

# **Pine Pass Coal Property**

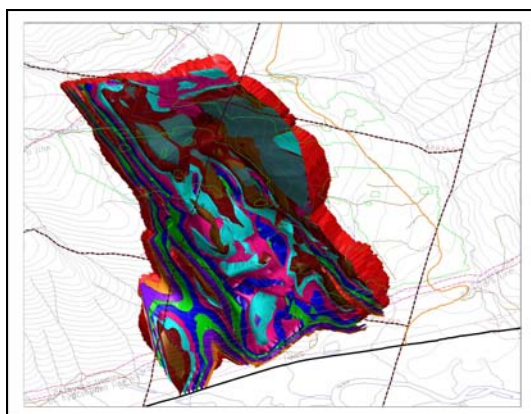
## **2005 Exploration Assessment Report**

**BC Geological Survey  
Coal Assessment Report  
1043**

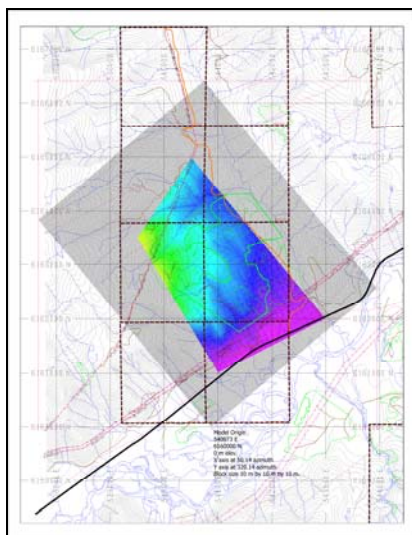


**Prepared for:**  
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**Pine Valley Mining  
Corporation**



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**For submittal to:**  
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Energy and Minerals Division  
Geological Survey Branch  
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**June 1, 2006**

**Ministry of Energy & Mines**  
**Energy & Minerals Division**  
**Geological Survey Branch**  
**TITLE PAGE AND SUMMARY**

**ASSESSMENT REPORT**

**Pine Pass Coal Property 2005 Exploration Assessment Report**

**TOTAL COST \$ 3,682,750**

AUTHOR(S) ResourceEye Services Inc. - Ron Parent, P. Geo. SIGNATURE(S) 

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S) CX-9-017 YEAR OF WORK 2005

STATEMENT OF WORK - CASH PAYMENT EVENT NUMBER(S)/DATE(S) \$3,682,750 for field work (April to September, 2005) and assessment reporting and resource evaluation.

PROPERTY NAME Pine Pass

CLAIM NAME(S) (on which work was done) Coal licenses 327312, 327313, 409343, 409344, 409346, 409347 -- the work is sought to apply to the contiguous block which also includes the following coal licenses: 409348, 409349, 409350, 409351, and 409352.

COMMODITIES SOUGHT Coal

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN 093O 007 - Pine Pass

MINING DIVISION Liard NTS 93O069, 93O059

LATITUDE 55° 37' " LONGITUDE 122° 20' " (at centre of work)

OWNER(S)

1) Pine Valley Mining Corporation 2) Falls Mountain Coal Inc.

MAILING ADDRESS

501-535 Thurlow Street, Vancouver, BC, V6E 3L2 501-535 Thurlow Street, Vancouver, BC, V6E 3L2

OPