATE		SITE #	11	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
17	70	blocky	0.79				mdsn and ss	intbd, gy		50/50
		broken	0.1				fgr.ss	br		cff
		blocky	0.78				mdsn			
	65	bloocky	0.75				fgr.ss	minor intbd		mdsn and carb sh
			0.59				mdsn and ss	intbd		
18		blocky	0.16				A/A			
		broken	0.06				ss	calcitic, br		
	65	blocky	0.49				ss and mdsn	intbd, 60/40		cff, coaly film on
								irreg bedding		bedding planes
		blocky	0.06				ss	calcitic, br		
	65	blocky	2.23				ss and mdsn	intbd, A/A		
19		blocky	1.88				ss and mdsn	intbd A/A		70/30
			0.91				mdsn			minor coal stringers
			0.02				coal			
			0.12				mdsn	A/A		
20		blocky	0.2				mdsn	A/A		
		blocky,platey	0.11				sh + carb sh+ co	all intbd		
		blocky	0.22				mdsn	massive		
		blocky,broken	2.07			15	coal	banded, minor cff		minor carb sh bands
21		blocky	0.62			16	coal			
		blocky	0.21				sh	bk		
		blocky	0.35				mdsn	minor sh		irreg. bedding
		blocky	0.42				sh	dk/gy		minor coal bands
		blocky	0.22				mdsn	coal frag		
		blocky	0.23				sh	A/A		
		blocky	0.53				mdsn	massive		
		blocky	0.39				mdsn	intbd		minor coal bands
22		blocky	0.09				A/A			
		blocky	0.55				mdsn	massive		intbd w sh at bottom
		broken,crushed	0.08				coal			
		blocky	0.51				mdsn and sh	intbd		numerous coal bands
		blocky	0.32				coal			
		blocky	0.12				sh	carb		
		blocky	0.08				coal			
		blocky	0.35				mdsn	massive		minor coal bands top
		blocky	0.03				coal			
			0.6				mdsn	grading down to fgr.ss		erosional bottom
			0.2				mdsn	minor coal bands		

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R35C	CONTRACTOR	J. T. Thomas
DATE		SITE #	11	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
23		blocky,broken	0.44			20	coal			
			0.58				mdsn	coal bands at top		
			0.17				shale	carb, coal lenses		
			0.72				mdsn	massive		coal lenses at top
			0.2				mdsn,sh,coal	intbd		
			0.47				mdsn	massive		minor coaly frag
			0.27				mdsn	irreg bedding		numerous v.thin coaly layers
			0.15				mdsn	massive		
24			1.29				A/A			
			0.15				mdsn,ss,coal	intbd		minor coal
			0.35				ss	massive, l/gy		
			0.35				ss	numerous clasts		no clear bedding
			0.25				conglom., cgr.ss	numrous vol.frag		coal frag
			0.61				volcanics	l/gy, massive		

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R46C	CONTRACTOR	J. T. Thomas
DATE		SITE #	E	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
1		v.broken	1.6			A001	ss	fgr., gy, massive		v.weathered,clean, non-calc,no pyrite
2	89	broken	0.52			A001	ss	fgr.,gy,massive		sl.weathered,non-calc s+p clean,rare carb lam
2		broken	1.24			A002	ss	fgr.,l/gy,massive		unweathered except at frac.A/A.occ. shell frag
3		blocky	1.17			A002	ss	l/gy,massive		A/A.occ. shell frags
		broken	0.27			A003	ss	fgr.,l/gy,massive		frac Fe-stained th/out bivalves+shell frags
		blocky	1.34			A003	ss	fgr.,l/gy,massive		clean,hard s+p A/A rare shell frags
4	90	blocky	2.82			A004	ss	mgr,.l/gy,massive	ssd	clean s+p.common carb lams w/in. minor ssd and pyrite assoc. w coal spar.non-calc
5	88	blocky	2.1			A005	ss	mgr.,l/gy,massive		massive at top. thin slsn beds to 2cm occ. towards base. sl calc zones w/in.no pyrite
6		blocky	2.25			A006	ss	mgr.,l/gy,massive		occ.intbd slsn/cgr.ss beds to 2cm at top rare calc. concretion w/in ss to 3cm
7	88	blocky	2.59			A007	ss	fgr.,l/gy,massive	ssd	clean s+p w minor nitbd slsn, mixing of slsn/ss esp at top.non calc,no pyrite
8		blocky	0.46			A007	ss	fgr.,l/gy,massive		clean,hard s+p,non-calc
8		blocky	0.4			A008	ss	fgr..l/gy,massive		A/A,ciacoreous,slow sustained fizz.
8		blocky	1.97			A009	ss	fgr..l/gy,massive		non-calc.A/A,v.uniform massive,clean
9		blocky	3.08			A010	ss	fgr.,l/gy,massive		A/A,occ. coal spar bands to 1cm w assoc. pyrite.shell frags rare occ. sl.calcareous zones
10		blocky	0.58			A010	ss	fgr.,l/gy,massive		A/A,occ.calcareous concretions,coal spur
10		blocky	0.81			A011	ss	fgr.,l/gy,massive		sl.calc, w common calcareous nodules to 5cm in diameter nodule = ss
10		blocky	1.53			A012	ss	fgr.,l/gy,massive		non-calc to v.s.calc rare small calc concr.
11		blocky	2.32			A012	ss	fgr.,massive		A/A
11		blocky	0.27			A013	ss	fgr.,massive		coal spar common
11		blocky	0.51			A014	ss	fgr.,massive		non=calc w v.rare calc nodules

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R46C	CONTRACTOR	J. T. Thomas
DATE		SITE #	E	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
12		broken	1.45			A014	ss	vfgr., massive well sorted		non-calc w v.rare calc nodules.pyrite w coal sper.sper = calcareous
13		blocky	2.51			A014	ss	vfgr.,massive		non-calc.rare coal sper
14		blocky	3			A015	ss	vfgr,,massive		overall fining up. non-calc, v.rare coal sper
15										
15		blocky	3.01			A016	ss	sfgr.,massive		clean s + p w occ. pyritized coal sper
16		v.broken	0.05			A017	coal	bk		assoc. pyrite
	88	blocky	1.21			A017	ss	vfgr.,l/gy,massive		coal sper + assoc. pyrt
		blocky	0.15			A018	bentonite	sandy, wh		mixed bentonite/ss
		blocky	1.6			A018	ss	vfgr.,l/gy,massive		coal sper + assoc. pyrt. occ. calc nodules
17	89	blocky	2.33			A019	ss	vfgr.,l/gy,massive		massive non-calc, w minor intermixed slsn. occ. bivalves. rare small pyrite blebs
18		blocky	0.48			A020	bentonite	v.thin bedding		bentonitic at base. intbd ss at top
18		blocky	2.46			A021	ss	fgr.,l/gy,massive		bioturb. slsn/ss (5/95) no distinct bedding. occ sl.calcareous zones th/out.bivalves shell frags th/out,pyrt
19		broken	1.66			A022	ss	fgr.,l/gy,v.thin bed		v.thin/intlam slsn/ss (10/90).mixed by bioturb minor sper + assoc pyrt. sl.calc zones.bivalves
20		blocky	1.44			A022	ss	fgr.,l/gy,v.thin bed		bioturb + rip-ups common
20		blocky	0.37			A023	ss	vfgr.,l/gy,massive		calcareous occ. bivalves
20	85	blocky	0.9			A024	ss	vfgr.,l/gy,lam		massive w commmon carb lams
21		blocky	2.49			A024	ss	silty vfgr..m/gy,lam		intbd but mainly mixed slsn/ss (15/85), no distinct bedding. bioturb occ.bivalves th/out
22	90	blocky	1.8			A025	ss	silty, fgr.,m/gy massive		A/A (5/95) mottled occ. carb lams. bivlaves horizons
22		blocky	0.17			A025	slsn	l/gy,massive		calcareous,sandy
22		blocky	1.5			A025	ss	silty, massive		mottled,non-calc
23		broken	1.51			A026	ss	mgr.,l/gy,massive		minor mixed carb lams
		blocky	0.26			A027	ss	m.gr,l/gy,massive		calc.,A/A.
23	90	blocky	1.34			A028	ss	m.gr.,l/gy,massive		clean s + p w minor amts of carb debris. calc + non-calc zones (40/60)

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R46C	CONTRACTOR	J. T. Thomas
DATE		SITE #	E	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
25	88	blocky	1.41			A029	ss	mgr.,l/gy,massive	bioturb	massive ss A/A.minor calc zones.mottled/ biotrbd at base.
		blocky	0.07			A029	silty ss	mgr.,m/gy,massiv	bioturb	mixing zone,ss A/A w/in slsn below.burrowed
25		blocky	1.55			A030	slsn	sandy,m.gy,massive		rare fg.ss intbds at top non,calc,common carb lams.common bivalve horizons. bivalves < 1cm-10cm
26		blocky	0.06			A030	slsn	m/gy,massive		A/A
	89	blocky	2.95			A031	ss	mgr.l/gy,massive	bioturb.	clean s + p ss w common carb lams + bioturb. carb lams. calc. nodules present esp in upper half.burrows,occ.bivalves
	27		1			A032	ss		fgr.l/gy,massive	A/A.carb + slsn lams more common at base
	27	79	1.91			A032	ss		fgr.l/gy,v.thin bdg	intbd fgr.ss/slsn 95/10 slsn = beds to 1cm.carb lams common.abrupt bdg contacts.ssd
	28		0.72			A032	ss		fgr.l/gy,v.thin bdg	A/A
	28		0.1			A033	ss		fgr.l/gy,v.thin bdg	dirty A/A
	28		0.05			A033	mdsn		carb m/br	coaly,transition zone
	28		0.1			A033	coal		bk	no pyrite, sl.dirty
	28		0.04			A033	mdsn		d/br,carb,massive	no pyrite,plant frags
	28		0.6			A033	ss		carb,vfg.m/gy, massive	dirty vfgr.ss. thin coaly/ carb bands.non-calc
	28	82	0.79			A034	ss		vfg.l/gy,lam	carb/silty lams occ. dirty at top, non-calc
	29		2.66			A034	ss		fgr.l/gy,v.thin bdd	massive ss w intbd slsn esp ar base.common carb lams esp at top + towards base.non-calc
	29		0.22			A035	mdsn		carb, br	coaly, no pyrite
	29		0.05			A035	coal		bk	dirty banding
	29		0.21			A036	ss		m/gy	dirty.carb mdsn at top
	30	84	0.84			A036	ss		carb,vfgr. m/gy	mottled.common carb lams.rf.non-calc,dirty
			0.14			1	coal		bk	thin mdsn bands w/in
			0.37			1	coal		bk	clean,hard,abrupt contact w floor
	30		0.61			A037	slsn		dirty,gy,massive	dirty non-calc.no pyrite plant frags w/in

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T9R46C	CONTRACTOR	J. T. Thomas
DATE		SITE #	E	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
30		blocky	0.2			A038	mdsn	b		coaly,no pyrite
30		blocky	0.08			A038	coal	bk		dirty
30		blocky	0.29			A038	slsn	m/gy,massive		carb.dirty,mdsn at top
30		blocky	0.19			A038	mdsn	coaly,bk,massive		
31			0.08			A038	mdsn	silty,br		thin coal bands to 1cm
			1.17			A039	ss	vfgr,massive		carb at top.minor amts of dissem.pyrt, non-calc
31		blocky	0.49			A040	ss	fgr,l/gy,massive		calc,slow sustained fizz,no pyrite
31		blocky	0.57			A041	ss	silty,fgr,l/gy,massive		non-calc.nopyrite. bivalvesth/out, to 2cm
31		blocky	0.56			A041	slsn	sandy,l/gy,massive		dirty,plant frags th/out
32	82	blocky	2.56			A042	ss	vfg.,gy,massive	bioturb	intbd,slsn at top.mottled bioturb.,non-calc
32		blocky	0.5			A042	ss	fgr.,l/gy,massive		non-calc. occ.bivalves
33		blocky	2.94			A043	ss	fgr,m/gy,massive	bioturb	mottled by biotrb. carb lams th/out.bivalve horizons.rare calc zones
34		blocky	0.31			A043	ss	fgr,m/gy,massive		A/A
			0.31			A044	ss	fgr,l/gy,massive		massive clean ss.no carb lams.non-calc
34		blocky	2.26			A044	ss	fgr,l/gy,massive	bioturb	mottled biotrb slsn/ss (10/90).non-calc,no py pyrite,carb lams
35		blocky	1.77			A045	ss	vfgr,,l/gy,massive		biotrb silty ss.mottled slsn/ss = (5/95). calc zones up to 10cm w/in, rare.no pyrite
36		blocky	0.66			A046	ss	vfgr,l/gy,massive		mottled, w l/br slsn rip-ups clasts.non-calc
36		blocky	2.34			A047	ss	fgr,l/gy,massive		weakly intbd w slsn to 1cm + carb lams. slsn/ss = (90/10) = mottled by biotrb.no pyrt,carb lams
37		blocky	2.87			A048	ss	fgr,l/gy,v.thin bdg		A/A. common thin intbd vfg.ss calc concretiemery bands to 5cm.intbd ss/slsn = (90/10) = mottled by biotrb no pyrt.carb lams
38		blocky	2.96			A049	ss	fgr,l/gy,massive		massive ss w common carb lams th/out + occ. calc slsn layers to 5cm slsn = sl.calc.rare pyrt blebs + bands. pyrt too
39		blocky	2.8			A050	ss	fgr,.l/gy,massive		A/A burrows,biotrb + wavy bdg w/in carb lams
40		v.broke	0.5			A05	ss	fgr,l/gy,massive		A/A

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R46C	CONTRACTOR	J. T. Thomas
DATE		SITE #	E	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
41		blocky	3.02			A051	ss	fgr,l/gy,v.thin bdg		intbd fgr.ss/slsn 95/90 sharp bdg contacts. slsn beds to 1cm. sl wavy bdg.rare calc zones
42		crushed	0.28			A052	ss	fgr,l/gy,v.thin bdg		A/A clean ss w occ. slsn
		blocky	0.75			A052	ss	fgr,l/gy,v.thin bdg		roof.clean,hard w slsn beds to 1cm.no pyrt
42		blocky	0.36			A053	ss	fgr,gy		biotrb roof.biotrb intbd carb lams/slsn/ss (10/15/75) non-calc no pyrt, abrupt contact
42	90	blocky	0.03			A054	coal	bk		
		broken	0.05			A054	mdsn	bk,platy		carby,no pyrt,non-calc
		blocky	0.08			A054	mdsn	br,massive		no visible pyrt
42		blocky	0.05			2	coal	bk		dirty coal,thin mdsn bands
		blockybroken	0.92			2	coal	bk		
		blocky	0.06			3	mdsn	carb,br,massive		v.coaly
		broken	0.17			3	coal	bk		
42		blocky	0.11			3	coal	bk		
43		blocky	0.39			4	coal	bk		hard,clean
		blocky	0.17			5	coal	bk		thin mdsn bands w/in
		blocky	0.26			5	coal	bk		hard,clean
		blocky	0.07			5	coal	bk		sl.dirty lower 2cm = clean
		blocky	0.2			6	mdsn	br,carb,massive		minor pyrt along bdg
		blocky	0.18			7	coal			clean
		blocky	0.02			7	coal			dirty,mdsn bands
		blocky	0.02			7	mdsn	br		carb
		blocky	0.01			7	coal			dirty bands
		blocky	0.23			7	coal			sl.dirty at base minor pyrt
		blocky	0.11			A055	mdsn			small pyrt blebs at base
		blocky	0.13			A055	coal			sl.dirty.pyrt on cleat face
		blocky	0.11			A055	mdsn			plant frags th/out.no pyrt
		blocky	0.02			A055	coal			clean
		blocky	0.1			A055	mdsn			coaly at base
		blocky	0.13			8	coal			dirty,mdsn + slsn bands up to 0.5cm th/out
		blocky	0.49			8	coal			hard,clean
		v.broken	0.28			A056	mdsn	d/gy,massive		carb.plant frags th/out
44		blocky	0.3			A056	mdsn	dk/gy,carb,massive		coaly at base
44		blocky	0.07			9	coal	bk,v.thin bdg		intbd coal/mdsn 65%
44		blocky	0.56			9	coal	bk		nubir pyrt akibg ckeat faces,clean,hard
44		blocky	0.2			10	coal	bk		dirty coal.no pyrt
44		blocky	0.08			11	mdsn	m/gy,massive,silty		non-calc
			0.46			12	coal	bk		sl dirty
44		blocky	0.43			A057	mdsn	carb,dk.gy,massive		v.coaly at top. carb at base.biotrb.volcanic rx frag w/in. floor #1

MANALTA COAL LTD.

PROJECT	Telkwa	Hole #	T94R46C	CONTRACTOR	J. T. Thomas
DATE		Site #	E	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
44		blocky	0.85			A058	mdsn	wh, massive		vol. tuff? milky gr
			0.7			A058	mdsn	silty		A/A increas gr size toward base
45		broken	1.55			A059	ss	mgr.m/gy,massive		consists of vol rx frags. non-calc, coarsening up sequence
45		blocky	0.33			A059	mdsn	cgr,m/gy,massive		A/A.coalrs vol.rk gr well mixed w/in mdsn matrix.non-calc,no pyrt
46		broken	0.53			A059	mdsn	dk/gy,massive		mdsn matriz w occ. cgr. of vol rx?
46		blocky	0.51			A060	mdsn	carb,dk.gy,massive		dense mdsn w occ. gr of wh mica + vol rk frags
46		blocky	0.2			A060	mdsn	carb,bk		mixed coal/mdsn (~25%) minor pyrt along fract
46		v.broken	0.65			A061	mdsn	l/gy,massive		v.dense,hard w common rip up clasts of coal/ mdsn,no pyrt
47		broken	0.78			A061	mdsn	carb,dk/gy,massive		abrupt contact w lower cong.
47		broken	1.52			A062	congl.	40% matrix/50% pebbles		matrix supported cong w pebblen up to 10cm of qrtz,vol rx,ss. poorly sorted.pebbles from cgr.ss to 10cm
48		broken	2.42			A063	congl	gy		A/A.abrupt erosionl contact w underlying mdsn.cgr. matri=sl.calc
48		broken	0.52			A064	mdsn	carb,l/br,massive		coal debris inc w/in mdsn.mixed mdsn carb/coal. v.coaly at top
49		broken	0.55			A064	mdsn	dk/br,massive,carb		mdsn A/A w thin coaly bands/blebs to 1.5cm. v.rare thin bands cgr.ss
49		broken	0.06			A065	mdsn	carb bk,massive		w/in non-calc.no pyrt
49		v.broken	0.1			A065	coal	bk		dirty ~60% coal
49		blocky	0.02			A065	mdsn	bk		carb
49		v.broken	0.11			A065	coal	bk		dirty
49		v.broken	0.15			A065	mdsn	bk,massive		v/coal ~30% coal
49		v.broken	0.09			A065	coal	bk		clean
49		broken	0.19			A065	mdsn			v.coaly ~45%coal
49		broken	0.18			A065	mdsn			carb
49		blocky	0.16			A065	coal	bk		dirty bands w/in
			0.02			A065	mdsn			
49		crushed	0.03			A065	coal			
49		blocky	0.13			A065	mdsn	carb		
50		broken	2.53			A066	slsn	m/br,massive,mdsn		dirty slsn w occ.thin coaly zones/blebs to 2cm, non-calc,sheared

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R46C	CONTRACTOR	J. T. Thomas
DATE		SITE #	E	LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
		blocky	0.03			A066	coal	bk		
50		broken	0.21			A066	sltsn	m/br,massive		short gradational contact w underlying ss
		blocky	0.22			A067	ss	cgr.l/gy,massive		clean,hard.non-calc s + p ss
51		broken	0.33			A067	ss	cgr.l/gy,massive		A/A.occ.carb lams
		blocky	1.95			A068	ss	silty,massive		overall fining up seq. sltsn at top grading to fgr.ss at base, no bdg
51		blocky	0.68			A068	ss	cgr.l/gy,massive		con't A/A.fining up fgr. ss at base grading to cgr.ss at base. v.sl.calc
52		blocky	0.12			A068	ss	cgr.l/gy,massive		A/A. rip up clast of underlying rx at base
52		blocky	0.56			A069	ss	vfgr.l/gy,massive		
		blocky	0.71			A070	mdsn	silty,massive		siltier at base.non-calc
		blocky	0.05			A070	coal			v.dirty, banded
52		blocky	1.32				mdsn	silty,l/br,massive		silty zones;grading from mdsn to sltsn. occ. carb/coaly bed to 0.5cm
53		blocky	2.8			A071	sltsn	m/br,massive		A/A. silty mdsn at top grading to dirty sltsn at base.non-calc,plant frags
54		blocky	2.76			A072	sltsn	m/br,massive		rare plant frags. carb at base.non-calc
			0.2			A073	mdsn	dk/br,carb,massive		v.coaly.minor coal
			0.96			A073	ss	l/br,massive		gradual fining up seq. mdsn at top to cgr.ss at base. sl.calc cgr.ss
55		blocky	1.67			A073	sltsn	l/br,massive,sandy		massive sltsn w occ. carb mottled parp. to bdg.non-calc. no pyrt

MANALTA COAL LTD.

PROJECT	Telkwa	HOLE #	T94R08C	CONTRACTOR	J. T. Thomas
DATE		SITE #		LOGGING CO.	BPB
CORE TYPE	NQ			CASING	82' (25m)
GEOLOGIST	Angelo			LOGGER	Al Bretton

BOX MARK	BCA	CORE STATE	INTERVAL THK	FROM	TO	SAMPLE #	ROCK TYPE	DESCRIPTION	SED STRUCT.	NOTES
1		broken	2.9	131.1	134		mdsn	at top, grading to dirty slsn at base		massive. occ. plant frags
2		broken	2.28	134	136.3		slsn	thin coal beds		occ. pyrt band
3		crumbly	2.7	136.3	139		slsn	A/A		grading to vfgr.ss
4		blocky	2.9	139	141.9		ss	vfgr.		bivalves th/out
5	76		2.9	141.9	144.5		A/A	A/A		grading to c.ss beds at base.fining up seq.

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Hole: T94R01 Project: TELKWA DRILLING 1994
Site: 25 Date Finished: 08/17/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
10.0	3.05	till	rocks
38.0	11.59	silty mudstone	
40.0	12.20	- COAL (clean)	-
48.0	14.64	sandy siltstone, light gray	
51.0	15.56	silty mudstone, dark gray	
52.5	16.01	- sandy siltstone, light gray	-
54.5	16.62	COAL (clean)	some carb sh.
54.8	16.71	silty mudstone	
61.0	18.61	- COAL (clean)	- with some carb sh.
79.0	24.10	silty mudstone	
80.5	24.55	COAL (clean)	
95.0	28.98	- silty mudstone, light gray	-
103.0	31.42	sandy siltstone, light gray	
105.0	32.03	COAL (dirty)	
126.0	38.43	- sandy siltstone, light gray	-
132.0	40.26	silty mudstone	
138.0	42.09	sandy siltstone	
165.0	50.33	- sandstone (fine), light gray	-
243.0	74.11	sandstone (coarse)	volcanic
246.5	75.18	COAL	
250.5	76.40	- sandy siltstone	-
257.0	78.39	COAL	and carb sh.
276.0	84.18	silty mudstone, light gray, medium soft	and coarse sandstone

Hole: T94R02 Project: Telkwa Drilling 1994
Site: 27 Date Finished: 08/17/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Dean
N: 6049741.9 Geoph. Comp: Century Geophysical
E: 618353.7
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
29.0	8.85	mudstone, light green, hard	black metallic specks, clear specks
74.0	22.57	mudstone, light brown, hard	black metallic specks, clear specks

Hole: T94R03 Project: Telkwa Drilling 1994
Site: 26 Date Finished: 08/18/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Mike
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Dean
N: 6050180.6 Geoph. Comp: Century Geophysical
E: 617850.3
EL: 0.0 Logs: x gamma sonic
x density neutron
Casing: 0.0 x caliper x electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
2.0	0.61	till	
5.0	1.53	COAL (dirty), black, soft	
30.0	9.15	sandstone (fine), gray, medium soft	
32.0	9.76	carby, black, soft	possible coal
50.0	15.25	sandstone (fine), gray, medium soft	
64.0	19.52	COAL (clean), black, soft	
66.0	20.13	sandstone (fine), dark brown, medium soft	
71.0	21.66	COAL (clean), black, soft	
74.0	22.57	siltstone, light gray, medium soft	
81.0	24.71	COAL (dirty), black, medium soft	
83.0	25.32	sandstone (fine), dark gray, medium soft	
91.0	27.76	siltstone, light brown, medium soft	
96.0	29.28	sandstone (fine), dark gray, medium soft	
102.0	31.11	sandstone (fine), light gray, medium soft	
104.0	31.72	COAL (dirty), black, medium soft	
114.0	34.77	siltstone, light brown, medium soft	
119.0	36.30	sandstone (fine), light gray, hard	
122.0	37.21	sandstone (coarse), light brown, medium soft	possible water about 12 gpm
124.0	37.82	mudstone, light brown, medium soft	carby
127.0	38.74	sandstone (fine), light brown, medium soft	
140.0	42.70	sandstone (fine), dark gray, medium soft	
180.0	54.90	sandstone (fine), dark brown, hard	
190.0	57.95	sandstone (coarse), hard	conglomerate-light red, green, grey
204.0	62.22	sandstone (medium), light brown, hard	
230.0	70.15	sandstone (fine), dark gray, hard	
242.0	73.81	mudstone, light gray, medium soft	
244.0	74.42	siltstone, black, hard	
250.0	76.25	sandstone (coarse), hard	conglomerate- green, blue
267.0	81.44	sandstone (coarse), light gray, hard	conglomerate
281.0	85.71	sandstone (medium), hard	conglomerate- red, green, white, brown

Hole: T94R04 Project: Telkwa Drilling 1994
Site: 21 Date Finished: 08/17/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 6051583.5 Geoph. Comp: Century Geophysical
E: 617412.2
EL: 0.0 Logs: x gamma sonic
x density neutron
Casing: 0.0 x caliper x electric
Case Type: verticality x dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
30.0	9.15		clay, sand, gravel
35.0	10.68	mudstone	grey/blue
47.0	14.34	sandstone (coarse), gray, hard	
69.5	21.20	sandy siltstone, gray, medium soft	
73.0	22.27	sandy siltstone, hard	grey/brown
101.0	30.81	mudstone, dark gray	medium sandstone
105.0	32.03	sandy siltstone, gray, medium soft	
106.5	32.48	mudstone, hard	grey/brown
118.5	36.14	mudstone, dark gray, hard	
119.0	36.30	COAL (dirty)	
120.0	36.60	mudstone, light gray	medium sandstone
129.0	39.35	mudstone, medium soft	grey/brown
135.5	41.33	COAL (dirty)	
137.5	41.94	, medium soft	grey/brown
138.0	42.09	COAL (dirty)	
145.0	44.23	mudstone, light gray, medium soft	
168.0	51.24	mudstone, hard	grey/brown
174.0	53.07	mudstone	carb
179.0	54.60	COAL (clean)	
180.0	54.90	mudstone, brown, hard	
194.0	59.17	COAL (clean)	
198.5	60.54	mudstone	grey/brown
202.0	61.61	carby, medium soft	
210.0	64.05	mudstone, hard	grey/brown
237.0	72.29	mudstone, light gray, medium soft	
239.0	72.90	COAL (dirty)	
243.0	74.11	, medium soft	grey/brown
250.0	76.25	sandstone (medium), gray	

Hole: T94R05 Project: Telkwa Drilling 1994
Site: 23 Date Finished: 08/18/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Dean
Drill Contr: Cor Lynn Drilling
Surveyed Location: Driller: Dean
N: 6051253.5 Geoph. Comp: Century Geophysical
E: 617502.0
EL: 0.0 Logs: x gamma sonic
x density neutron
Casing: 0.0 x caliper x electric
Case Type: x verticality x dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
13.0	3.97	clay, red, soft	
23.0	7.02	mudstone, gray, medium soft	
142.0	43.31	sandstone (fine), light gray, medium soft	
156.0	47.58	siltstone, gray, medium soft	
161.0	49.11	mudstone, light gray, soft	
178.0	54.29	siltstone, dark gray, soft	
190.0	57.95	mudstone, dark gray, medium soft	
201.0	61.31	sandstone (medium), gray, medium soft	coal stringers, metallic specks
230.0	70.15	siltstone, dark gray, soft	pyrite interbed
232.0	70.76	COAL (clean), black, soft	
255.0	77.77	siltstone, dark gray, medium soft	soft mdsn with coal grains(specks) layers
265.0	80.83	sandstone (fine), dark gray, soft	soft mdsn with coal grains(specks) layers
281.0	85.71	siltstone, dark gray, medium soft	calcite fractures 276-280 coal stringers
288.0	87.84	sandstone (medium), dark gray, hard	
290.0	88.45	COAL (clean), black, soft	
301.0	91.80	sandstone (coarse), light gray, hard	conglomerate
305.0	93.02	sandstone (medium), light brown, hard	
306.0	93.33	COAL (clean), black, soft	
330.0	100.65	siltstone, dark brown, hard	
361.0	110.11	sandstone (fine), dark gray, medium soft	
372.0	113.46	sandstone (medium), light gray, hard	
376.0	114.68	sandstone (coarse), light gray, hard	conglomerate
382.0	116.51	mudstone, light gray, soft	ver soft (clay like)
400.0	122.00	sandstone (coarse), light gray, medium soft	with FSasn interbeds (soft) dark grey

Hole: T94R06 Project: Telkwa Drilling 1994
Site: 22 Date Finished: 08/30/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Dean
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Dean
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: x gamma sonic
x density neutron
Casing: 0.0 x caliper x electric
Case Type: x verticality x dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
5.0	1.53	till	
17.0	5.19	mudstone, green, soft	
40.0	12.20	mudstone, gray, soft	
47.0	14.34	sandstone (medium), dark gray, medium soft	
86.0	26.23	mudstone, dark gray, soft	soft mudstone layers, light grey
90.0	27.45	siltstone, dark gray, medium soft	
125.0	38.13	mudstone, light gray, soft	soft mudstone and layers of siltstone
236.0	71.98	siltstone, dark gray, soft	soft siltstone and layers of mudstone
253.0	77.16	sandstone (fine), dark brown, hard	
266.0	81.13	siltstone, dark gray, medium soft	soft mudstone layers, light grey
307.0	93.63	sandstone (medium)	
327.0	99.74	sandstone (fine), dark gray, hard	
347.0	105.84	siltstone, dark gray, hard	soft mudstone layers, light grey
407.0	124.14	sandstone (fine), dark gray, medium soft	
470.0	143.35	siltstone, dark gray, soft	mudstone layers dark grey
497.0	151.59	COAL (clean), black, soft	mudstone layers
512.0	156.16	mudstone, dark gray, medium soft	coal?
518.0	157.99	sandstone (fine), dark gray, hard	soft mudstone layers (black(specks))
527.0	160.74	sandstone (medium), gray, hard	
549.0	167.45	siltstone, dark gray, medium soft	

Hole: T94R07 Project: Telkwa Drilling 1994
Site: 24 Date Finished: 08/30/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: David
Drill Contr: McAuley Drilling
Surveyed Location: Driller: David
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: x gamma sonic
x density neutron
Casing: 0.0 x caliper x electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
20.0	6.10	clay	sand, till
62.0	18.91	mudstone, light gray, medium soft	
94.5	28.82	sandy siltstone, dark gray, medium soft	light grey mudstone lens
97.0	29.59	sandy siltstone, light brown, hard	
102.0	31.11	sandy siltstone, gray, hard	
111.0	33.86	sandy siltstone, light gray, medium soft	mudstone lens
122.0	37.21	sandstone (medium), gray, medium soft	
129.0	39.35	sandy siltstone, dark gray, medium soft	light green mudstone lens
129.4	39.47	carby	
143.0	43.62	mudstone, gray, medium soft	
155.0	47.28	sandy siltstone, dark gray, medium soft	light green mudstone lens
196.0	59.78	mudstone, dark gray, medium soft	
207.0	63.14	sandstone (fine), gray	
208.5	63.59	carby	
211.0	64.36	mudstone, light gray, medium soft	sandstone (m)
213.5	65.12	COAL (dirty)	
220.0	67.10	mudstone, dark gray, medium soft	
239.0	72.90	sandy siltstone, dark gray, hard	
259.2	79.06	mudstone, dark gray, medium soft	sandstone (m)
264.0	80.52	COAL (clean)	
293.0	89.36	mudstone, gray	
295.0	89.97	COAL (clean)	
314.0	95.77	mudstone, gray, medium soft	
319.5	97.45	COAL (clean)	
320.5	97.75	mudstone, medium soft	
335.5	102.33	COAL (clean), gray	
341.0	104.01	mudstone, gray, medium soft	
347.0	105.84	mudstone, gray, medium soft	
349.5	106.60	mudstone, dark gray, medium soft	
355.0	108.28	COAL (clean)	
358.5	109.34	mudstone, light gray, medium soft	
360.0	109.80	COAL (clean)	
364.0	111.02	mudstone, light gray, medium soft	

365.8 111.57 | COAL (dirty) |
366.5 111.78 | mudstone, gray, medium soft |
368.2 112.30 - COAL (clean) - coal (dirty)
375.0 114.38 | mudstone, gray, medium soft |
378.0 115.29 | COAL (clean) |
378.5 115.44 - mudstone, light brown -
383.5 116.97 | COAL (clean) |
384.5 117.27 | mudstone |
385.0 117.43 - COAL (clean) -
385.5 117.58 | , gray, medium soft |
386.5 117.88 | COAL (clean) |
391.0 119.26 - , gray, medium soft - coal banding
394.0 120.17 | COAL (dirty) |
396.0 120.78 | , brown, medium soft |
398.5 121.54 - , gray, medium soft -
400.0 122.00 | sandstone (fine), gray |

Hole: T94R08 Project: Telkwa Drilling 1994
Site: 20 Date Finished: 08/30/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Dean
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Dean
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
58.0	17.69	clay	till
65.0	19.83	sandstone (medium), gray, medium soft	
90.0	27.45	mudstone, light gray, medium soft	
130.0	39.65	sandy siltstone, dark gray, medium soft	
185.0	56.43	mudstone, dark gray, medium soft	
186.5	56.88	mudstone, light brown, hard	
211.0	64.36	mudstone, dark gray, medium soft	
216.0	65.88	sandstone (fine), gray, hard	
233.0	71.07	mudstone, gray, medium soft	carb traces
246.0	75.03	sandstone (fine), gray, hard	
247.5	75.49	mudstone, light brown, hard	
273.0	83.27	mudstone, dark gray, medium soft	
282.0	86.01	sandy siltstone, dark gray, hard	
304.0	92.72	mudstone, dark gray, medium soft	
306.0	93.33	sandy siltstone, light gray, hard	
366.0	111.63	mudstone, gray, hard	
368.0	112.24	COAL (dirty)	
370.0	112.85	mudstone, gray, soft	
376.0	114.68	mudstone, light gray, soft	coal and carb bands
388.0	118.34	mudstone, light gray, soft	
399.0	121.70	sandstone (medium), gray, medium soft	
400.0	122.00	mudstone, light brown, soft	carb traces
409.5	124.90	COAL (clean)	
422.0	128.71	mudstone, dark gray, medium soft	
430.0	131.15	sandy siltstone, dark gray, hard	
452.0	137.86	sandy siltstone, gray, medium soft	mudstone at top grading to v.fine ss base
470.0	143.35	sandstone (medium), gray	bivalves common through out
474.0	144.57	sandstone (coarse), gray	fining up sequences. channel log deposits

Hole: T94R09 Project: Telkwa Drilling 1994
Site: 30 Date Finished: 08/30/95 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Dean
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Dean
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: x gamma sonic
x density neutron
Casing: 0.0 x caliper x electric
Case Type: x verticality x dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
127.0	38.74	gravel, gray, soft	clay
183.0	55.82	gravel, red, soft	clay
205.0	62.53	sandstone (coarse), dark green, hard	cong.?
222.0	67.71	sandstone (coarse), dark red, hard	cong.?
310.0	94.55	sandstone (coarse), dark green, hard	
421.0	128.41	mudstone, dark red, hard	volcanics?
447.0	136.34	mudstone, dark violet, medium soft	volcanics? calcite fractures
480.0	146.40	mudstone, dark red, medium soft	fractured, 10gpm water, calcite fractures
489.0	149.15	mudstone, dark red, hard	

Hole: T94R10c Project: Telkwa Drilling 1994
Site: 19 Date Finished: 08/30/95 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Dave
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Dave
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: x gamma sonic
x density neutron
Casing: 0.0 x caliper x electric
Case Type: x verticality x dipmeter
Downhole Units: Feet
other:

Comments:
Cored from 52.8m to T.D.

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
20.0	6.10	colluvium	till
28.0	8.54	mudstone, light gray, medium soft	
115.0	35.08	mudstone, dark gray, medium soft	
123.0	37.52	mudstone, light gray, medium soft	
141.0	43.01	mudstone, dark gray, medium soft	
150.0	45.75	sandy siltstone, light gray, hard	carb stringers
152.0	46.36	COAL (clean)	
160.0	48.80	mudstone, dark gray, medium soft	
162.5	49.56	COAL (clean)	
173.5	52.92	mudstone, dark gray, medium soft	started coring at 52.8m

Hole: T94R11 Project: Telkwa Drilling 1994
Site: 29 Date Finished: 08/30/95 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Dean
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Dean
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Meters
other:
Comments:
No logs, no casing

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
82.0	25.00	colluvium, gray, soft	rocks
219.7	67.00	colluvium, red, soft	rocks
488.5	149.00	- gravel	- sand
678.7	207.00	colluvium, medium soft	rocks, consolidated?
741.0	226.00	gravel, hard	
793.4	242.00	- mudstone, hard	- volcanics below overburden

Hole: T94R12 Project: Telkwa Drilling 1994
Site: 18 Date Finished: 08/30/95 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Dave
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Dave
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: x gamma sonic
x density neutron
Casing: 0.0 x caliper x electric
Case Type: x verticality x dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
64.0	19.52	clay	gravel, till
73.0	22.27	mudstone, light gray, medium soft	
102.0	31.11	mudstone, dark gray, medium soft	carb banding
106.0	32.33	sandy siltstone, dark gray, hard	
133.5	40.72	, dark gray, medium soft	carb banding
140.0	42.70	COAL (clean)	
176.0	53.68	mudstone, dark gray, medium soft	
177.0	53.99	COAL (clean)	
179.5	54.75	mudstone, medium soft	
180.0	54.90	COAL (clean), light gray	
184.0	56.12	mudstone, light brown, hard	carb and coal banding
200.0	61.00	mudstone, dark gray, medium soft	
218.0	66.49	mudstone, dark gray, medium soft	brown siltstone 2"-3" bands
227.0	69.24	sandy siltstone, dark gray	
243.0	74.11	sandstone (fine), light gray, medium soft	
245.0	74.72	sandstone (coarse), medium soft	grey/brown, volcanic pebbles
249.0	75.94	mudstone, medium soft	grey, blue, green, red. volcanics
258.0	78.69	sandstone (coarse), medium soft	
265.0	80.83	sandstone (coarse), light gray, medium soft	
272.0	82.96	mudstone, dark gray, medium soft	
279.0	85.10	sandy siltstone, dark gray, hard	
281.0	85.71	mudstone, dark gray, medium soft	
308.0	93.94	sandy siltstone, dark gray, medium soft	

Hole: T94R13 Project: Telkwa Drilling 1994
Site: 28 Date Finished: 08/30/95 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Dean
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Dean
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: x gamma sonic
x density neutron
Casing: 0.0 x caliper x electric
Case Type: verticality dipmeter
Downhole Units: Meters
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
131.1	40.00	till	gravel, sand
173.8	53.00	mudstone, dark red, soft	? vol.
223.0	68.00	- mudstone, soft	- light green, blue, white. ? vol
459.0	140.00	mudstone, brown, medium soft	

Hole: T94R14 Project: Telkwa Drilling 1994
Site: 31 Date Finished: 08/30/95 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:

Comments:
No casing / no geophysical logs

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
20.0	6.10	till	gravel
104.0	31.72	gravel	boulders, pea gravel and sand-some rocks
130.0	39.65	- , gray, soft	- what appeared to be soft shale
348.0	106.14	till, gray	gravel- dense with rocks
503.0	153.42	till, gray, medium soft	silty coal ships and pebbbles
510.0	155.55	-	- volcanics-red-hard

Hole: T94R16 Project: Telkwa Drilling 1994
Site: 34 Date Finished: 08/26/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: MacBeth
Drill Contr: McAuley Drilling
Surveyed Location: Driller: MacBeth
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:

Comments:
No geophysical logs

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
3.0	0.92	till	
14.0	4.27	till	gravel
100.0	30.50	- colluvium	- till
144.0	43.92	gravel	till
320.0	97.60	gravel	till, O/B (tertiary sands and gravels)
360.0	109.80	-	- volcanic rx to T.D.

Hole: T94R17 Project: Telkwa Drilling 1994
Site: 49 Date Finished: 08/26/95 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Mike
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Mike
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: x gamma sonic
x density neutron
Casing: 0.0 x caliper x electric
Case Type: verticality dipmeter
Downhole Units: Meters
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
124.6	38.00	gravel	clay
209.8	64.00	mudstone, medium soft	dark red/brown
226.2	69.00 -	mudstone, medium soft	- dark red/brown; interbedded calcite
282.0	86.00	mudstone, medium soft	dark red/brown; slightly darker in colour
321.3	98.00	siltstone, medium soft	dark red/brown
341.0	104.00 -	siltstone, medium soft	- dark re/br; gy and wh conglomerate layers
370.5	113.00	siltstone, medium soft	dark red/brown;soft white mudstone layers
383.6	117.00	siltstone, medium soft	dark red/brown; calcite layers
400.0	122.00 -	sandstone (coarse), medium soft	- light green/white, mostly white in colour
403.3	123.00	siltstone, hard	dark red/brown
442.6	135.00	siltstone, medium soft	dark red/bronw; mudstone layers
472.1	144.00 -	siltstone, dark green, medium soft	-
544.3	166.00	siltstone, medium soft	dark red/brown
547.5	167.00	siltstone, dark gray, medium soft	green specks
557.4	170.00 -	sandstone (fine), medium soft	- dark red/brown
626.2	191.00	siltstone, medium soft	dark red/brown
662.3	202.00	siltstone, medium soft	dark red/brown; green layers interbedded
714.8	218.00 -	siltstone, medium soft	- dark red/brown
721.3	220.00	siltstone, medium soft	dark red/brown
842.6	257.00	siltstone, medium soft	dark red/brown
872.1	266.00 -	siltstone	- dark red/green
941.0	287.00	mudstone, soft	dark red/grey

Hole: T94R18 Project: Telkwa Drilling 1994
Site: 45 Date Finished: 08/26/95 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: McAuley
Drill Contr: McAuley Drilling
Surveyed Location: Driller: McAuley
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: x gamma sonic
x density neutron
Casing: 0.0 x caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other: Resistivity

Comments:
Geophysical logs to 30m only.

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
60.0	18.30	till	gravel and rocks
70.0	21.35	gravel	red till-pebbles
105.0	32.03	sand	sandy silt and red gravel
130.0	39.65	till	red silty till and rocks
169.0	51.55	till	green/brown and rocks
337.0	102.79	sandstone (fine), light gray, medium soft	sedimentary rx; sl. carb
359.0	109.50	mudstone, dark gray, medium soft	reworked volcanics
370.0	112.85	sandstone (fine), hard	gy,gr,re; interbedded. volcanic rx

Hole: T94R19 Project: Telkwa Drilling 1994
Site: 44 Date Finished: 08/26/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Dean
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Dean
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Meters
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
127.9	39.00	clay	rocks
147.5	45.00	mudstone, soft	light green/blue
160.7	49.00	mudstone, white, soft	
170.5	52.00	mudstone, light green, soft	
206.6	63.00	conglomerate, medium soft	light red, yellow, green, white
213.1	65.00	mudstone, dark violet, medium soft	light green interbedded mudstone
219.7	67.00	mudstone, dark yellow	fractured 5gpm water
272.1	83.00	conglomerate, dark green	light green, white, black interbedded
396.7	121.00	siltstone, hard	dark red/brown
498.4	152.00	siltstone, light green, medium soft	soft mudstone layers
563.9	172.00	siltstone, hard	dark red/brown
675.4	206.00	mudstone, dark brown, medium soft	

Hole: T94R20 Project: Montgomery Drilling 1994
Site: 41 Date Finished: 00/00/00 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
72.0	21.96	till	clay-rocks
81.0	24.71	gravel	
87.0	26.54	till	clay-rocks
94.0	28.67	conglomerate, hard	gr,wh,gy; includes vol. rock fragments
113.0	34.47	sandstone (fine), dark gray, soft	
170.0	51.85	sandstone (coarse), light gray, hard	carby layer 34.1? and 49.6
214.0	65.27	conglomerate	light green,blue,white
230.0	70.15	siltstone, light brown, hard	soft mudstone light grey layers
235.0	71.68	sandstone (coarse), hard	light gr,wh,gy,with vol.rock fragments
276.0	84.18	conglomerate, hard	light red,green,white,grey,black
277.0	84.49	mudstone, dark yellow, hard	
282.0	86.01	conglomerate, hard	light green,white,gray and dark red
301.0	91.80	conglomerate, dark brown, hard	white specks
310.0	94.55	siltstone, dark red, medium soft	mudstone layers, white interbedded, vol.
315.0	96.08	siltstone, hard	dark red/brown
317.0	96.69	sandstone (fine), hard	dark red/brown, white specks
390.0	118.95	siltstone	dark red/brown, interbedded fine s.s., gr

Hole: T94R21 Project: Montgomery Drilling 1994
Site: 40 Date Finished: 00/00/00 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
70.0	21.35	clay	rocks
99.0	30.20	gravel	
113.0	34.47	gravel	clay and rocks
116.0	35.38	sand	
121.0	36.91	gravel	
190.0	57.95	clay	rocks
214.0	65.27	mudstone, dark red, soft	volcanics to T.D.
232.0	70.76	mudstone, light violet, medium soft	yellow and black specks
267.0	81.44	mudstone, dark red, soft	

Hole: T94R22 Project: Montgomery Drilling 1994
Site: 39 Date Finished: 08/26/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
115.0	35.08	till, gray	gravel
125.0	38.13	till, red	and rocks
126.0	38.43	- silty mudstone, hard	- s.s. (medium) grey-carb sed rx
130.0	39.65	siltstone, green	volcanic rx
152.0	46.36	sandstone (medium), green	volcanic rx
160.0	48.80	- sandstone (medium), hard	- green and brown, volcanic rx
175.0	53.38	sandstone (medium), brown	
180.0	54.90	sandstone (medium), brown	mudstone interbedded, volcanic rx
200.0	61.00	- sandstone (medium)	- red/green, volcanics

Hole: T94R23 Project: Montgomery Drilling 1994
Site: 51 Date Finished: 08/30/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
24.0	7.32	till	
161.0	49.11	sandstone (medium), gray, medium soft	coal stringer 20.1m ><
163.0	49.72	mudstone, soft	carby
183.0	55.82	sandstone (medium), dark gray, medium soft	
184.0	56.12	mudstone, dark gray, soft	carby
217.0	66.19	sandstone (medium), gray, medium soft	
226.0	68.93	siltstone, gray, soft	carby,coal layers
235.0	71.68	sandstone (fine), gray, medium soft	
302.0	92.11	sandstone (medium), gray, medium soft	
304.0	92.72	COAL (clean), black, soft	
323.0	98.52	mudstone, brown, medium soft	coal layers 92.0-97.0m
348.0	106.14	sandstone (fine), gray, hard	coal layers 100.-101.4m
353.0	107.67	conglomerate, hard	yellow, white, grey, black
371.0	113.16	sandstone (medium), gray, hard	siltstone layers, dark grey
384.0	117.12	mudstone, dark gray, medium soft	sandstone (m) layers
386.0	117.73	COAL (clean), black, soft	coal and coarse sandstone layers
388.0	118.34	mudstone, gray, medium soft	siltstone layers
393.0	119.87	conglomerate, medium soft	white, grey, black; coal layers; coal(c)
400.0	122.00	sandstone (coarse), light gray, medium soft	coal (c), coal layers
409.0	124.75	mudstone, light gray, soft	coal layers
414.0	126.27	sandstone (medium), light gray, medium soft	coal and calcite layers
422.0	128.71	siltstone, light gray, medium soft	coal and calcite layers
427.0	130.24	sandstone (coarse), light gray, medium soft	
451.0	137.56	siltstone, brown, medium soft	
483.0	147.32	sandstone (coarse), light gray, soft	
486.0	148.23	COAL (clean), dark brown, soft	
500.0	152.50	sandstone (coarse), greenish gray, hard	possible conglomerate
511.0	155.86	conglomerate, light green, hard	white and black specks
529.0	161.35	, medium soft	dark red, green; volcanics

Hole: T94R24 Project: Montgomery Drilling 1994
Site: 3 Date Finished: 00/00/00 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
4.0	1.22	till, brown	with rocks
50.0	15.25	till, gray	with rocks
62.0	18.91	sandstone (medium), soft	false bedrock
68.0	20.74	till, gray	
92.0	28.06	gravel	cemented
105.0	32.03	sandstone (medium), medium soft	
177.5	54.14	sandstone (coarse), medium soft	
179.0	54.60	COAL (clean)	
200.0	61.00	sandstone (coarse), medium soft	
270.0	82.35	sandstone (coarse), medium soft	s.s. with interbedded mudstone
279.0	85.10	COAL (clean), medium soft	coal (c); had trouble with returns
285.5	87.08	sandstone (medium), medium soft	
288.0	87.84	COAL (clean)	
288.5	87.99	mudstone	sandstone (m)
292.0	89.06	COAL (clean), medium soft	
307.0	93.63	mudstone	
307.3	93.73	COAL (clean), medium soft	coal stringers
325.0	99.13	silty mudstone	
326.0	99.43	COAL (dirty)	coal and carb shale
350.0	106.75	silty mudstone, medium soft	siltstone and s.s. interbedded
356.0	108.58	COAL (dirty)	
370.0	112.85	silty mudstone	s.s.(m); siltstone and s.s. interbedded

Hole: T94R25 Project: Montgomery Drilling 1994
Site: 54 Date Finished: 09/01/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
58.0	17.69	till	
68.0	20.74	sandstone (medium), gray, medium soft	
97.0	29.59	siltstone, brown, medium soft	soft white mudstone layers
99.0	30.20	COAL (dirty), black, soft	interbedded with carby shale
123.0	37.52	sandstone (fine), light brown, medium soft	
124.0	37.82	mudstone, dark brown, soft	carby
140.0	42.70	siltstone, light brown, medium soft	
143.0	43.62	sandstone (coarse), black, medium soft	
146.0	44.53	conglomerate	
163.0	49.72	siltstone, light brown, medium soft	
195.0	59.48	sandstone (coarse), gray, medium soft	
197.0	60.09	mudstone, light gray, medium soft	
199.0	60.70	mudstone, medium soft	dark red/brown; ?volcanics
206.0	62.83	mudstone, dark green, medium soft	?volcanics
227.0	69.24	mudstone, dark red, medium soft	dark red/brown; volcanics
348.0	106.14	siltstone, dark red, medium soft	dark red/brown

Hole: T94R26 Project: Montgomery Drilling 1994
Site: 56 Date Finished: 00/00/00 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
21.0	6.41	colluvium	till
280.0	85.40	sandy siltstone, dark red, medium soft	volcanic rx below O/B to T.D.

Hole: T94R27 Project: Montgomery Drilling 1994
Site: 55 Date Finished: 00/00/00 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
21.0	6.41	till	grey/brown, rocks
28.0	8.54	gravel	
58.0	17.69	till	reddish/brown, rocky
58.4	17.81	, hard	
129.0	39.35	sandstone (fine), light gray, medium soft	carb traces
131.0	39.96	sandstone (medium), dark gray, medium soft	laced with coal banding
140.0	42.70	mudstone, dark gray, medium soft	laced with coal banding
151.0	46.06	sandstone (medium), dark gray, hard	carb traces
153.0	46.67	sandstone (fine), white, medium soft	
159.0	48.50	sandstone (medium), hard	grey/blue
182.0	55.51	sandstone (coarse), dark gray	carb traces
189.0	57.65	mudstone, medium soft	
209.0	63.75	sandstone (coarse), light gray, hard	banded
214.0	65.27	COAL (clean), dark gray	carb traces
220.0	67.10	mudstone, dark gray, medium soft	coal stringers
226.0	68.93	sandy siltstone, dark gray, hard	
243.0	74.11	mudstone, light gray, medium soft	carb traces and coal stringers
246.0	75.03	sandstone (medium), dark gray, hard	
252.0	76.86	COAL (clean)	dark brown siltstone stringers
259.0	79.00	mudstone, light gray	coal bands
264.5	80.67	COAL (clean)	
268.0	81.74	mudstone, light gray	
271.0	82.66	sandstone (fine), light gray, hard	
278.0	84.79		volcanics ?
299.0	91.19	mudstone, light gray	coal bands
303.0	92.41	COAL (clean)	
307.0	93.63	sandy siltstone, dark brown, hard	
325.0	99.13	sandy siltstone, light brown, hard	
329.0	100.35	sandstone (coarse), hard	multi coloured
355.0	108.28	mudstone, light brown, hard	
367.0	111.94	mudstone, dark brown, medium soft	
371.0	113.16	sandy siltstone, red, hard	
430.0	131.15	, hard	grey, brown, green, white, red; volcanics

500.0 152.50 | , red, hard

Hole: T94R28 Project: Montgomery Drilling 1994
Site: 10 Date Finished: 09/02/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
31.0	9.46	till	
48.0	14.64	sandstone (medium), dark gray, medium soft	
57.0	17.39	mudstone, gray, soft	16.1m coal stringer
63.0	19.22	mudstone, light gray	very soft almost clay
77.0	23.49	mudstone, light gray, medium soft	black mudstone interbed
95.0	28.98	sandstone (coarse), medium soft	conglomerate ?
101.0	30.81	sandstone (coarse), light gray, hard	25.4m coal stringers
103.0	31.42	siltstone, dark gray, medium soft	
104.0	31.72	COAL (clean), black, soft	
106.0	32.33	mudstone, black, soft	pyrite layers
109.0	33.25	siltstone, gray, medium soft	
118.0	35.99	mudstone, dark brown, soft	pyrite layers
125.0	38.13	sandstone (fine), dark gray, medium soft	36.6m coal stringer
130.0	39.65	mudstone, medium soft	blue/grey
148.0	45.14	siltstone, dark gray, soft	
223.0	68.02	sandstone (fine), gray, soft	
393.0	119.87	sandstone (medium), light gray, medium soft	
445.0	135.73	sandstone (fine), gray, hard	

Hole: T94R29 Project: Montgomery Drilling 1994
Site: 2 Date Finished: 09/04/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
9.0	2.75	till	
11.0	3.36	sandstone (medium), brown, soft	
16.0	4.88	sandstone (fine), gray, medium soft	
70.0	21.35	sandstone (medium), light gray, medium soft	
117.0	35.69	sandstone (fine), dark gray, medium soft	soft layers
122.0	37.21	COAL (clean), black, soft	
128.0	39.04	mudstone, soft	carby, coal stringers
138.0	42.09	sandstone (fine), dark gray, medium soft	siltstone interbedded
165.0	50.33	mudstone, dark gray, soft	42.8m pyrite layer and coal stringers
175.0	53.38	sandstone (fine), gray, medium soft	52.3m coal stringers
183.0	55.82	mudstone, dark gray, soft	53.8m coal
186.0	56.73	COAL (clean), gray, soft	
209.0	63.75	mudstone, dark gray, soft	57.5m pyrite 59.4m coal
222.0	67.71	COAL (clean), black, soft	
233.0	71.07	sandstone (fine), gray, soft	
246.0	75.03	mudstone, dark gray, soft	
282.0	86.01	sandstone (fine), light gray, medium soft	
292.0	89.06	sandstone (medium), light gray, hard	
347.0	105.84	sandstone (coarse), light gray, hard	very hard
473.0	144.27	sandstone (medium), light gray, hard	118m slightly softer
480.0	146.40	mudstone, black, medium soft	possible coal?
506.0	154.33	sandstone (fine), light gray, medium soft	
510.0	155.55	sandstone (medium), gray, medium soft	

Hole: T94R30 Project: Montgomery Drilling 1994
Site: 6 Date Finished: 00/00/00 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
89.0	27.15	colluvium	gravel, till
138.0	42.09	mudstone, red, medium soft	s/ss, volcanic rx
146.0	44.53	- mudstone, medium soft	- grey/blue, burnt
200.0	61.00	mudstone, red, medium soft	volcanics

Hole: T94R31 Project: Montgomery Drilling 1994
Site: Date Finished: 09/05/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
21.0	6.41	till	
46.0	14.03	sandstone (medium), gray, medium soft	
60.0	18.30	sandstone (coarse), light gray, hard	carby layers interbedded
62.0	18.91	sandstone (medium), light gray, medium soft	
200.0	61.00	sandstone (fine), dark gray, hard	44.3m pyrite layer-brown sandstone layers
202.0	61.61	sandstone (fine), light brown, soft	carby layers
208.0	63.44	sandstone (fine), light gray, hard	
210.0	64.05	sandstone (fine), light brown, soft	carby layers
231.0	70.46	sandstone (fine), light gray, hard	
235.0	71.68	sandstone (medium), dark gray, hard	
236.0	71.98	sandstone (medium), dark brown, hard	
245.0	74.72	sandstone (medium), light gray, hard	
250.0	76.25	sandstone (medium), dark gray, hard	
261.0	79.61	sandstone (coarse), light gray, medium soft	
263.0	80.22	sandstone (fine), dark gray, hard	
283.0	86.32	sandstone (coarse), light gray, hard	
306.0	93.33	sandstone (medium), light gray, hard	carby layers-fractured at 86.5m
310.0	94.55	sandstone (fine), dark brown, hard	carby layers
314.0	95.77	sandstone (fine), dark gray, hard	carby layers
327.0	99.74	sandstone (medium), light gray, hard	
366.0	111.63	sandstone (coarse), light gray, hard	
396.0	120.78	sandstone (fine), light gray, hard	very hard
433.0	132.07	sandstone (medium), light gray, medium soft	
443.0	135.12	sandstone (coarse), light gray, medium soft	carby layers-possible coal? 130m
478.0	145.79	mudstone, dark gray, soft	very soft-133 to 38m,coal layers-thick?
483.0	147.32	mudstone, dark gray, soft	carby
510.0	155.55	sandstone (medium), dark gray, medium soft	
519.0	158.30	sandstone (fine), dark brown, hard	
540.0	164.70	sandstone (coarse), light gray, hard	
562.0	171.41	mudstone, light brown, soft	
566.0	172.63	sandstone (medium), gray, medium soft	
580.0	176.90	siltstone, light brown, medium soft	
587.0	179.04	sandstone (coarse), light gray, hard	

596.0	181.78	mudstone, dark gray, soft	pyrite layer at 176.2m
606.0	184.83	sandstone (medium), light gray, medium soft	
629.0	191.85	conglomerate, hard	red, green, blue, white, grey
649.0	197.95	mudstone, soft	dark red/green, volcanics
671.0	204.66	mudstone, dark red, soft	

Hole: T94R32 Project: Montgomery Drilling 1994
Site: 8 Date Finished: 09/07/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
32.0	9.76	till	
65.0	19.83	sandstone (medium), light gray, medium soft	
146.0	44.53	sandstone (coarse), dark gray, medium soft	carby layers
155.0	47.28	sandstone (fine), dark gray, medium soft	
167.0	50.94	siltstone, dark gray, soft	
169.0	51.55	sandstone (fine), dark gray, medium soft	
183.0	55.82	sandstone (medium), dark gray, medium soft	carby at 52m and 53.6m
203.0	61.92	sandstone (coarse), light gray, medium soft	interbedded carby
206.0	62.83	sandstone (fine), dark brown, soft	
220.0	67.10	sandstone (fine), light gray, medium soft	carby 63.8m-interbedded throughout
247.0	75.33	sandstone (fine), dark gray, soft	
256.0	78.08	mudstone, black, soft	possible coal seams 74.1 to 76.7m
268.0	81.74	siltstone, dark gray, soft	79.7-80.1m coal?
280.0	85.40	sandstone (coarse), light gray, medium soft	
287.0	87.54	sandstone (coarse), light gray, soft	carby layers, conglomerate?
297.0	90.58	sandstone (fine), dark gray, hard	
301.0	91.80	mudstone, black, soft	coal?
303.0	92.41	mudstone, dark brown, soft	carby?
314.0	95.77	mudstone, black, soft	coal?
322.0	98.21	mudstone, dark gray, medium soft	
326.0	99.43	sandstone (coarse), light gray, medium soft	
328.0	100.04	sandstone (fine), dark brown, medium soft	
342.0	104.31	siltstone, light brown, hard	coarse sandstone layers interbedded
368.0	112.24	mudstone, black, soft	interbedded brown siltstone and bk mdsn
375.0	114.38	mudstone, dark brown, hard	
381.0	116.21	sandstone (fine), light brown, hard	
387.0	118.04	sandstone (coarse), hard	conglomerate-light red, green, grey
395.0	120.48	sandstone (coarse), light gray, medium soft	mudstone layers
402.0	122.61	mudstone, dark red, medium soft	green interbed layers, volcanics
449.0	136.95	mudstone, dark red, medium soft	volcanics

Hole: T94R34 Project: Montgomery Drilling 1994
Site: 9 Date Finished: 09/08/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
19.0	5.80	till	
158.0	48.19	sandstone (fine), dark gray, soft	
166.0	50.63	mudstone, dark gray, soft	
201.0	61.31	sandstone (fine), dark gray, soft	
205.0	62.53	sandstone (medium), light green, medium soft	
223.0	68.02	sandstone (fine), dark gray, soft	
228.0	69.54	COAL (clean), black, soft	
242.0	73.81	sandstone (fine), dark gray, medium soft	
263.0	80.22	COAL (clean), black, soft	mudstone break 74m?
289.0	88.15	sandstone (fine), gray, medium soft	
300.0	91.50	siltstone, light gray, soft	carby and coal layers
302.0	92.11	COAL (clean), black, soft	
333.0	101.57	mudstone, dark gray, soft	carby layers and coal layers through out
342.0	104.31	sandstone (fine), gray, medium soft	
343.0	104.62	sandstone (coarse), light gray, medium soft	coal?
408.0	124.44	mudstone, gray, soft	coal layers through out
420.0	128.10	sandstone (fine), gray, medium soft	carby mudstone 126m
459.0	140.00	mudstone, gray, soft	
467.0	142.44	sandstone (coarse), light gray, hard	mudstone layers
501.0	152.81	mudstone, dark gray, medium soft	carby layers
520.0	158.60	sandstone (coarse), gray, medium soft	
527.0	160.74	mudstone, gray, soft	

Hole: T94R35 Project: Montgomery Drilling 1994
Site: 11 Date Finished: 00/00/00 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
65.0	19.83	till	brown and green
90.0	27.45	till	reddish brown
108.0	32.94	till, green	
109.0	33.25	COAL (clean)	coal in till
118.0	35.99	till	very dense or soft shale
127.0	38.74	COAL (clean), medium soft	coal
137.0	41.79	mudstone, light gray	coal stringer at 129
147.5	44.99	COAL (clean), medium soft	good coal
155.0	47.28	sandy siltstone, light gray, medium soft	
160.0	48.80	sandstone (medium), hard	
189.0	57.65	, light gray, medium soft	s/ss, sf
192.0	58.56	COAL (clean)	coal-mudstone and carb stringers
195.0	59.48	COAL (clean)	
205.0	62.53	silty mudstone, light gray	
213.0	64.97	COAL (dirty)	carb shale and coal
248.0	75.64	silty mudstone	s.s. and siltstone interbedded
250.0	76.25	carby	
262.0	79.91	COAL	carb shale
274.0	83.57	sandstone (medium)	interbedded carb shale and mudstone
276.0	84.18	COAL (dirty)	carb shale and coal
296.0	90.28	silty mudstone	carb
298.0	90.89	sandstone (fine), hard	v.hard ss looked like water producing ss
310.0	94.55	silty mudstone	wh and gr mdsn interedded with ss
326.0	99.43	sandstone (coarse), brown, hard	very hard
380.0	115.90		red and multi coloured

Hole: T94R36 Project: Montgomery Drilling 1994
Site: 1 Date Finished: 09/13/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
59.0	18.00	till	
69.0	21.05	gravel	
141.0	43.01	sandstone (fine), dark gray, medium soft	
199.0	60.70	sandstone (coarse), gray, medium soft	
268.0	81.74	sandstone (fine), dark gray, medium soft	
270.0	82.35	mudstone, light gray, medium soft	sample?
272.0	82.96	mudstone, light gray, soft	very soft, bentinite?
283.0	86.32	sandstone (medium), dark gray, medium soft	
284.0	86.62	sandstone (fine), light brown, medium soft	shell fragments
302.0	92.11	sandstone (medium), dark gray, medium soft	
311.0	94.86	sandstone (coarse), dark green, hard	
385.0	117.43	sandstone (medium), dark gray, medium soft	109.2m pyrite 109.9m carby
387.0	118.04	sandstone (fine), light brown, medium soft	
433.0	132.07	sandstone (medium), dark gray, hard	
434.0	132.37	mudstone, light brown, medium soft	
484.0	147.62	sandstone (medium), dark gray, medium soft	
485.0	147.93	mudstone	carby and pyrite
498.0	151.89	COAL (clean), black, soft	
500.0	152.50	siltstone, light brown, medium soft	carby
503.0	153.42	mudstone, dark brown, soft	carby and pyrite
504.0	153.72	sandstone (fine), gray, medium soft	
528.0	161.04	mudstone, dark brown, soft	carby
537.0	163.79	COAL (dirty), black, soft	
542.0	165.31	mudstone, dark gray, medium soft	
545.0	166.23	COAL (clean), black, soft	
550.0	167.75	siltstone, gray, medium soft	
552.0	168.36	COAL (clean), black, soft	
564.0	172.02	mudstone, dark gray	coal layers
573.0	174.77	mudstone, dark gray	siltstone layers
598.0	182.39	siltstone, light gray, medium soft	
599.0	182.70	mudstone, light brown, medium soft	
612.0	186.66	mudstone, dark gray, soft	coal layers
615.0	187.58	sandstone (coarse), medium soft	conglomorate

620.0	189.10	sandstone (fine), dark gray, medium soft	
651.0	198.56	mudstone, dark brown	carby

Hole: T94R37 Project: Montgomery Drilling 1994
Site: 5 Date Finished: 00/00/00 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
155.0	47.28	till	rocks and some gravel
200.0	61.00	gravel	loose and cemented
235.0	71.68	- till, brown	- and rocks
290.0	88.45		volcanic below O/B to T.D.

Hole: T94R38 Project: Montgomery Drilling 1994
Site: 4 Date Finished: 09/18/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
86.0	26.23	till	gravel
91.0	27.76	mudstone, soft	unconsolidated
227.0	69.24	sandstone (medium), gray, medium soft	
246.0	75.03	sandstone (fine), dark gray, medium soft	carby layers and pyrite
247.0	75.33	siltstone, white, soft	very soft
297.0	90.58	sandstone (fine), dark gray, medium soft	
302.0	92.11	sandstone (medium), green, hard	
307.0	93.63	sandstone (medium), gray, hard	
311.0	94.86	siltstone, brown, medium soft	carby interbed
327.0	99.74	sandstone (fine), dark gray, hard	
330.0	100.65	mudstone, dark brown, soft	carby
353.0	107.67	sandstone (fine), gray, medium soft	coal? 100-103m
417.0	127.19	sandstone (medium), greenish gray, hard	
423.0	129.02	COAL (clean), black, soft	
433.0	132.07	mudstone, light gray, medium soft	calcium carbonate specks?
440.0	134.20	mudstone, dark gray, medium soft	calcium carbonate specks
452.0	137.86	conglomerate, medium soft	
454.0	138.47	sandstone (medium), gray, medium soft	carby mudstone layers
463.0	141.22	mudstone, brown, soft	
496.0	151.28	siltstone, gray, medium soft	
499.0	152.20	sandstone (coarse), hard	light red, green, white
503.0	153.42	conglomerate, medium soft	
513.0	156.47	siltstone, brown, medium soft	
532.0	162.26	sandstone (coarse), hard	light red, green, white
537.0	163.79	mudstone, brown, medium soft	
542.0	165.31	sandstone (medium), light gray, medium soft	
548.0	167.14	sandstone (coarse), brown, medium soft	carby
559.0	170.50	sandstone (fine), brown, hard	
567.0	172.94	sandstone (medium), dark brown, medium soft	
576.0	175.68	sandstone (coarse), dark gray, medium soft	white soft mdsn with metallic flakes
586.0	178.73	conglomerate, medium soft	dark re,gr,bl,gy;wh s mdsn with bk flakes
591.0	180.26	, green, medium soft	volcanics

Hole: T94R39 Project: Montgomery Drilling 1994
Site: Date Finished: 00/00/00 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
11.0	3.36	till	
18.0	5.49	sandstone (coarse), light gray	
35.0	10.68	- mudstone, light gray, medium soft	- sandstone (m), interbedded
67.0	20.44	sandstone (coarse), light gray	
79.0	24.10	sandstone (coarse), dark gray, medium soft	coaly
95.0	28.98	- mudstone, dark gray, medium soft	- small coal stringers
125.0	38.13	sandstone (medium), light gray	
194.5	59.32	sandstone (medium), dark gray, medium soft	coaly
199.0	60.70	- COAL (clean), black	-
218.0	66.49	mudstone, gray, medium soft	
220.0	67.10	mudstone, soft	
246.0	75.03	- mudstone, dark brown, medium soft	- carby, coal trace
251.0	76.55	COAL (clean), black, medium soft	
262.0	79.91	mudstone, gray, medium soft	
278.0	84.79	- sandstone (medium), dark gray, medium soft	- laced with hard brown siltstone bands
288.0	87.84	mudstone, light gray, medium soft	280 coal stringer?
306.0	93.33	mudstone, gray, medium soft	carb shale, coal-light grey,most
310.0	94.55	- mudstone, gray, medium soft	-
321.0	97.91	mudstone, light gray, medium soft	volcanics
337.0	102.79	mudstone, dark gray, medium soft	
361.0	110.11	- sandy siltstone, light brown, hard	-
369.0	112.55	sandstone (coarse)	brown, green, black, white
373.0	113.77	mudstone	grey, brown, black; carby
440.0	134.20	- sandy siltstone, light brown	-

Hole: T94R40 Project: Montgomery Drilling 1994
Site: 52 Date Finished: 00/00/00 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
28.0	8.54	till	gravel
48.0	14.64	conglomerate, medium soft	green, blue
52.0	15.86	mudstone, soft	carby
56.0	17.08	sandstone (coarse), light gray, medium soft	
79.0	24.10	conglomerate, hard	light red,yellow,green,blue,white,grey
80.0	24.40	sandstone (coarse), gray, medium soft	
83.0	25.32	mudstone, dark gray, soft	
87.0	26.54	sandstone (coarse), dark gray, medium soft	carby layers
104.0	31.72	siltstone, dark gray, soft	
107.0	32.64	mudstone, dark brown, soft	
110.0	33.55	mudstone, dark brown, soft	
131.0	39.96	siltstone, gray, medium soft	
138.0	42.09	sandstone (medium), gray, medium soft	
147.0	44.84	mudstone, dark gray, soft	
164.0	50.02	siltstone, brown, medium soft	
166.0	50.63	sandstone (coarse), gray, hard	blue and red specks
169.0	51.55	conglomerate, hard	dark green,grey,brown,black
173.0	52.77	mudstone, brown, medium soft	
176.0	53.68	siltstone, brown, medium soft	
185.0	56.43	mudstone, dark gray, medium soft	53.8m coal stringer
193.0	58.87	mudstone, light gray, soft	
196.0	59.78	siltstone, dark gray, medium soft	soft mudstone white and black, metallic
205.0	62.53	sandstone (coarse), dark gray, medium soft	soft mudstone white and black, metallic
227.0	69.24	mudstone, medium soft	dark red/brown
248.0	75.64	mudstone, dark violet, soft	
327.0	99.74	mudstone, black, soft	volcanics

Hole: T94R41 Project: Montgomery Drilling 1994
Site: Date Finished: 09/18/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
44.0	13.42	till	
68.0	20.74	mudstone, dark gray, soft	
125.0	38.13	sandstone (fine), light gray, medium soft	
130.0	39.65	sandstone (medium), dark gray, medium soft	
142.0	43.31	sandstone (medium), light green, medium soft	
151.0	46.06	sandstone (fine), dark brown, medium soft	
174.0	53.07	sandstone (fine), dark gray, medium soft	
175.0	53.38	COAL (clean), black, soft	
179.0	54.60	mudstone, dark gray, medium soft	
184.0	56.12	siltstone, dark gray, medium soft	
189.0	57.65	COAL (clean), black, soft	
194.0	59.17	mudstone, gray, soft	coal layers
205.0	62.53	siltstone, gray, medium soft	
216.0	65.88	sandstone (fine), gray, medium soft	62.3m coal layers
221.0	67.41	COAL (clean), black, soft	
230.0	70.15	sandstone (fine), dark gray, medium soft	coal layers 67.8-68.5m
233.0	71.07	siltstone, dark brown, medium soft	
241.0	73.51	sandstone (fine), dark gray, medium soft	coal stringers
247.0	75.33	COAL (clean), black, soft	
250.0	76.25	sandstone (medium), light brown, hard	
261.0	79.61	COAL (clean), soft	76.2-77.2m siltstone layers
272.0	82.96	mudstone, gray, medium soft	soft layers white mudstone
276.0	84.18	COAL (clean), black, soft	
285.0	86.93	mudstone, gray, soft	soft layers white mudstone
288.0	87.84	COAL (clean), black, soft	
297.0	90.58	mudstone, gray, soft	
298.0	90.89	sandstone (medium), greenish gray, hard	
305.0	93.02	sandstone (coarse), greenish gray, hard	
315.0	96.08	sandstone (coarse), hard	light green,white,grey,black
321.0	97.91	sandstone (fine), light gray, hard	
327.0	99.74	siltstone, dark gray, medium soft	
337.0	102.79	mudstone, dark gray, soft	coal layers
342.0	104.31	siltstone, gray, medium soft	

377.0 114.99 | sandstone (fine), light gray, medium soft |
447.0 136.34 | sandstone (medium), gray, medium soft |
454.0 138.47 - sandstone (coarse), light gray, medium soft -
487.0 148.54 | sandstone (medium), gray, medium soft |

Hole: T94R42 Project: Montgomery Drilling 1994
Site: Date Finished: 09/19/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
41.0	12.51	till	
72.0	21.96	sandstone (medium), gray, medium soft	
73.0	22.27	, white, soft	bentinite
149.0	45.45	sandstone (medium), gray, medium soft	
165.0	50.33	mudstone, dark gray, soft	carby
173.0	52.77	sandstone (fine), dark gray, medium soft	
176.0	53.68	COAL (clean), black, soft	carby mudstone and siltstone layers
183.0	55.82	mudstone, dark gray, soft	
194.0	59.17	mudstone, gray, soft	soft sandstone layers
205.0	62.53	sandstone (fine), light gray, soft	
273.0	83.27	sandstone (medium), dark gray, medium soft	
285.0	86.93	COAL (clean), black, soft	
291.0	88.76	sandstone (fine), gray, medium soft	siltstone layers
293.0	89.36	COAL (clean), black, soft	
296.0	90.28	sandstone (fine), dark gray, medium soft	
298.0	90.89	siltstone, light gray, soft	soft mudstone layers
303.0	92.41	mudstone, gray, soft	coal layers through out
306.0	93.33	COAL (clean), black, soft	
310.0	94.55	sandstone (fine), light gray, medium soft	
313.0	95.47	siltstone, light brown, medium soft	carby mudstone layers
316.0	96.38	mudstone, light gray, medium soft	
319.0	97.30	conglomerate, medium soft	red, green, grey, brown
327.0	99.74	siltstone, gray, medium soft	soft mudstone layers
329.0	100.35	conglomerate, hard	light green,blue,white,grey
350.0	106.75	siltstone, brown, medium soft	soft mudstone layers
355.0	108.28	conglomerate, hard	light red,green,brown
362.0	110.41	siltstone, brown, medium soft	
384.0	117.12	sandstone (medium), light brown, hard	
391.0	119.26	sandstone (coarse), hard	conglomerate-light red,green,white,grey
407.0	124.14	siltstone, light brown, hard	
411.0	125.36	mudstone, light brown, medium soft	
421.0	128.41	siltstone, light brown, medium soft	
426.0	129.93	sandstone (coarse), gray, hard	

430.0	131.15	mudstone, dark gray, medium soft	
432.0	131.76	sandstone (fine), gray, hard	
439.0	133.90	sandstone (coarse), gray, hard	
446.0	136.03	siltstone, dark gray, medium soft	
447.0	136.34	sandstone (fine), dark gray, medium soft	
454.0	138.47	sandstone (coarse), dark gray, hard	
462.0	140.91	sandstone (coarse), medium soft	cong.-light red,green,white,grey
467.0	142.44	mudstone, brown, medium soft	
474.0	144.57	mudstone, light gray, medium soft	
476.0	145.18	sandstone (coarse), green, medium soft	
491.0	149.76	conglomerate, medium soft	light re,gr,bl,wh; sasn (c) grey layers
507.0	154.64	mudstone, dark red, medium soft	volcanics; green flakes interbedded

Hole: T94R43 Project: Montgomery Drilling 1994
Site: Date Finished: (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
25.0	7.63	till	rocks and gravel
105.0	32.03	interbedded siltstone & sandstone (med), dark gray	
115.0	35.08	sandy siltstone, light gray	sandstone (fine)
119.0	36.30	carby	carb shale and coal stringers
155.0	47.28	interbedded siltstone & sandstone (med)	carb shale and coal at 119-124ft.
156.0	47.58	COAL (dirty)	
186.0	56.73	mudstone	and siltstone
190.0	57.95	COAL (clean)	carby shale and coal
272.0	82.96	mudstone, brown	siltstone-some ss stringers
275.0	83.88	COAL (clean)	carby shale and some clean coal
284.5	86.77	silty mudstone	siltstone and mudstone
293.0	89.36	COAL (clean), medium soft	clean coal with mudstone stringers
298.0	90.89	silty mudstone, blue	
299.0	91.19	COAL (clean)	carb
313.0	95.47	mudstone	
320.0	97.60	silty mudstone, blue	slsn and mdsn-coaly; carb sh. stringers

Hole: T94R44 Project: Montgomery Drilling 1994
Site: Date Finished: 09/20/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
17.0	5.19	till	
66.0	20.13	sandstone (fine), dark gray, medium soft	
68.0	20.74	mudstone, dark gray, medium soft	
96.0	29.28	siltstone, dark gray, medium soft	
167.0	50.94	sandstone (fine), dark gray, medium soft	45-47m mudstone layers
197.0	60.09	siltstone, dark gray, soft	
205.0	62.53	mudstone, dark gray, soft	
206.0	62.83	sandstone (medium), gray, medium soft	
208.0	63.44	siltstone, dark gray, soft	
215.0	65.58	COAL (clean), black, soft	carby mudstone 62.3-63.9m
224.0	68.32	mudstone, dark gray, soft	carby
268.0	81.74	sandstone (fine), dark gray, medium soft	
272.0	82.96	sandstone (medium), greenish gray, medium soft	
276.0	84.18	sandstone (fine), gray, medium soft	
303.0	92.41	sandstone (medium), gray, hard	
323.0	98.52	sandstone (coarse), gray, hard	
333.0	101.57	sandstone (medium), dark gray, hard	
447.0	136.34	sandstone (fine), light gray, hard	106.6m ca + pyrite;115-117m calcite fract
490.0	149.45	sandstone (medium), gray, medium soft	

Hole: T94R45 Project: Montgomery Drilling 1994
Site: Date Finished: 09/22/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
52.0	15.86	till	
85.0	25.93	sandstone (coarse), gray, medium soft	
213.0	64.97	sandstone (medium), dark gray, medium soft	
253.0	77.16	sandstone (coarse), greenish gray, medium soft	
271.0	82.66	sandstone (medium), gray, medium soft	carby shale 80.7m
283.0	86.32	sandstone (coarse), gray, soft	soft white and sandstone layers
289.0	88.15	sandstone (fine), gray, soft	82.9m coal layers
297.0	90.58	sandstone (coarse), greenish gray, medium soft	
403.0	122.92	sandstone (medium), gray, medium soft	
418.0	127.49	COAL (clean), black, soft	siltstone carby layers
422.0	128.71	siltstone, dark brown, soft	carby layers, 126.2 pyrite
452.0	137.86	mudstone, dark gray, soft	coal layers
454.0	138.47	sandstone (medium), gray, medium soft	sandstone (fine) interbedded
455.0	138.78	sandstone (coarse), gray, medium soft	
460.0	140.30	conglomerate, medium soft	red,green,blue,white,grey; coarse sasn
463.0	141.22	mudstone, dark gray, soft	carvy
464.0	141.52	COAL (clean), black, soft	
467.0	142.44	sandstone (medium), gray, medium soft	
487.0	148.54	siltstone, gray, medium soft	carby; coal layers
492.0	150.06	mudstone, light gray, medium soft	
501.0	152.81	sandstone (fine), dark gray, medium soft	sandstone (c) interbedded
509.0	155.25	sandstone (fine), light gray, medium soft	
527.0	160.74	sandstone (coarse), gray, hard	

Hole: T94R47 Project: Montgomery Drilling 1994
Site: Date Finished: 09/25/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
38.0	11.59	till	
80.0	24.40	sand, brown	
84.0	25.62	- gravel	-
144.0	43.92	mudstone, dark red, medium soft	

Hole: T94R48 Project: Montgomery Drilling 1994
Site: Date Finished: 09/25/95 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
41.0	12.51	till	
52.0	15.86	gravel	
75.0	22.88	mudstone, red, medium soft	?vol
80.0	24.40	conglomerate, medium soft	light red,yellow,green,blue,violet,white
90.0	27.45	mudstone, dark red, medium soft	volcanics
91.0	27.76	sandstone (coarse), light gray, hard	
95.0	28.98	conglomerate, hard	
96.0	29.28	sandstone (medium), light gray, medium soft	
100.0	30.50	sandstone (coarse), light gray, medium soft	conglomerate
119.0	36.30	conglomerate, medium soft	light red,green,blue,white,grey
132.0	40.26	conglomerate, hard	ye,gr,gy,br,bk; fracture 38.5m
133.0	40.57	sandstone (fine), dark gray, medium soft	
158.0	48.19	conglomerate, medium soft	re,gr,gy,br,bk
231.0	70.46	conglomerate, medium soft	dark re,vi,wh,gy; volcanic
264.0	80.52	siltstone, dark red, medium soft	

Hole: T94R49 Project: Montgomery Drilling 1994
Site: Date Finished: 09/25/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
41.0	12.51	till	
51.0	15.56	mudstone, dark violet, soft	volcanic
61.0	18.61	mudstone, dark red, medium soft	volcanic
66.0	20.13	mudstone, dark violet, soft	volcanic
72.0	21.96	mudstone, dark red, soft	volcanic
79.0	24.10	, light violet, soft	volcanic; very soft
167.0	50.94	, dark red, soft	volcanic
176.0	53.68	, dark brown, soft	volcanic
226.0	68.93	, dark violet, medium soft	volcanic; calcite fractures
237.0	72.29	, dark violet, medium soft	volcanic; white interbed
242.0	73.81	, medium soft	volcanic; pink
244.0	74.42	, white, medium soft	violet interbed

Hole: T94R50 Project: Montgomery Drilling 1994
Site: Date Finished: 09/26/95 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
3.0	0.92	till	
58.0	17.69	conglomerate, medium soft	light re,gr,bl,wh,gy,br,bk
60.0	18.30	, dark red, soft	volcanic
70.0	21.35	conglomerate, medium soft	re,ye,gr,wh,bk
74.0	22.57	, light green, soft	dark red interbedded; volcanic
83.0	25.32	, dark brown, soft	volcanic
87.0	26.54	, greenish gray, soft	colcanic
97.0	29.59	, dark red, medium soft	volcanic
100.0	30.50	sandstone (coarse), light gray, medium soft	about 3gpm water
101.0	30.81	sandstone (coarse), light red, medium soft	
105.0	32.03	sandstone (coarse), light gray, medium soft	
108.0	32.94	sandstone (medium), light gray, medium soft	
144.0	43.92	conglomerate, light gray, medium soft	
187.0	57.04	conglomerate, medium soft	re,gr,gy,br,bk; sandstone (c)
210.0	64.05	sandstone (coarse), hard	56m fracture, 50gpm water
221.0	67.41	, dark red, medium soft	volcanic

Hole: T94R51 Project: Montgomery Drilling 1994
Site: 42 Date Finished: 09/29/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
35.0	10.68	till	clay and rocks
59.0	18.00	, green, medium soft	volcanics below O/B.
157.0	47.89	- , dark red, medium soft	- water 29.8m 10gpm; volcanic
197.0	60.09	, dark brown, hard	reddish brown; volcanic
211.0	64.36	, hard	dark re.gr.br; volcanic; green specks
241.0	73.51	- , dark brown, hard	- volcanic

Hole: T94R52 Project: Montgomery Drilling 1994
Site: 46 Date Finished: 09/30/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
41.0	12.51	till	
90.0	27.45	conglomerate, hard	re,gr,vi,wh,gy,br,bk
93.0	28.37	sandstone (coarse), gray, hard	
94.0	28.67	sandstone (coarse), dark gray, hard	
109.0	33.25	conglomerate, hard	re,vi,wh,gy
113.0	34.47	sandstone (coarse), hard	iron colour
118.0	35.99	conglomerate, hard	re,ye,gr,vi,wh,gy,bk
120.0	36.60	sandstone (coarse), dark gray, medium soft	
123.0	37.52	sandstone (coarse), light gray, soft	
125.0	38.13	conglomerate, hard	re,vi,wh
129.0	39.35	sandstone (coarse), light gray, medium soft	
136.0	41.48	conglomerate, hard	re,vi,wh,gy,bk
138.0	42.09	sandstone (coarse), light gray, medium soft	
140.0	42.70	conglomerate	re,vi,wh,gy
152.0	46.36	sandstone (medium), dark gray, medium soft	
157.0	47.89	sandstone (coarse), light gray, medium soft	
160.0	48.80	siltstone, white, medium soft	volcanic
183.0	55.82	siltstone, red, medium soft	volcanic
190.0	57.95	siltstone, violet, medium soft	volcanic; 54.9m fracture, 10gpm water
195.0	59.48	siltstone, light red, medium soft	volcanic; 56m weathered and fractured
207.0	63.14	siltstone, medium soft	iron coloured on white siltstone
223.0	68.02	siltstone, violet, medium soft	volcanic; calcite fractures
267.0	81.44	siltstone, dark violet, medium soft	

Hole: T94R53 Project: Montgomery Drilling 1994
Site: Date Finished: (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
20.0	6.10	gravel	pea gravel and boulders
160.0	48.80	till, light gray, soft	with rocks- 2' volcanic;boulders at 105'
170.0	51.85	- gravel	- sand and pea gravel
370.0	112.85	till	very dense hard till and many boulders
445.0	135.73	till, gray, medium soft	silty-with coal chips and pebbles
475.0	144.88	-	- volcanocs -red and green

Hole: T94R54 Project: Montgomery Drilling 1994
Site: 36 Date Finished: 09/30/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
23.0	7.02	till	
52.0	15.86	gravel	
79.0	24.10	- till	-
81.0	24.71	, dark red, medium soft	vol?
152.0	46.36		clay and rocks
240.0	73.20	- gravel	-
317.0	96.69	, dark violet, medium soft	light brown layers 71.9-83.4m; volcanic

Hole: T94R55 Project: Montgomery Drilling 1994
Site: Date Finished: (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
178.0	54.29	till	
221.0	67.41	gravel	
264.0	80.52	- , dark brown, hard	- volcanics below gravels to T.D.

Hole: T94R56 Project: Montgomery Drilling 1994
Site: Date Finished: 10/03/94 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Don
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Don
N: 0.0 Geoph. Comp: Century Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
517.0	157.69	gravel	uncons. sa and gr to 155m

Hole: T93R-01 Project: TELKWA 1993
Site: 214 Date Finished: 09/06/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by:
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp:
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
6.0	1.83	till	
22.0	6.71	silty mudstone, light gray	
30.0	9.15	sandy siltstone	
35.0	10.68	silty mudstone, gray	S.S. stringer
67.0	20.44	sandy siltstone, gray	
70.0	21.35	COAL (clean)	
91.0	27.76	mudstone, gray	
99.0	30.20	COAL (clean), light gray	
140.0	42.70	sandy siltstone	

Hole: T93R-02 Project: TELKWA 1993
Site: 108 Date Finished: 09/02/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
7.0	2.14	carbonaeous mudstone, dark brown	
26.0	7.93	COAL (dirty)	33
33.0	10.07	silty mudstone, dark gray, medium soft	
44.0	13.42	sandstone (fine), light gray, hard	
50.0	15.25	sandstone (coarse), light gray, medium soft	
79.0	24.10	mudstone, black, soft	Coal stringers
89.0	27.15	silty mudstone, dark gray, soft	A lot of coal stringers
103.0	31.42	silty mudstone, dark gray	
114.0	34.77	sandstone (fine), light gray, hard	
128.0	39.04	silty mudstone, light gray, medium soft	
175.0	53.38	sandstone (coarse), light gray, medium soft	H2O 10 GPM
190.0	57.95	silty mudstone, dark gray, soft	
207.0	63.14	mudstone, light gray, hard	
225.0	68.63	sandstone (coarse), light gray, soft	H2O
247.0	75.33	mudstone, black, soft	
255.0	77.77	COAL (dirty)	
264.0	80.52	mudstone, dark gray	

Hole: T93R-03 Project: TELKWA 1993
Site: 110 Date Finished: 09/05/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: T. Mullen
Drill Contr: McAuley Drilling
Surveyed Location: Driller: T. Mullen
N: 0.0 Geoph. Comp: BPB Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
14.5	4.42	till, dark gray	Wet
22.0	6.71	mudstone, light gray, medium soft	Fract. @ 18' H2O
192.0	58.56	sandy siltstone, gray, medium soft	Thin mdsn bands @ 125'carbish-coal
216.5	66.03	mudstone, light gray, soft	
234.5	71.52	COAL (dirty), dark gray, soft	Mudstn
249.5	76.10	COAL (clean), black, medium soft	Few shale stringers
251.0	76.55	sandy siltstone, gray, medium soft	
253.0	77.16	COAL (clean), medium soft	clean/dirty coal. Trace bent.
254.0	77.47	mudstone, brown, medium soft	
259.5	79.15	COAL (clean), soft	Shale and coal
271.0	82.66	mudstone, light gray	
273.0	83.27	, medium soft	Clean/dirty coal; mudstn; shale and coal
282.0	86.01	sandy siltstone, gray, medium soft	
289.0	88.15	, medium soft	Clean/dirty coal; mudstn; shale and coal
294.0	89.67	sandy siltstone, light gray, medium soft	
299.0	91.19	, medium soft	Volanic - multi colored
330.0	100.65	sandy siltstone, light gray, medium soft	

Hole: N93R-04 Project: TELKWA 1993
Site: 103 Date Finished: 09/03/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB Geophysical
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
7.0	2.14	mudstone, light gray	
47.0	14.34	sandstone (coarse), dark gray, medium soft	H2O - 5 GPM
64.0	19.52	mudstone, dark gray, medium soft	
76.0	23.18	sandstone (coarse), light gray, soft	
83.0	25.32	mudstone, black, soft	
98.0	29.89	sandstone (coarse), light gray, soft	Somme diff. colors appearing; H20 10GPM
110.0	33.55	mudstone, dark gray, soft	
120.0	36.60	carbonaeous mudstone, soft	Coal stringers
190.0	57.95	mudstone, black, soft	
199.0	60.70	sandstone (coarse), light gray, soft	H20 25 GPM
226.0	68.93	mudstone, dark gray, soft	
237.0	72.29		Conglomerate? (volcanic)
246.0	75.03	mudstone, dark gray, soft	
303.0	92.41		Conglomerate (volcanic)

Hole: N93R-05 Project: TELKWA 1993
Site: 113 Date Finished: 09/03/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB Geophysical
E: 0.0
EL: 0.0 Logs: x gamma x sonic
x density x neutron
Casing: 0.0 x caliper x electric
Case Type: x verticality x dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
12.0	3.66		Clay/sand/gravel
37.0	11.29	mudstone, black, medium soft	
62.0	18.91	silty mudstone, dark gray, medium soft	
80.0	24.40	mudstone, black, hard	
84.0	25.62	sandstone (fine), light gray, hard	H2O - 5 GPM
110.0	33.55	mudstone, black, medium soft	
127.0	38.74	mudstone, light gray, medium soft	
130.0	39.65	COAL (dirty)	
135.0	41.18	mudstone, black, medium soft	
137.0	41.79	COAL (dirty)	
143.0	43.62	mudstone, black, medium soft	
153.0	46.67	carbonaeous mudstone, soft	Coal stringers
160.0	48.80	mudstone, black, medium soft	
180.0	54.90	mudstone, dark gray, hard	
193.0	58.87	mudstone, black, soft	
220.0	67.10	COAL (clean)	
224.0	68.32	mudstone, dark gray, medium soft	
233.0	71.07	sandstone (medium), light gray, hard	
247.0	75.33	mudstone, light gray, soft	
260.0	79.30	mudstone, dark gray, hard	
282.0	86.01	mudstone, dark gray, medium soft	
303.0	92.41	silty mudstone, light gray, hard	

Hole: T93R-06 Project: TELKWA 1993
Site: 112 Date Finished: 09/05/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB Geophysical
E: 0.0
EL: 0.0 Logs: x gamma x sonic
x density x neutron
Casing: 0.0 x caliper x electric
Case Type: x verticality x dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
4.0	1.22		Clay/sand/gravel
7.0	2.14	COAL (clean)	3'
16.0	4.88	mudstone, light gray	
18.0	5.49	carby, dark brown, soft	
33.0	10.07	mudstone, dark gray, soft	
36.0	10.98	COAL (dirty)	5'
42.0	12.81	mudstone, black, soft	
54.0	16.47	mudstone, light gray, soft	
69.0	21.05	mudstone, black, hard	
97.0	29.59	COAL (dirty)	28'
121.0	36.91	mudstone, dark gray, hard	
123.0	37.52	COAL (dirty)	2'
158.0	48.19	mudstone, dark gray, medium soft	
165.0	50.33	mudstone, light gray, hard	
168.0	51.24	silty mudstone, black, medium soft	
183.0	55.82	sandstone (fine), light gray, hard	Trace H2O

Hole: T93R-07 Project: TELKWA 1993
Site: 114 Date Finished: 09/05/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB Geophysical
E: 0.0
EL: 0.0 Logs: x gamma x sonic
x density x neutron
Casing: 0.0 x caliper x electric
Case Type: x verticality x dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
32.0	9.76		Clay/sand/gravel/till
74.0	22.57	till	Very colorful
107.0	32.64	mudstone, dark gray, soft	
118.0	35.99	silty mudstone, light gray, medium soft	
145.0	44.23	mudstone, gray, hard	
167.0	50.94	mudstone, black, hard	
205.0	62.53	mudstone, dark gray, medium soft	
213.0	64.97	mudstone, black, hard	
216.0	65.88	silty mudstone, gray, hard	
221.0	67.41	mudstone, black, hard	
267.0	81.44	mudstone, dark gray, soft	
277.0	84.49	mudstone, black, hard	
283.0	86.32	carbonaeous mudstone, gray, hard	Possibly coal stringers
303.0	92.41	silty mudstone, medium soft	
304.0	92.72	carbonaeous mudstone, dark brown	
317.0	96.69	silty mudstone, dark gray, hard	
326.0	99.43	mudstone, black, hard	
347.0	105.84	COAL (dirty)	21'
350.0	106.75	mudstone, black, medium soft	
362.0	110.41	mudstone, dark gray, medium soft	
371.0	113.16	carby	
377.0	114.99	COAL (dirty)	carby
409.0	124.75	mudstone, dark gray, hard	
411.0	125.36	sandstone (medium), light gray, hard	
420.0	128.10	mudstone, black, medium soft	

Hole: T93R-08 Project: TELKWA 1993
Site: Date Finished: 09/05/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by:
Drill Contr: McAuely Drilling
Surveyed Location: Driller:
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
6.0	1.83	till, dark gray, soft	
10.0	3.05	mudstone, dark gray, medium soft	
15.0	4.58	- COAL (dirty), black, medium soft	- Clean/dirty coal
29.0	8.85	sandy siltstone, gray, medium soft	
35.0	10.68	COAL (clean), black, medium soft	
37.0	11.29	- sandy siltstone, dark gray, medium soft	-
41.0	12.51	COAL (dirty), black, medium soft	Shaley
46.0	14.03	sandy siltstone, dark gray, medium soft	
50.0	15.25	- COAL (dirty), black, medium soft	- Shaley
53.0	16.17	sandy siltstone, dark gray, medium soft	
56.0	17.08	COAL (dirty), black, medium soft	Shaley coal
86.0	26.23	- sandy siltstone, dark gray, medium soft	-
89.0	27.15	COAL (dirty), black, medium soft	Shaley coal
121.0	36.91	sandstone (fine), light gray, medium soft	Few coarse ss bands
124.0	37.82	- COAL (dirty), black, medium soft	- Shale and coal
140.0	42.70	sandstone (fine), light gray, medium soft	

Hole: T93R-09 Project: TELKWA 1993
Site: 115 Date Finished: 09/05/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
4.0	1.22		Clay/sand/gravel
14.0	4.27	mudstone, dark brown, soft	
23.0	7.02	sandstone (fine), light gray	H2O trace
44.0	13.42	mudstone, light gray	
51.0	15.56	mudstone, light gray, soft	Very soft
69.0	21.05	silty mudstone, black, medium soft	
78.0	23.79	mudstone, black, hard	
87.0	26.54	silty mudstone, dark gray, medium soft	
116.0	35.38	mudstone, black, medium soft	
121.0	36.91	mudstone, light gray, soft	
139.0	42.40	mudstone, black, medium soft	
165.0	50.33	silty mudstone, light gray, hard	
196.0	59.78	mudstone, black, hard	
199.0	60.70	mudstone, dark gray, hard	
208.0	63.44	silty mudstone, dark gray, medium soft	
222.0	67.71	sandstone (fine), light gray, hard	
235.0	71.68	sandy siltstone, light gray, medium soft	
249.0	75.94	mudstone, black	
255.0	77.77	sandstone (fine), light gray, hard	
273.0	83.27	silt, gray, soft	
291.0	88.76	mudstone, black, medium soft	
302.0	92.11	silty mudstone, dark gray, medium soft	
309.0	94.25	mudstone, gray, hard	
349.0	106.45	sandstone (fine), hard	
366.0	111.63	silt, light gray, medium soft	
386.0	117.73	mudstone, light gray, soft	
415.0	126.58	mudstone, light gray, medium soft	Calcite deposit @ 397
418.0	127.49	COAL (dirty), soft	Clean/dirty coal
452.0	137.86	mudstone, black, soft	
460.0	140.30	sandstone (fine), light gray, soft	
464.0	141.52	silty mudstone, dark gray, medium soft	
483.0	147.32	sandstone (fine), light gray, hard	
486.0	148.23	mudstone, dark gray, medium soft	

517.0 157.69 | sandstone (fine), light gray, hard |
540.0 164.70 | mudstone, black, medium soft |
562.0 171.41 - sandstone (medium), dark gray -

Hole: T93R-10 Project: TELKWA 1993
Site: 115 Date Finished: 09/06/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by:
Drill Contr: McAuley Drilling
Surveyed Location: Driller:
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
11.0	3.36	till, dark brown	Few cobbles
62.0	18.91		Volcanic
84.0	25.62	sandy siltstone, light gray, medium soft	
86.5	26.38	, black	Clean/dirty coal
93.0	28.37	sandy siltstone, light gray, medium soft	
102.5	31.26	COAL (clean), black, medium soft	
107.0	32.64	mudstone, light gray, medium soft	
119.0	36.30	COAL (clean), black, soft	
175.0	53.38	mudstone, dark brown, medium soft	Shale/siltstone interbedded
200.0	61.00		Volcanic

Hole: T93R-11 Project: TELKWA 1993
Site: Date Finished: 09/07/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Mullen
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Mullen
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
53.0	16.17	till	Some boulders - gravel bands
56.0	17.08		Carb shale and coal?
70.0	21.35	sandy siltstone, dark gray, medium soft	
82.0	25.01	COAL (clean), black, medium soft	
136.0	41.48	sandy siltstone, dark gray, medium soft	
154.5	47.12	COAL (clean), black, medium soft	
157.5	48.04	mudstone, dark gray, medium soft	Carb shale
159.0	48.50	COAL, black, soft	Coal clean/dirty
164.0	50.02	sandy siltstone, dark gray, medium soft	
167.0	50.94	COAL, black, medium soft	Coal clean/dirty
169.0	51.55	sandy siltstone, dark gray, medium soft	
171.0	52.16	COAL (clean), black, medium soft	
191.0	58.26	sandy siltstone, dark gray, medium soft	@ 187' 1.0' coal and carb shale
194.0	59.17	COAL, black	Coal clean/dirty
208.0	63.44	sandy siltstone, dark gray, medium soft	
210.0	64.05	COAL, black, soft	Coal clean/dirty
213.0	64.97	sandy siltstone, dark gray, medium soft	
215.0	65.58	COAL, black, soft	Coal clean/dirty
240.0	73.20	sandy siltstone, dark gray, medium soft	

Hole: T93R-12 Project: TELKWA 1993
Site: Date Finished: 09/07/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
51.0	15.56		Clay/gravel/till
79.0	24.10	mudstone, dark gray, soft	
96.0	29.28	silty mudstone, dark gray, soft	
107.0	32.64	mudstone, dark gray, soft	
118.0	35.99	silty mudstone, light gray, soft	
165.0	50.33	mudstone, black, medium soft	
195.0	59.48	mudstone, dark gray, soft	
201.0	61.31	mudstone, gray, medium soft	
215.0	65.58	mudstone, black, hard	
219.0	66.80	silt, black, hard	
223.0	68.02	COAL (dirty)	
235.0	71.68	carbonaeous mudstone	
241.0	73.51	mudstone, dark gray, hard	
245.0	74.72	silty mudstone, light gray	
250.0	76.25	COAL (dirty)	
255.0	77.77	mudstone, dark gray, medium soft	
264.0	80.52	COAL (dirty)	
294.0	89.67	mudstone, dark gray, hard	
300.0	91.50	sandstone (fine), light gray, hard	
303.0	92.41	mudstone, black, hard	
323.0	98.52	silty mudstone, black, soft	
348.0	106.14	COAL (dirty)	
380.0	115.90	mudstone, brown, soft	
383.0	116.82	carbonaeous mudstone	
393.0	119.87	mudstone, black, soft	
403.0	122.92		Carb - coal?
407.0	124.14	mudstone, black, medium soft	
423.0	129.02	mudstone, dark gray, soft	

Hole: T93R-13 Project: TELKWA 1993
Site: Date Finished: 09/07/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
78.0	23.79		Clay/sand/gravel/till
92.0	28.06	mudstone, dark gray, soft	
120.0	36.60	- silty mudstone, light gray, soft	-
130.0	39.65	carbonaeous mudstone, soft	Coal stringers
178.0	54.29	mudstone, dark gray, soft	
183.0	55.82	- carbonaeous mudstone, soft	- Coal stringers
194.0	59.17	mudstone	
197.0	60.09	silty mudstone, dark gray, medium soft	
210.0	64.05	- mudstone, light gray, soft	- Volcanic
213.0	64.97	silty mudstone, soft	Volcanic - trace H2O
233.0	71.07	silty mudstone, light gray, medium soft	
239.0	72.90	- silty mudstone, light gray, soft	-
257.0	78.39	silt, dark red, soft	
265.0	80.83	silty mudstone, dark gray, soft	
292.0	89.06	- silty mudstone, dark red, soft	-
312.0	95.16	silty mudstone, dark red, medium soft	
422.0	128.71	silty mudstone, dark green, hard	Some red. Some calcite
462.0	140.91	- , dark green, soft	-

Hole: T93R-14 Project: TELKWA 1993
Site: Date Finished: 09/07/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Mullen
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Mullen
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
12.0	3.66	till, red, soft	Clay/till
44.0	13.42	, medium soft	Volcanics
130.0	39.65	- mudstone, gray, medium soft	- @ 55' Fractured to 60'
163.0	49.72	sandstone (medium), gray, medium soft	Carb traces - H20 @ 140'
178.0	54.29	, medium soft	Volcanics - multi colored
190.0	57.95	- mudstone, light gray, medium soft	- Shaley bands
235.0	71.68	, medium soft	Volcanics - multi-colored
262.0	79.91	mudstone, gray, medium soft	Shaley bands
277.0	84.49	- sandy siltstone, dark gray	-
295.0	89.97	sandstone (fine), dark gray, hard	
300.0	91.50	sandstone (medium), dark gray	Multi-colored pebbles/shale/mudstone
360.0	109.80	- sandstone (medium), dark gray, hard	-

Hole: T93R-15 Project: TELKWA 1993
Site: Date Finished: 09/07/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
140.0	42.70		Clay/sand/gravel/till
140.1	42.73		Hole stays open reasonably well.

Hole: T93R-16 Project: TELKWA 1993
Site: Date Finished: 09/07/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
120.0	36.60		Clay/sand/gravel/till

Hole: T93R-17 Project: TELKWA 1993
Site: Date Finished: 09/07/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
13.0	3.97		Clay/gravel
47.0	14.34	silty mudstone, dark gray, soft	
72.0	21.96	mudstone, dark gray, soft	
81.0	24.71	silty mudstone, light gray, medium soft	
86.0	26.23	mudstone, black, hard	
90.0	27.45	sandstone (fine), light green, hard	H2O - 35 GPM
104.0	31.72	mudstone, black, medium soft	
144.0	43.92	mudstone, black, soft	
158.0	48.19	silty mudstone, black, medium soft	
161.0	49.11	silt, light gray, hard	
169.0	51.55	mudstone, black, hard	
184.0	56.12	silt, light gray, medium soft	
209.0	63.75	sandstone (fine), dark gray, soft	
226.0	68.93	silty mudstone, dark gray, soft	
249.0	75.94	mudstone, black, soft	
254.0	77.47	sandstone (fine), light green, hard	Fractured @ 272 - H2O - 20 GPM
256.0	78.08	mudstone, black, soft	
262.0	79.91	COAL (dirty)	6'
271.0	82.66	carbonaeous mudstone, soft	
282.0	86.01	COAL (clean)	11'
286.0	87.23	mudstone, black, medium soft	
302.0	92.11	COAL (dirty)	Stringers of white, black and grey mdsn
326.0	99.43	mudstone, black, medium soft	
332.0	101.26	silty mudstone, dark gray, medium soft	
342.0	104.31	COAL (dirty)	Carby stringers
344.0	104.92	mudstone, black	
350.0	106.75	carby, dark gray	Coal stringers
406.0	123.83	sandstone (fine), dark gray, medium soft	
423.0	129.02	sandstone (fine), dark gray, medium soft	

Hole: T93R-18 Project: TELKWA 1993
Site: Date Finished: 09/07/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
80.0	24.40		Clay/gravel/till
88.0	26.84	COAL (clean)	8'
94.0	28.67	carbonaeous mudstone	
133.0	40.57	mudstone, dark gray	
152.0	46.36	sandstone (medium), dark gray, hard	
189.0	57.65	silty mudstone, black, medium soft	
197.0	60.09	silty mudstone, black, medium soft	
200.0	61.00	mudstone, light gray, medium soft	
205.0	62.53	sandstone (coarse), light gray, hard	
218.0	66.49	mudstone, black, hard	
230.0	70.15	sandstone (fine), light gray, hard	
234.0	71.37	sandstone (fine), dark gray, hard	
239.0	72.90	mudstone, dark gray, medium soft	
251.0	76.55	silty mudstone, black, medium soft	
256.0	78.08	sandstone (fine), light green, hard	
272.0	82.96	silty mudstone, light gray, soft	Carb or coal @ 259'
285.0	86.93	mudstone	Coal stringers - Frac @ 280 - 10 GPM
295.0	89.97	mudstone, light gray, hard	Traces of limestone
336.0	102.48		
358.0	109.19	, green	Volcanic
362.0	110.41	mudstone, gray, soft	
419.0	127.80		Volcanic - multi-colored
432.0	131.76	mudstone, soft	Coal stringers - multi-colored
441.0	134.51	carbonaeous mudstone, gray, soft	
476.0	145.18	mudstone, soft	Limestone
511.0	155.86	, dark red, soft	Volcanic
524.0	159.82	mudstone, dark gray, soft	
533.0	162.57	, dark red, soft	Volcanic
544.0	165.92	mudstone, gray, soft	
603.0	183.92		Volcanic - multi-colored

Hole: T93R-19 Project: TELKWA 1993
Site: 111 Date Finished: 09/07/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
29.0	8.85		Clay/sand
34.0	10.37	sandstone (coarse), hard	Gravel/till - limestone?
125.0	38.13	, hard	Very conglomerate
128.0	39.04	, soft	Volcanic
133.0	40.57	sandstone (coarse), hard	Limestone?
197.0	60.09	sandstone (coarse), black, medium soft	H20 - 4 GPM - coming back red
247.0	75.33	mudstone, black, hard	Volcanic
271.0	82.66	mudstone, dark red, soft	Volcanic
294.0	89.67	sandy siltstone, black, hard	H20 - 15 GPM Volcanic
341.0	104.01	silty mudstone, dark red, medium soft	Volcanic
343.0	104.62	silty mudstone, dark red, soft	Fractured 20 GPM - Volcanic
400.0	122.00	, black, medium soft	Volcanic

Hole: T93R-20 Project: TELKWA 1993
Site: Date Finished: 09/15/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Mullen
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Mullen
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
152.0	46.36	, soft	Clay/grav/till - too much gravel

Hole: T93R-21 Project: TELKWA 1993
Site: Date Finished: 09/15/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
9.0	2.75		Clay/sand
21.0	6.41	mudstone, black, soft	
43.0	13.12	silt, black, medium soft	
64.0	19.52	sandstone (fine), black, hard	
76.0	23.18	sandstone (fine), dark gray, medium soft	
111.0	33.86	silty mudstone, dark gray, hard	
145.0	44.23	mudstone, black, medium soft	Carby stringer @ 127
163.0	49.72	silty mudstone, black, hard	
169.0	51.55	mudstone, dark brown, medium soft	
184.0	56.12	sandstone (fine), dark brown, soft	
189.0	57.65	sandstone (fine), light green, soft	
191.0	58.26	mudstone, light gray, medium soft	Possibly a coal stringer @ 190
194.0	59.17	COAL (dirty)	3'
203.0	61.92	mudstone, black, medium soft	
209.0	63.75	sandstone (fine), light green, hard	
212.0	64.66	mudstone, dark gray, soft	
216.0	65.88	COAL (dirty)	
222.0	67.71	carbonaeous mudstone, dark gray, soft	Coal stringers
233.0	71.07	COAL (dirty)	11'
266.0	81.13	mudstone, dark gray, medium soft	Carby stringers
271.0	82.66	sandstone (fine), light green, hard	
278.0	84.79	carbonaeous mudstone	
282.0	86.01	COAL (dirty)	
301.0	91.80	silty mudstone, dark gray, hard	
320.0	97.60	carbonaeous mudstone, black	Coal stringers
359.0	109.50	COAL (clean)	39'
370.0	112.85	carbonaeous mudstone, soft	
383.0	116.82	mudstone, dark gray, soft	
390.0	118.95	COAL (dirty)	7'
393.0	119.87	carbonaeous mudstone, dark brown, soft	
397.0	121.09	carbonaeous mudstone, dark brown, soft	With coal stringers
418.0	127.49	mudstone, dark gray, soft	
426.0	129.93	COAL (dirty)	8'

430.0	131.15	carbonaeous mudstone, dark brown, soft	With coal stringers
435.0	132.68	mudstone, black, medium soft	
462.0	140.91	silt, dark gray, medium soft	

Hole: T93R-22 Project: TELKWA 1993
Site: Date Finished: 09/16/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Mullen
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Mullen
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
53.0	16.17	, soft	Clay/sand/gravel/till
295.0	89.97	mudstone, gray, medium soft	Few mudstone bands
307.0	93.63	sandstone (medium), green	
311.0	94.86	COAL, black, medium soft	Clean/dirty
330.0	100.65	mudstone, light gray, medium soft	@ 316' - 0.5 coal - carb. shale
359.0	109.50	sandstone (medium), brown, medium soft	
369.0	112.55	COAL (clean), black, medium soft	
375.0	114.38	sandy siltstone, gray, medium soft	
377.0	114.99	COAL (clean), black, medium soft	
403.0	122.92	mudstone, brown, soft	
415.0	126.58	sandstone (medium), brown, medium soft	
416.0	126.88	COAL (dirty), black	Coal and carb shale
466.0	142.13	mudstone, green, medium soft	
496.0	151.28	COAL (clean), black, medium soft	@ 470' - 0.5' br. shale - few shale bands
498.0	151.89	sandy siltstone, light gray, medium soft	
503.0	153.42	COAL (clean), black, medium soft	
506.0	154.33	sandy siltstone, light brown, medium soft	
516.0	157.38	mudstone, brown, medium soft	
527.0	160.74	COAL, black, medium soft	Clean/dirty
555.0	169.28	mudstone, brown, medium soft	@ 540' - 1.3 coal and carb shale
563.0	171.72	COAL (clean), black, soft	
569.0	173.55	sandstone (medium), gray, medium soft	
580.0	176.90	sandstone (fine), light gray, medium soft	

Hole: T93R-23 Project: TELKWA 1993
Site: Date Finished: 09/16/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
111.0	33.86		Clay/sand/gravel
142.0	43.31	mudstone, dark gray, soft	
165.0	50.33	sandstone (fine), light green, soft	
198.0	60.39	mudstone, light gray, soft	
220.0	67.10	sandstone (medium), light green, soft	
224.0	68.32	sandy siltstone, dark gray, medium soft	
250.0	76.25	sandstone (fine), light green, soft	
257.0	78.39	silty mudstone, soft	Carby stringers - mixed brown/grey
307.0	93.63	sandstone (fine), light green, soft	
316.0	96.38	silty mudstone, dark gray, medium soft	
323.0	98.52	sandstone (fine), light green, soft	
359.0	109.50	silty mudstone, gray, soft	Carby stringers
362.0	110.41	mudstone, dark gray, soft	
381.0	116.21	silty mudstone, light gray, soft	
397.0	121.09	carbonaeous mudstone, soft	Coal stringers @ 381
411.0	125.36	carbonaeous mudstone	
423.0	129.02	COAL (dirty)	
440.0	134.20	carbonaeous mudstone	With coal stringers
455.0	138.78	carbonaeous mudstone	Mixed with dirty coal
471.0	143.66	mudstone, soft	
486.0	148.23	silty mudstone, black, medium soft	
522.0	159.21	silty mudstone, gray, hard	
542.0	165.31	silt, light gray, hard	

Hole: T93R-25 Project: TELKWA 1993
Site: 21 Date Finished: 09/18/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: D.R.
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Mullen
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 42.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
23.0	7.02		Clay/sand/gravel/till
243.0	74.11	mudstone, brown, medium soft	
257.0	78.39	sandstone (medium), gray, medium soft	
371.0	113.16	mudstone, gray, medium soft	
381.0	116.21	COAL (clean), black, medium soft	
396.0	120.78	sandy siltstone, gray, medium soft	
398.0	121.39	COAL (clean), black, medium soft	
610.0	186.05	sandstone (fine), light green, medium soft	

Hole: T93R-26 Project: TELKWA 1993
Site: Date Finished: 09/16/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
103.0	31.42		Clay/gravel/till
108.0	32.94	COAL (dirty)	5'
120.0	36.60	- mudstone, dark gray, medium soft	-
122.0	37.21	COAL (dirty)	2'
131.0	39.96	mudstone, light gray, soft	
136.0	41.48	- silty mudstone, dark gray, soft	- Coal stringer @ 130'
140.0	42.70	sandstone (fine), dark gray, hard	
147.0	44.84	silty mudstone, black, medium soft	
160.0	48.80	- mudstone, dark gray, hard	-
184.0	56.12	silty mudstone, dark gray, medium soft	
189.0	57.65	sandstone (fine), dark gray, hard	
196.0	59.78	- sandstone (medium), light green	-
219.0	66.80	sandstone (fine), light green, hard	
236.0	71.98	silty mudstone, light gray, medium soft	
249.0	75.94	- mudstone, dark gray, medium soft	-
261.0	79.61	silty mudstone, dark gray, medium soft	
282.0	86.01	sandstone (fine), light gray, hard	

Hole: T93R-28 Project: TELKWA 1993
Site: 22 Date Finished: 09/16/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 60.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
43.0	13.12		Clay/gravel
55.0	16.78	mudstone, dark gray, soft	
57.0	17.39	carbonaeous mudstone	
72.0	21.96	mudstone, black, soft	
110.0	33.55	mudstone, dark gray, soft	
117.0	35.69	COAL (dirty)	Possible carby layer w/coal stringer
133.0	40.57	mudstone, dark gray, soft	
141.0	43.01	mudstone, dark brown, medium soft	
158.0	48.19	mudstone, black, soft	
164.0	50.02	mudstone, light gray, soft	
180.0	54.90	mudstone, black, soft	
211.0	64.36	COAL (dirty)	31'
217.0	66.19	silty mudstone, dark gray, medium soft	
224.0	68.32	COAL (dirty)	7'
235.0	71.68	mudstone, light gray, soft	
247.0	75.33	sandstone (fine), black, hard	
252.0	76.86	COAL (dirty)	Carby and coal stringers mixed
274.0	83.57	silty mudstone, dark gray, soft	
296.0	90.28	silt, dark gray, medium soft	
319.0	97.30	sandstone (fine), light green, hard	
325.0	99.13	silty mudstone, black, medium soft	
340.0	103.70	sandstone (fine), light green, hard	Twisted off
392.0	119.56	silt, black, soft	
431.0	131.46	silt, black, medium soft	
453.0	138.17	silt, dark gray, soft	
482.0	147.01	sandstone (fine), light green, hard	

Hole: T93R-29 Project: TELKWA 1993
Site: 18 Date Finished: 09/21/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: T.R.
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Mullen
N: 6058971.0 Geoph. Comp: BPB Wireline
E: 617173.0
EL: 849.7 Logs: x gamma sonic
x density neutron
Casing: 42.7 Meters x caliper electric
Case Type: x verticality dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
127.0	38.74	till, light gray, soft	Clay/sand/gravel/till (l,d/br/gr/wh)
235.0	71.68	sandstone (medium), light gray, medium soft	
286.0	87.23	silty mudstone, light gray, medium soft	
292.0	89.06	COAL (clean), black, medium soft	
296.0	90.28	COAL (dirty), dark gray, soft	Calcite/pyrite
298.0	90.89	sandy siltstone, light gray, medium soft	
307.0	93.63	carbonaceous mudstone, dark brown, soft	Carb br/blk shales - coal traces
319.0	97.30	silty mudstone, dark gray, medium soft	Calcite - light grey mudstone bands
336.0	102.48	silty mudstone, dark brown, soft	Carb & br. shale - coal bands
344.0	104.92	silty mudstone, light gray, medium soft	
346.0	105.53	COAL (clean), black, medium soft	
363.0	110.72	COAL (dirty), black, medium soft	Coal and shale interbedded
368.0	112.24	COAL (clean), black, medium soft	
389.0	118.65	silty mudstone, light brown, soft	
392.0	119.56	COAL (clean), black, medium soft	
398.0	121.39	sandy siltstone, light gray, medium soft	
402.0	122.61	COAL (clean), black, medium soft	
415.0	126.58	sandy siltstone, light gray, medium soft	
440.0	134.20	silty mudstone, light green, medium soft	

Hole: T93R-30 Project: TELKWA 1993
Site: 17 Date Finished: 09/23/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Mullen
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Mullen
N: 6059572.0 Geoph. Comp: BPB Wireline
E: 616781.0
EL: 902.2 Logs: x gamma sonic
x density neutron
Casing: 24.4 Meters x caliper electric
Case Type: x verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
20.0	6.10	till, brown	Cobbles
29.0	8.85	till	(Sand/gravel/till) 22' H20
63.0	19.22	till	
100.0	30.50	sandy siltstone, light gray, soft	
294.0	89.67	sandstone (medium), light gray	120' H20
298.0	90.89	COAL (clean), black, soft	
304.0	92.72	carbonaeous mudstone, dark gray, medium soft	
307.0	93.63	COAL (clean), black, soft	
309.0	94.25	carbonaeous mudstone, light gray, medium soft	
311.0	94.86	COAL (clean), black, soft	
314.0	95.77	silty mudstone, light gray, medium soft	
317.0	96.69	COAL (dirty), black, soft	Carb, shale - coal
318.0	96.99	silty mudstone, light gray, medium soft	
320.0	97.60	COAL (clean), black, medium soft	
329.0	100.35	silty mudstone, light gray, medium soft	
337.0	102.79	COAL (clean), black, medium soft	
339.0	103.40	sandy siltstone, dark gray, medium soft	
349.0	106.45	COAL (clean), black, medium soft	
369.0	112.55	silty mudstone, gray	
373.0	113.77	COAL (dirty), black, medium soft	Clean/dirty coal
383.0	116.82	COAL (dirty)	Interbedded coal/shale
387.0	118.04	COAL (clean), black, medium soft	
395.0	120.48	sandy siltstone, light gray, medium soft	
398.0	121.39	COAL (clean), black, medium soft	Interbedded
419.0	127.80	sandstone (fine), brown, medium soft	
424.0	129.32	COAL (clean), black, medium soft	
440.0	134.20	sandstone (medium), gray, medium soft	

Hole: T93R-32 Project: TELKWA 1993
Site: Date Finished: 09/16/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
6.0	1.83	clay	
44.0	13.42	mudstone, dark gray, soft	
76.0	23.18	mudstone, black, medium soft	
81.0	24.71	mudstone, dark gray, medium soft	
93.0	28.37	sandstone (fine), light green, medium soft	
97.0	29.59	COAL (dirty), soft	Carb mudstone
103.0	31.42	mudstone, light gray, soft	
112.0	34.16	mudstone, black, soft	
116.0	35.38	COAL (clean)	
129.0	39.35	mudstone, light gray, soft	
137.0	41.79	COAL (dirty)	Carby
144.0	43.92	silty mudstone, light gray, soft	H20 2 GPM
156.0	47.58	mudstone, light brown, soft	
174.0	53.07	silty mudstone, light gray, soft	
181.0	55.21	mudstone, black, medium soft	
185.0	56.43	mudstone, black, medium soft	
190.0	57.95	sandstone (fine), light green, medium soft	
195.0	59.48	mudstone, black, soft	
200.0	61.00	carbonaeous mudstone	Coal stringer
212.0	64.66	mudstone, black, medium soft	
218.0	66.49	COAL (dirty)	
220.0	67.10	mudstone, light gray, medium soft	
224.0	68.32	COAL (dirty)	
227.0	69.24	mudstone, dark gray, soft	
248.0	75.64	mudstone, black, soft	
255.0	77.77	mudstone, black, hard	
259.0	79.00	sandstone (fine), light green, medium soft	
262.0	79.91	mudstone, black, soft	
276.0	84.18	COAL (dirty)	
282.0	86.01	carbonaeous mudstone	
300.0	91.50	mudstone, black, soft	
303.0	92.41	COAL (dirty)	
321.0	97.91	mudstone, black, hard	

327.0	99.74	sandstone (coarse), light gray, hard
338.0	103.09	COAL (dirty)
347.0	105.84	mudstone, black, hard
353.0	107.67	sandstone (fine), dark gray, medium soft
363.0	110.72	mudstone, black, hard

Hole: T93R-33 Project: TELKWA 1993
Site: 16 Date Finished: 09/25/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Mullen
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Mullen
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
8.0	2.44		Clay, Till, Cobbles
135.0	41.18	sandstone (fine), gray, medium soft	
280.0	85.40	- mudstone, light gray, medium soft	- Soft mudstone bands
500.0	152.50	mudstone, gray, medium soft	Soft mudstone bands

Hole: T93R-34 Project: TELKWA 1993
Site: 37 Date Finished: 09/25/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:

Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
121.0	36.91		Clay/gravel
136.0	41.48	silty mudstone, dark gray, soft	
143.0	43.62	mudstone, black, medium soft	
169.0	51.55	silty mudstone, black, soft	
181.0	55.21	mudstone, black, soft	
212.0	64.66	mudstone, black, hard	
222.0	67.71	carbonaeous mudstone	With coal stringers
236.0	71.98	COAL (dirty), hard	Carby stringers
240.0	73.20	carbonaeous mudstone	
256.0	78.08	mudstone, dark gray, hard	
263.0	80.22	silty mudstone, dark gray, hard	
274.0	83.57	sandy siltstone, dark gray, medium soft	
292.0	89.06	mudstone, dark brown, medium soft	
328.0	100.04	silty mudstone, dark brown, hard	
342.0	104.31	silty mudstone, dark brown, soft	
369.0	112.55	mudstone, dark gray, medium soft	
402.0	122.61	sandstone (coarse), gray, hard	
418.0	127.49	silty mudstone, dark gray, soft	
433.0	132.07	sandstone (coarse), dark gray, hard	
441.0	134.51	mudstone, black, hard	
457.0	139.39	sandstone (coarse), dark gray, hard	H2O 15 GPM
462.0	140.91	mudstone, black, soft	
512.0	156.16	carbonaeous mudstone, soft	w/Coal Stringers
522.0	159.21	, medium soft	Volcanic - very colorful
535.0	163.18	silty mudstone, dark gray, hard	
542.0	165.31	mudstone, green, soft	

Hole: T93R-35 Project: TELKWA 1993
Site: 24 Date Finished: 09/27/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Mullen
Drill Contr: McAuley Drilling
Surveyed Location: Driller: Mullen
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
80.0	24.40	, brown	Clay/till/cobbles
125.0	38.13		Clay/sand/gravel/till
168.0	51.24	- mudstone, gray, medium soft	- Possible coal @ 128' - 130'
170.0	51.85	COAL (clean), black, soft	
170.5	52.00	silty mudstone, gray, medium soft	
176.0	53.68	- COAL (clean), black, soft	-
184.0	56.12	silty mudstone, light gray, medium soft	
184.5	56.27	COAL (clean), black, soft	
279.5	85.25	- silty mudstone, gray, medium soft	-
312.5	95.31	COAL (clean), black, soft	@304' 1.0 carb shale
323.0	98.52	mudstone, gray, medium soft	
329.0	100.35	- COAL, black, medium soft	- Clean/dirty - Carb. shale and coal bands
331.0	100.96	mudstone, gray, medium soft	
344.0	104.92	sandstone (coarse), gray, hard	
348.0	106.14	- COAL, black	- Clean/dirty - carb. shale and coal bands
361.0	110.11	mudstone, gray, medium soft	

Hole: T93R-36 Project: TELKWA 1993
Site: 24 Date Finished: 09/27/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
15.0	4.58	clay	
22.0	6.71	mudstone, dark gray, soft	
23.0	7.02	COAL (dirty)	
31.0	9.46	carbonaeous mudstone	
33.0	10.07	COAL (dirty)	
35.0	10.68	carbonaeous mudstone	Coal stringers
59.0	18.00	mudstone, dark gray, soft	
65.0	19.83	carbonaeous mudstone	
77.0	23.49	COAL (dirty)	
82.0	25.01	sandstone (coarse), dark gray	
92.0	28.06	mudstone, black, soft	
95.0	28.98	COAL (dirty)	
100.0	30.50	silty mudstone, dark gray, medium soft	
102.0	31.11	carbonaeous mudstone	
112.0	34.16	COAL (dirty)	
117.0	35.69	mudstone, black, medium soft	
122.0	37.21	COAL (dirty)	
134.0	40.87	mudstone, black, soft	
140.0	42.70	sandstone (medium), dark gray, medium soft	Trace H2O
143.0	43.62	carbonaeous mudstone	w/Coal Stringers
169.0	51.55	mudstone, black, soft	
181.0	55.21	mudstone, dark gray, medium soft	
237.0	72.29	mudstone, black, hard	
241.0	73.51	carbonaeous mudstone	w/Coal Stringers
254.0	77.47	mudstone, light gray, hard	
270.0	82.35	carbonaeous mudstone	
274.0	83.57	silty mudstone, light gray, medium soft	
280.0	85.40	sandstone (coarse), dark gray, hard	
282.0	86.01	carbonaeous mudstone	
290.0	88.45	silt, light gray, medium soft	
295.0	89.97	sandstone (fine), light gray, medium soft	H2O - 5 GPM
307.0	93.63	sandstone (fine), light gray, soft	
318.0	96.99	silty mudstone, light gray, soft	

330.0	100.65	sandstone (coarse), soft	Green/white/red
342.0	104.31	silty mudstone, light gray, soft	
353.0	107.67	silty mudstone, brown, soft	
355.0	108.28	mudstone, light gray, soft	
358.0	109.19	silt, gray, soft	
370.0	112.85	sandstone (coarse), soft	Grey/black/white/red
395.0	120.48	mudstone, light gray, soft	
418.0	127.49	silt, dark gray, medium soft	
450.0	137.25	mudstone	Volcanic red

Hole: T93R-37 Project: TELKWA 1993
Site: Date Finished: 09/27/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 0.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
14.0	4.27		Clay/gravel
30.0	9.15	mudstone, light gray, soft	
31.0	9.46	COAL (dirty)	H2O well flowing @ 1 GPM
35.0	10.68	carbonaeous mudstone, dark brown, soft	Fractured
84.0	25.62	silty mudstone, dark gray, soft	
145.0	44.23	silty mudstone, dark gray, soft	
157.0	47.89	mudstone, black, medium soft	
179.0	54.60	sandstone (medium), light green, medium soft	
192.0	58.56	sandstone (medium), light green, hard	
203.0	61.92	mudstone, gray, hard	
217.0	66.19	mudstone, brown, hard	
223.0	68.02	sandstone (medium), light green, medium soft	
235.0	71.68	sandy siltstone, gray, medium soft	
255.0	77.77	sandstone (coarse), dark gray, medium soft	
269.0	82.05	sandstone (medium), dark gray, hard	
286.0	87.23	sandstone (medium), black, hard	
294.0	89.67	silty mudstone, black, hard	
303.0	92.41	sandstone (medium), light green, hard	
326.0	99.43	sandstone (medium), black, hard	
395.0	120.48	mudstone, black, hard	
403.0	122.92	sandstone (fine), light green, medium soft	
416.0	126.88	mudstone, black, medium soft	Fractured @ 411'
436.0	132.98	sandstone (medium), light gray, hard	
452.0	137.86	mudstone, black, medium soft	

Hole: T93R-39 Project: TELKWA 1993
Site: Date Finished: 09/27/93 (Month/Day/Year)

Torrens Location:
lsd sect twp rg w Lithology by: Rick
Drill Contr: Cora Lynn Drilling
Surveyed Location: Driller: Rick
N: 0.0 Geoph. Comp: BPB
E: 0.0
EL: 0.0 Logs: gamma sonic
density neutron
Casing: 29.0 caliper electric
Case Type: verticality dipmeter
Downhole Units: Feet
other:
Comments:

DEPTH (ft)	DEPTH (m)	DESCRIPTION	COMMENTS
29.0	8.85		Clay/sand/gravel
32.0	9.76	COAL (clean)	
37.0	11.29	carby	w/Coal Stringers
45.0	13.73	mudstone, dark gray, soft	
47.0	14.34	COAL (clean)	
50.0	15.25	carbonaeous mudstone	
59.0	18.00	sandstone (coarse), dark gray, soft	
63.0	19.22	carbonaeous mudstone	
65.0	19.83	COAL (clean)	
69.0	21.05	mudstone, light gray, soft	
73.0	22.27	carby, soft	w/Coal Stringers
84.0	25.62	mudstone, dark gray, soft	
99.0	30.20	silty mudstone, brown, medium soft	
104.0	31.72	carbonaeous mudstone	w/Coal Stringers
117.0	35.69		
119.0	36.30	COAL (dirty)	
130.0	39.65	mudstone, dark gray, soft	
136.0	41.48	carbonaeous mudstone, soft	w/Coal Stringers
145.0	44.23	mudstone, dark gray, soft	
163.0	49.72	mudstone, light gray, soft	155' Carby stringer
166.0	50.63	COAL (dirty)	
178.0	54.29	carbonaeous mudstone, soft	Coal stringers
180.0	54.90	mudstone, dark gray, soft	
201.0	61.31	carbonaeous mudstone, light brown, soft	Very soft
235.0	71.68	silty mudstone, dark gray, soft	
240.0	73.20	carbonaeous mudstone	Coal stringers
336.0	102.48	mudstone, light red, soft	Volcanic
362.0	110.41	mudstone, light red, hard	Volcanic

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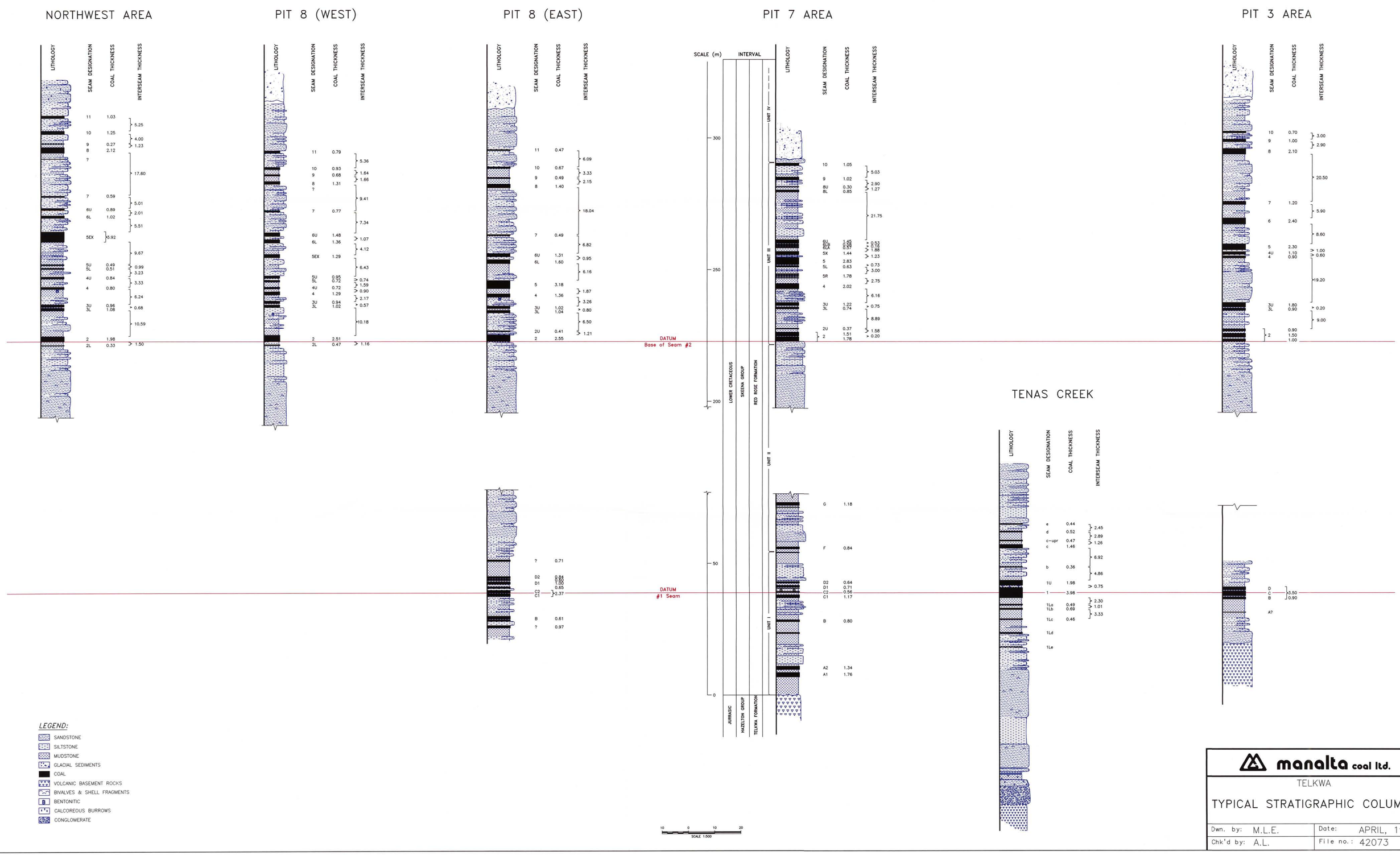

LEGEND:

- SANDSTONE
- SILTSTONE
- MUDSTONE
- GLACIAL SEDIMENTS
- COAL
- VOLCANIC BASEMENT ROCKS
- BIVALVES & SHELL FRAGMENTS
- B BENTONITIC
- CALCOREOUS BURROWS
- CONGLOMERATE

manalta coal ltd.

TELKWA

TYPICAL STRATIGRAPHIC COLUMNS

Dwn. by: M.L.E.	Date: APRIL, 1995
Chk'd by: A.L.	File no.: 42073

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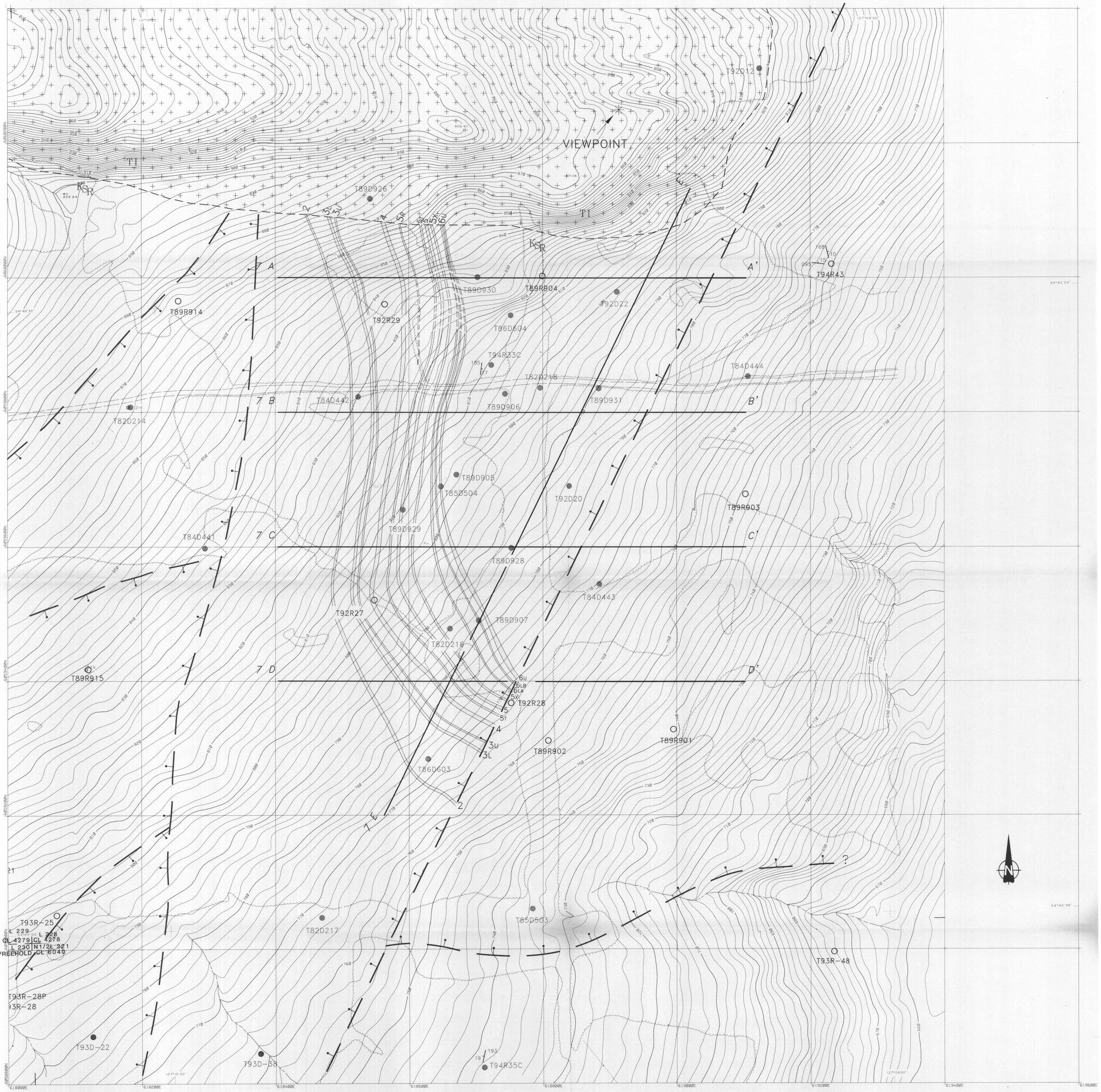

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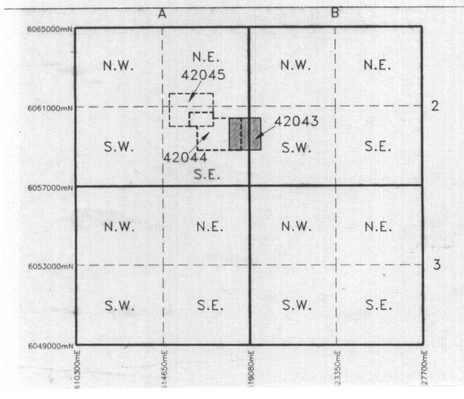

SCALE

0 50 100 m

LEGEND:

- GEOLOGICAL CONTACT (APPROXIMATE)
- NORMAL FAULT (TEETH ON DOWNTHROWN SIDE)
- THRUST FAULT (TEETH ON UPTHROWN SIDE)
- TI — TERTIARY INTRUSIVE (GRANODIORITE)
- K_{SR} — SKEENA GROUP (CRETACEOUS) RED ROSE FORMATION –SANDSTONE, SILTSTONE, MUDSTONE & COAL
- SEAM SUBCROP POSITION: APPROXIMATE
- SEAM SUBCROP POSITION: PRESUMED
- CORED DRILL HOLE
- ROTARY DRILL HOLE
- 7 A A' — CROSS SECTION

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TELKWA
WEST CENTRAL B.C.

PIT 7
1994 GEOLOGY MAP

AUTHOR: A.L.	SCALE: 1:2 000	DRAWN BY: M.L.E.	
DATE: FEBRUARY, 1995	REVISED:	DRAWING No: 42043 D	
To Accompany			

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TELKWA - PIT #7
Drill-hole Seam Intersections

		2 Seam							3 Seam				4 Seam					5 Seam						6 Lower Seam			6 Upr Seam			8 Seam						
	Seam:	2A 2a (m)	2P 2 prtg (m)	2B 2b (m)	2 total (m)	ibrdn (m)	2U 2-upr (m)	ibrdn (m)	2B/3L ibrdn (m)	3L 3-lwr (m)	3P ibrdn (m)	3U 3-upr (m)	ibrdn (m)	4 4 (m)	ibrdn (m)	5R 5R (m)	ibrdn (m)	4/5T ibrdn (m)	5T 5T (m)	6LP ibrdn (m)	5 5 (m)	6P1 ibrdn (m)	5x 5x (m)	6P2 ibrdn (m)	6LA 6-lwrA (m)	6UP1 ibrdn (m)	6LB 6-lwrB (m)	6UP2 ibrdn (m)	6U 6-upr (m)	ibrdn (m)	8L 8-lwr (m)	ibrdn (m)	8U 8-upr (m)	ibrdn (m)	9 9 (m)	ibrdn (m)	10 10 (m)
Drill-hole																																				
T92D-12	N/C																																			
T92D-22		0.71	1.14	1.27	3.12		---		19.76*	1.00	1.82	1.77		---		---			0.42	0.44	2.35	2.62	2.30		---		---		1.54								
T89R-904		1.98	---	1.61	3.59		—		10.62	0.52	1.17	1.35	5.22	1.52	2.74	2.14	4.12	9.00	0.94	0.76	2.07	2.52	0.99	0.61	0.39		---		---		0.85	1.27	0.30	2.90	1.02	5.03	1.05
T89D-930		1.72	---	1.58	3.30		---		6.46	0.58	1.05	1.15	9.17	1.19	2.43	1.36																					
T86D-604		1.81	—	1.57	3.38		—		8.69	0.42	0.76	1.12	4.65	1.92	5.02	1.85	3.81	10.68	0.62	0.70	1.56	2.44	1.96		---		---		1.71								
T92R-29		0.57	—	0.43	1.00		---		10.41	0.55	0.38	1.20																									
T89D-931		1.75	---	1.85	3.60		—		10.96	0.58	1.03	1.53	8.52	1.75				8.74	0.30	0.00	2.29	0.71	2.30		---		---		0.74								
T82D-218		1.79	---	1.74	3.53		—		9.82	0.58	0.76	1.39	5.37	1.74		---		2.74	0.50	1.21	2.43															
T94R-33C		1.75	---	1.52	3.27	1.98	0.14		10.42	0.57	0.81	0.93	5.82	1.97				2.35	0.46	2.09	3.12				1.04	0.10	0.99	1.19	0.77								
T89R-906		1.71	---	1.53	3.24	2.09	0.38	7.13	9.60	0.53	0.68	1.36	5.09	1.75		---		2.82	0.54	1.23	2.63	0.64	0.70	0.62	0.15	0.14	0.29	0.45	1.55								
T84D-442		1.47	—	1.02	2.49																															
T92D-20		1.53	—	1.99	3.52		---		9.53	0.52	0.73	1.03	6.42	2.78		---		6.43	0.25	1.02	3.43	0.74	1.55		0.68	0.00	0.99	0.90	1.11								
T89R-905		1.94	---	1.97	3.91	1.10	0.08	11.18	12.36	0.27	0.46	0.96	6.66	2.19		—		1.55	0.64	1.36	3.00	0.52	1.55	1.55	0.75	0.18	0.57	0.38	1.64								
T85D-504		2.19	0.23	1.50	3.92		—		10.56	0.72	1.23	0.97	6.18	2.10		---		1.60	0.82	0.70	4.30	1.32	1.20	2.91	0.73	0.22	0.46	0.39	1.55								
T89D-929		2.39	0.75	1.52	4.66		---		10.86	1.33	0.27	0.98	6.04	2.16		---		1.10	0.83	0.27	3.16															
T89D-928		1.88	---	1.72	3.60		—		11.68	0.84	0.43	1.69	7.08	3.00		—		1.88	1.04	1.09	3.36	0.67	0.99	3.69	0.72	0.24	0.57	0.55	1.72								
T89D-907		2.12	0.32	1.14	3.58		---		11.14	1.18	0.16	0.99	5.27	2.13		—		2.31	0.82	0.40	3.11	0.71	1.18													
T82D-216		2.28	0.24	1.44	3.96	1.31	0.58	9.10	10.99	1.06	0.30	0.90	5.42	1.84		---		2.10	0.49	0.33	3.10	0.59	1.14													
T92R-27		2.16	—	1.59	3.75	1.83	0.43	8.14	10.40	1.10	0.69	1.08	5.21	2.14																						
T86D-603		2.07	—	1.68	3.75																															
T82D-217	N/C																																			
T84D-443	#1 seams																																			
T84D-444	#1 seams																																			
T85D-503	#1 seams																																			
T89R-901	#1 seams																																			
T89R-902	#1 seams																																			
T89R-903	#1 seams																																			
T89D-926	N/C																																			
T89D-927	#1 seams																																			
T92R-28	N/C																																			
	Averages:	**1.78**	**0.54**	**1.51**	**3.43**	**1.66**	**0.32**	**8.89**	**10.28**	**0.73**	**0.75**	**1.20**	**6.14**	**2.01**	**3.40**	**1.78**	**3.97**	**4.10**	**0.62**	**0.83**	**2.85**	**1.23**	**1.44**	**1.88**	**0.64**	**0.15**	**0.65**	**0.64**	**1.37**	---	**0.85**	**1.27**	**0.30**	**2.90**	**1.02**	**5.03**	**1.05**

where: N/C = No Coal

* = possibly structurally thickened; not considered in averages

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DRILL-HOLE #	SEAM	SEAM REC'VRY (%)	DRILLED SEAM INT'RVL From (m)	To (m)	SEAM THICKN'S (m)	RESIDUAL MOISTURE Raw (%)	Clean (%)	ASH Raw (%)	Clean (%)	VOLATILE MATTER Raw (%)	FIXED CARBON Raw (%)	Clean (%)	CALORIFIC VALUE Raw (MJ/kg)	Clean (MJ/kg)	SULPHUR Raw (%)	Clean (%)	YIELD (%)	SPECIFIC GRAVITY Raw (g/cc)	Washbity (g/cc)	F.S.I.
T92D-22	?	100	27.23	27.65	0.42	1.19		14.84							2.59			1.43		
	6U	100	35.05	36.59	1.54	0.67	1.61	13.70	7.20	29.69	55.94				2.83	1.66	86.86	1.41	1.60	
	5x	100	38.42	40.72	2.30	0.86	2.32	17.88	10.17	25.38	55.88				1.23	1.13	84.56	1.46	1.60	
	?	100	41.54	41.71	0.17															
	5	91	43.34	45.69	2.35	0.68	2.00	13.10	7.38	28.48	57.74				0.70	0.57	90.46	1.41	1.60	
	5T/5 Prtg		45.69	46.16	0.47															
	5T		46.13	46.55	0.42	0.88	0.91	15.20	13.16						2.22	1.95	92.87	1.43	1.60	
	4		—	---																
	3U	100	63.77	65.54	1.77															
	3 Prtg		65.54	67.36	1.82															
	3L	100	67.36	68.36	1.00	0.63	0.95	12.40	10.57	28.83	58.14				1.91	1.61	95.05	1.40	1.60	
	?	100	82.87	83.68	0.81															
	2B	100	88.12	89.39	1.27	0.59	1.40	14.39	9.31	26.13	58.89				0.95	0.86	88.81	1.42	1.60	
	2 Prtg		89.39	90.53	1.14															
	2A	100	90.53	91.24	0.71															
					3.12															
T92R-27	4	N/A	10.21	12.35	2.14															
	?	N/A	12.82	13.33	0.51															
	3U	N/A	17.56	18.64	1.08															
	3 Prtg		18.64	19.33	0.69															
	3L	N/A	19.33	20.43	1.10															
	2U	N/A	28.57	29.00	0.43															
	2B	N/A	30.83	32.42	1.59															
	2A		32.42	34.58	2.16															
					3.75															
T92R-28		No Coal																		
T92R-29	3U	N/A	16.58	17.78	1.20															
	3 Prtg		17.78	18.16	0.38															
	3L	N/A	18.16	18.71	0.55															
	2B	N/A	29.12	29.55	0.43															
	2A		29.55	30.12	0.57															
					1.00															
T93D-31	1?		30.65	33.50	2.85															
	?		33.85	34.37	0.52															
	?		38.32	38.81	0.49	0.44		32.15							2.56			1.63		

DRILL-HOLE #		SEAM	SEAM REC'VRY (%)	DRILLED SEAM INT'RVL From (m)	To (m)	SEAM THICKN'S (m)	RESIDUAL MOISTURE Raw (%)	Clean (%)	ASH Raw (%)	Clean (%)	VOLATILE MATTER Raw (%)	Clean (%)	FIXED CARBON Raw (%)	Clean (%)	CALORIFIC VALUE Raw (MJ/kg)	Clean (MJ/kg)	SULPHUR Raw (%)	Clean (%)	YIELD (%)	SPECIFIC GRAVITY Raw (g/cc)	Washbty (g/cc)	F.S.I.
T93D-38		?1		69.89	70.10	0.21	0.55		30.71								1.15			1.61		
		Prtng		70.10	70.68	0.58	0.50		80.09								2.67			2.42		
		?2		70.68	71.28	0.60	0.54	0.59	22.51	17.36	29.08		47.87		26.30		1.28	1.33	81.11	1.51		
		?3		84.86	85.63	0.77	0.82		12.88								0.98			1.40		
		?4		89.69	90.07	0.38	0.54	0.55	31.36	18.70							0.71	0.84	55.76	1.62		
		1		101.23	102.80	1.57	0.91	0.57	27.89	15.66	23.86	27.61	47.34	56.16	24.11	29.26	0.30	0.30	68.72	1.58		
		?5		108.95	109.86	0.91	0.74	0.71	38.56	16.89							0.35	0.51	52.83	1.70		
		?6		118.41	120.25	1.84	0.79	0.58	38.86	15.31	21.72	27.74	38.63	56.37			0.29	0.42	44.29	1.71		1.5
T94R-33C		6U		29.42	30.19	0.77	0.87	0.87	19.95	8.08	26.51	28.85	52.67	62.20	27.41	31.77	1.60	1.23	77.91	1.48		
		6Lb		31.38	32.37	0.99	1.30	1.06	12.49	8.47		27.61		62.86		31.43	3.01	1.75	88.19	1.40		
		6La		32.47	33.51	1.04	1.09	0.95	14.96	8.73		27.99		62.33		31.36	1.45	0.83	86.18	1.43		
		5		33.91	37.03	3.12	0.78	0.81	10.40	6.37	30.03	30.12	58.79	62.70	30.26	32.41	0.45	0.53	92.43	1.38		
		5T		39.12	39.58	0.46	0.95	0.38	29.09	14.33	25.16	29.23	44.80	56.06	22.99	29.51	1.45	1.49	57.26	1.59		
		4		41.93	43.90	1.97	0.88	0.77	7.97	6.61	29.73	30.38	61.42	62.24	30.76	31.96	0.75	0.65	96.77	1.35		
		3U		49.72	50.65	0.93	0.56	0.97	14.90	8.49	29.76	29.32	54.78	61.22	27.99	31.55	1.35	1.07	82.08	1.43		
		3 Prtg		50.65	51.46	0.81																
		3L		51.46	52.03	0.57	0.98	0.49	24.02	10.55	28.30	30.75	46.70	58.21	25.58	31.08	1.54	1.19	68.06	1.53		
		2U		60.33	60.47	0.14																
		2		62.45	65.72	3.27	1.01	1.06	13.57	10.16	26.94	27.95	58.48	60.83	28.71	30.58	0.38	0.41	91.23	1.41		
	1-21	2-6U Cmp																				2.0
T94R-35C		?		36.68	37.40	0.72	0.68	1.17	33.00	21.57		27.48		49.78		26.66	0.44	0.46	53.00	1.64		
		?		39.50	40.07	0.57	0.73	0.94	25.83	17.24	26.79	28.96	46.65	52.86		28.66	0.53	0.44	82.77	1.55		
		?		40.52	40.79	0.27	0.58	0.82	32.09	13.48		29.42		56.28		29.99	0.32	0.47	63.62	1.62		
	4-7	c?		43.51	46.63	3.12	0.80	0.89	36.08	11.87	22.97	27.95	40.15	59.29	21.46	30.51	0.23	0.32	56.89	1.67		5.0
		1Ua?		57.96	59.05	1.09	0.80	0.92	35.92	14.80	22.67	26.51	40.61	57.77	20.95	29.07	0.40	0.49	56.88	1.67		
		1Ub?		61.89	63.08	1.19	0.62	1.13	31.95	17.38	24.44	25.55	42.99	55.94	22.33	27.01	0.44	0.46	62.68	1.62		
		1U?		63.82	64.43	0.61	0.74	0.91	53.41	18.46		28.54		53.09		27.96	0.26	0.58	19.97	1.91		
	15-16	1?		75.46	78.18	2.72	0.57	0.80	34.57	20.31	24.31	26.96	40.55	51.93	21.46	27.02	0.33	0.40	56.14	1.65		4.5
		1La?		81.74	82.10	0.36	0.70		39.48								0.30			1.72		
		1Lb?		83.52	83.98	0.46	0.87	1.25	45.86	11.21	20.82	28.87	32.45	58.67	16.39	30.10	0.91	0.57	24.55	1.80		
T94R-43				33.62	34.91	1.29																
				48.83	49.10	0.27																
				49.80	50.25	0.45																
				56.76	58.07	1.31																
				83.28	84.33	1.05																
				85.09	85.45	0.36																
				87.19	89.81	2.62																
				95.49	95.78	0.29																
																						2.5
																						6.5
																						0.5

TELKWA PROJECT - COAL QUALITY SUMMARY

PIT #7 Composited seams - Raw and Washed results, reported on an A.D. basis

DRILL-HOLE #	SEAM	EQM MOIST'R (%)	H.G.I.	P (%)	CL (%)	RAW SULFUR FORMS % A.D. Pyritic	RAW SULFUR FORMS % A.D. Sulfate	RAW SULFUR FORMS % A.D. Organic	WASHED SULFUR FORMS % A.D. Pyritic	WASHED SULFUR FORMS % A.D. Sulfate	WASHED SULFUR FORMS % A.D. Organic	SiO2	Al2O3	TiO2	Fe2O3	MINERAL ANALYSIS OF ASH (%) CaO	MgO	Na2O	K2O	P2O5	SO3	Undet.	DRILL-HOLE #	SEAM	%H2O	%C
T82D-216	5x																						T82D-216	5x		
	5																							5.00		
	5T/5 Prtg																							5T/5 Prtg		
	5T																							5T		
	4																							4.00		
	3U																							3U		
	3 Prtg																							3 Prtg		
	3L																							3L		
	2U																							2U		
	2B																							2B		
	2 Prtg																							2 Prtg		
	2A																							2A		
T82D-217	N/C																						T82D-217	N/C		
T82D-218	?																						T82D-218	?		
	5																							5.00		
	5T/5 Prtg																							5T/5 Prtg		
	5T																							5T		
	4																							4.00		
	3U																							3U		
	3 Prtg																							3 Prtg		
	3L																							3L		
	2B																							2B		
	2A																							2A		
T84D-442	2B																						T84D-442	2B		
	2A																							2A		

DRILL-HOLE #	SEAM	EQM MOIST'R (%)	H.G.I.	P (%)	CL (%)	RAW SULFUR FORMS (% A.D.) Pyritic	Sulfate	Organic	WASHED SULFUR FORMS (% A.D.) Pyritic	Sulfate	Organic	MINERAL ANALYSIS OF ASH (%) SiO2	Al2O3	TiO2	Fe2O3	CaO	MgO	Na2O	K2O	P2O5	SO3	Undet.	DRILL-HOLE #	SEAM	%H2O	%C
T84D-443	G																						T84D-443	G		
	F																							F		
	D2																							D2		
	D1																							D1		
	C2																							C2		
	C1																							C1		
	B																							B		
	A2																							A2		
	A1																							A1		
T84D-444	C1																						T84D-444	C1		
	B																							B		
	A2																							A2		
	A1																							A1		
T85D-503	E1																						T85D-503	E1		
	C1																							C1		
	A2																							A2		
T85D-504	6U																						T85D-504	6U		
	6UP2																							6UP2		
	6LB																							6LB		
	6UP1																							6UP1		
	6LA																							6LA		
	5x																							5x		
	5																							5.00		
	5T/5 Prtg																							5T/5 Prtg		
	5T																							5T		
	4																							4.00		
	3U																							3U		
	3 Prtg																							3 Prtg		
	3 Prtg																							3 Prtg		
	3 Prtg																							3 Prtg		
	3L																							3L		
	2B																							2B		
	2 Prtg																							2 Prtg		
	2A																							2A		
T86D-603	2B																						T86D-603	2B		
	2A																							2A		

DRILL-HOLE #	SEAM	EQM MOIST'R (%)	H.G.I.	P (%)	CL (%)	RAW SULFUR FORMS % A.D. Pyritic	RAW SULFUR FORMS % A.D. Sulfate	RAW SULFUR FORMS % A.D. Organic	WASHED SULFUR FORMS % A.D. Pyritic	WASHED SULFUR FORMS % A.D. Sulfate	WASHED SULFUR FORMS % A.D. Organic	SiO2	Al2O3	TiO2	Fe2O3	CaO	MgO	Na2O	K2O	P2O5	SO3	Undet.	DRILL-HOLE #	SEAM	%H2O	%C
																MINERAL ANALYSIS OF ASH (%)										
T86D-604/ T89D604A	6U																						T86D-604/ T89D604A	6U		
	5x																							5x		
	5																							5.00		
	5T/5 Prtg																							5T/5 Prtg		
	5T																							5T		
	5R																							5R		
	4																							4.00		
	3U																							3U		
	3 Prtg																							3 Prtg		
	3L																							3L		
	2B																							2B		
	2A																							2A		
T89R-901	G																						T89R-901	G		
	F																							F		
	D2																							D2		
	D1																							D1		
	C2																							C2		
	C1																							C1		
	B																							B		
T89R-902	D2																						T89R-902	D2		
	D1																							D1		
	C2																							C2		
	C1																							C1		
	B																							B		
	A2																							A2		
	A1																							A1		
T89R-903	D2																						T89R-903	D2		
	D1																							D1		
	C2																							C2		
	C1																							C1		
	B																							B		
	?																							?		
	?																							?		
	A2																							A2		

DRILL-HOLE #	SEAM	EQM MOIST'R (%)	H.G.I.	P (%)	CL (%)	RAW SULFUR FORMS % A.D. Pyritic	RAW SULFUR FORMS % A.D. Sulfate	RAW SULFUR FORMS % A.D. Organic	WASHED SULFUR FORMS % A.D. Pyritic	WASHED SULFUR FORMS % A.D. Sulfate	WASHED SULFUR FORMS % A.D. Organic	SiO2	Al2O3	TiO2	Fe2O3	CaO	MgO	Na2O	K2O	P2O5	SO3	Undet.	DRILL-HOLE #	SEAM	%H2O	%C
																MINERAL ANALYSIS OF ASH (%)										
T89R-904	10																						T89R-904	10.00		
	9																							9.00		
	8U																							8U		
	8L																							8L		
	6LA																							6LA		
	5x																							5x		
	5																							5.00		
	5T																							5T		
	5R																							5R		
	4																							4.00		
	3U																							3U		
	3L																							3L		
	2B																							2B		
	2A																							2A		
T89R-905/ T89D-905A	6U																						T89R-905/ T89D-905A	6U		
	6UP2																							6UP2		
	6LB																							6LB		
	6UP1																							6UP1		
	6LA																							6LA		
	5x																							5x		
	5																							5.00		
	5T/5 Prtg																							5T/5 Prtg		
	5T																							5T		
	4																							4.00		
	3U																							3U		
	3 Prtg																							3 Prtg		
	3L																							3L		
	2U																							2U		
	2B																							2B		
	2A																							2A		

DRILL-HOLE #	SEAM	EQM MOIST'R (%)	H.G.I.	P (%)	CL (%)	RAW SULFUR FORMS (%) A.D. Pyritic	RAW SULFUR FORMS (%) A.D. Sulfate	RAW SULFUR FORMS (%) A.D. Organic	WASHED SULFUR FORMS (%) A.D. Pyritic	WASHED SULFUR FORMS (%) A.D. Sulfate	WASHED SULFUR FORMS (%) A.D. Organic	SiO2	Al2O3	TiO2	Fe2O3	CaO	MgO	Na2O	K2O	P2O5	SO3	Undet.	DRILL-HOLE #	SEAM	%H2O	%C
																MINERAL ANALYSIS OF ASH (%)										
T89R-906/ T89D906A	6U																						T89R-906/ T89D906A	6U		
	6UP2																							6UP2		
	6LB																							6LB		
	6UP1																							6UP1		
	6LA																							6LA		
	5x																							5x		
	5																							5.00		
	5T/5 Prtg																							5T/5 Prtg		
	5T																							5T		
	4																							4.00		
	3U																							3U		
	3 Prtg																							3 Prtg		
	3L																							3L		
	2U																							2U		
	2B																							2B		
	2A																							2A		
T89D-907/ T89D-907A	5x																						T89D-907/ T89D-907A	5x		
	5																							5.00		
	5T/5 Prtg																									
	5T																							5T		
	4																							4.00		
	3U																							3U		
	3 Prtg																							3 Prtg		
	3L																							3L		
	2B																							2B		
	2 Prtg																							2 Prtg		
	2A																							2A		
T89D-927	?																						T89D-927	?		
	D2																							D2		
	?																							?		
	?																							?		
	C2																							C2		
	C1																							C1		
	?																							?		

DRILL-HOLE #	SEAM	EQM MOIST'R (%)	H.G.I.	P (%)	CL (%)	RAW SULFUR FORMS (%) A.D. Pyritic	RAW SULFUR FORMS (%) A.D. Sulfate	RAW SULFUR FORMS (%) A.D. Organic	WASHED SULFUR FORMS (%) A.D. Pyritic	WASHED SULFUR FORMS (%) A.D. Sulfate	WASHED SULFUR FORMS (%) A.D. Organic	SiO2	Al2O3	TiO2	Fe2O3	MINERAL ANALYSIS OF ASH (%) CaO	MgO	Na2O	K2O	P2O5	SO3	Undet.
T89D-928	6U																					
	6UP2																					
	6LB																					
	6UP1																					
	6LA																					
	5x																					
	5																					
	5T/5 Prtg																					
	5T																					
	4																					
	3U																					
	3 Prtg																					
	3L																					
	2B																					
	2A																					
T89D-929	5																					
	5T/5 Prtg																					
	5T																					
	4																					
	3U																					
	3 Prtg																					
	3L																					
	2B																					
	2 Prtg																					
	2A																					
T89D-930	5R																					
	4																					
	3U																					
	3 Prtg																					
	3L																					
	2B																					
	2A																					

DRILL-HOLE #	SEAM	%H2O	%C
T89D-928	6U		
	6UP2		
	6LB		
	6UP1		
	6LA		
	5x		
	5.00		
	5T		
	4.00		
	3U		
	3 Prtg		
	3L		
	2B		
	2A		
T89D-929	5.00		
	5T/5 Prtg		
	5T		
	4.00		
	3U		
	3 Prtg		
	3L		
	2B		
	2 Prtg		
	2A		
T89D-930	5R		
	4.00		
	3U		
	3 Prtg		
	3L		
	2B		
	2A		

DRILL-HOLE #	SEAM	EQM MOIST'R (%)	H.G.I.	P (%)	CL (%)	RAW SULFUR FORMS (%) A.D. Pyritic	Sulfate	Organic	WASHED SULFUR FORMS (%) A.D. Pyritic	Sulfate	Organic	SiO2	Al2O3	TiO2	Fe2O3	MINERAL ANALYSIS OF ASH (%) CaO	MgO	Na2O	K2O	P2O5	SO3	Undet.	DRILL-HOLE #	SEAM	%H2O	%C
T89D-931	6U																						T89D-931	6U		
	5x																							5x		
	5																							5.00		
	4																							4.00		
	3U																							3U		
	3 Prtg																							3 Prtg		
	3L																							3L		
	2B																							2B		
	2A																							2A		
T92D-12	?																						T92D-12	?		
T92D-20	?																						T92D-20	?		
	6U			0.04	0.08				0.50	0.06	1.01													6U		
	6UP2																							6UP2		
	6LB			0.10	0.08				0.06	0.03	0.44													6LB		
	6LA			0.01	0.04				0.23	0.01	0.65													6LA		
	(6L)																							(6L)		
	5x																							5x		
	5																							5.00		
	5T/5 Prtg																							5T/5 Prtg		
	5T																							5T		
	?																							?		
	?																							?		
	4	3.3		0.04	0.06	0.05	0.01	0.48	0.06	0.01	0.48	52.52	17.37	1.04	3.35	11.82	2.82	0.84	0.13	1.33	7.07	1.71		4.00	1.61	77.81
	3U	2.9		0.09	0.18	0.75	trace	0.87	0.40	0.01	0.73	55.52	23.69	1.52	8.36	4.46	0.50	0.62	0.19	3.05	1.24	0.85		3U	1.35	78.20
	3 Prtg																							3 Prtg		
	3L	2.9		0.01	0.01	1.67	0.04	0.41	0.92	0.06	0.68	54.22	8.51	0.52	13.71	8.19	3.90	0.63	0.12	0.02	8.60	1.58		3L	1.32	72.63
	2B																							2B		
	2A																							2A		
	2			0.08	0.10				0.09	0.01	0.30	58.82	26.22	1.80	2.06	5.32	0.70	0.62	0.27	1.78	1.71	0.70		2.00	1.83	74.10

DRILL-HOLE #	SEAM	EQM MOIST'R (%)	H.G.I.	P (%)	CL (%)	RAW SULFUR FORMS % A.D. Pyritic	RAW SULFUR FORMS % A.D. Sulfate	RAW SULFUR FORMS % A.D. Organic	WASHED SULFUR FORMS % A.D. Pyritic	WASHED SULFUR FORMS % A.D. Sulfate	WASHED SULFUR FORMS % A.D. Organic	SiO2	Al2O3	TiO2	Fe2O3	CaO	MgO	Na2O	K2O	P2O5	SO3	Undet.	DRILL-HOLE #	SEAM	%H2O	%C
																MINERAL ANALYSIS OF ASH (%)										
T92D-22	?																						T92D-22	?		
	6U																							6U		
	5x																							5x		
	?																							?		
	5																							5.00		
	5T/5 Prtg																							5T/5 Prtg		
	5T																							5T		
	3U																							3U		
	3 Prtg																							3 Prtg		
	3L																							3L		
	?																							?		
	2B																							2B		
	2 Prtg																							2 Prtg		
	2A																							2A		
T92R-27	4																						T92R-27	4.00		
	?																							?		
	3U																							3U		
	3 Prtg																							3 Prtg		
	3L																							3L		
	2U																							2U		
	2B																							2B		
	2A																							2A		
T92R-28																							T92R-28			
T92R-29	3U																						T92R-29	3U		
	3 Prtg																							3 Prtg		
	3L																							3L		
	2B																							2B		
	2A																							2A		
T93D-31	1?																									
	?																									
	?																									

DRILL-HOLE #	SEAM	EQM MOIST'R (%)	H.G.I.	P (%)	Cl. (%)	RAW SULFUR FORMS % A.D. Pyritic	RAW SULFUR FORMS % A.D. Sulfate	RAW SULFUR FORMS % A.D. Organic	WASHED SULFUR FORMS % A.D. Pyritic	WASHED SULFUR FORMS % A.D. Sulfate	WASHED SULFUR FORMS % A.D. Organic	SiO2	Al2O3	TiO2	Fe2O3	CaO	MgO	Na2O	K2O	P2O5	SO3	Undet.	DRILL-HOLE #	SEAM	%H2O	%C
												MINERAL ANALYSIS OF ASH (%)														
T93D-38	?1 Prtng																									
	?2	2.2			0.09	0.64	0.02	0.62																		
	?3																									
	?4																									
	1	2.6			0.24	0.06	0.01	0.24	0.02	0.01	0.27															
	?5					0.06	0.01	0.29	0.05	0.01	0.45															
	?6		66			0.05	0.01	0.24	0.02	0.01	0.39	54.87	34.23	1.68	3.44	1.98	0.32	0.15	0.78	0.99	0.96	0.60			0.71	70.71
				0.01	0.04	0.71	0.06	0.84	0.25	0.02	0.96															
									0.48	0.03	1.24															
									0.07	0.01	0.76															
				0.08	0.05	0.14	0.04	0.27	0.05	0.01	0.48															
						0.83	0.01	0.63	0.49	0.01	1.00															
					0.06	0.16	0.04	0.54	0.08	0.01	0.57															
					0.05	0.67	0.01	0.66	0.20	0.01	0.86															
						0.73	0.02	0.81	0.35	0.03	0.81															
				0.07	0.05	0.12	0.01	0.25	0.03	0.01	0.38															
			65																							
						0.10	0.13	0.30																		
				0.51	0.05																					
						0.06	0.01	0.38																		
			67																							
		4.70			0.08	0.54	0.21	0.16	0.10	0.02	0.45															
			66	0.09	0.08							55.19	22.00	1.31	6.18	6.35	1.65	0.57	0.30	1.43	3.92	1.09		Average	1.36	74.69
			67	0.51	0.24							58.82	34.23	1.80	13.71	11.82	3.90	0.84	0.78	3.05	8.60	1.71			1.83	78.20
			65	0.01	0.01							52.52	8.51	0.52	2.06	1.98	0.32	0.15	0.12	0.02	0.96	0.60			0.71	70.71

A.D. ULTIMATE ANALYSIS (%)					FUSION ANALYSIS OF ASH (Temp. C)							
					OXIDIZING				REDUCING			
%H	%N	%ASH	%S	%O	Init.	Soft.	Hemis.	Fluid	Init.	Soft.	Hemis.	Fluid

A.D. ULTIMATE ANALYSIS (%)					FUSION ANALYSIS OF ASH (Temp. C)							
					OXIDIZING				REDUCING			
%H	%N	%ASH	%S	%O	Init.	Soft.	Hemis.	Fluid	Init.	Soft.	Hemis.	Fluid

A.D. ULTIMATE ANALYSIS (%)					FUSION ANALYSIS OF ASH (Temp. C)							
					OXIDIZING				REDUCING			
%H	%N	%ASH	%S	%O	Init.	Soft.	Hemis.	Fluid	Init.	Soft.	Hemis.	Fluid

A.D. ULTIMATE ANALYSIS (%)					FUSION ANALYSIS OF ASH (Temp. C)							
					OXIDIZING				REDUCING			
%H	%N	%ASH	%S	%O	Init.	Soft.	Hemis.	Fluid	Init.	Soft.	Hemis.	Fluid

A.D.													
ULTIMATE ANALYSIS					FUSION ANALYSIS OF ASH								
					OXIDIZING						REDUCING		
%H	%N	%ASH	%S	%O	Init.	Soft.	Hemis.	Fluid		Init.	Soft.	Hemis.	Fluid
(%)					(Temp. C)								

A.D. ULTIMATE ANALYSIS (%)					FUSION ANALYSIS OF ASH (Temp. C)							
					OXIDIZING				REDUCING			
%H	%N	%ASH	%S	%O	Init.	Soft.	Hemis.	Fluid	Init.	Soft.	Hemis.	Fluid

A.D. ULTIMATE ANALYSIS (%)					FUSION ANALYSIS OF ASH (Temp. C)							
					OXIDIZING				REDUCING			
%H	%N	%ASH	%S	%O	Init.	Soft.	Hemis.	Fluid	Init.	Soft.	Hemis.	Fluid
4.28	1.15	7.37	0.54	7.24								
4.55	0.97	6.92	1.14	6.87								
4.28	0.89	13.58	1.66	5.64								
4.27	1.01	11.36	0.40	7.03	1384	1410	1437	1472	1326	1368	1405	1472

A.D.					FUSION ANALYSIS OF ASH							
ULTIMATE ANALYSIS					OXIDIZING				REDUCING			
%H	%N	%ASH	%S	%O	Init.	Soft.	Hemis.	Fluid	Init.	Soft.	Hemis.	Fluid
(%)					(Temp. C)							

A.D. ULTIMATE ANALYSIS (%)					FUSION ANALYSIS OF ASH (Temp. C)							
					OXIDIZING				REDUCING			
%H	%N	%ASH	%S	%O	Init.	Soft.	Hemis.	Fluid	Init.	Soft.	Hemis.	Fluid
4.63	0.75	15.36	0.42	7.43	1472	1472	1472	1472	1472	1472	1472	1472
					1302	1329	1352	1400	1252	1284	1297	1389
					1452+	1452+	1452+	1452+	1452+	1452+	1452+	1452+
4.40	0.95	10.92	0.83	6.84	1386	1404	1420	1448	1350	1375	1391	1444
4.63	1.15	15.36	1.66	7.43	1472	1472	1472	1472	1472	1472	1472	1472
4.27	0.75	6.92	0.40	5.64	1302	1329	1352	1400	1252	1284	1297	1389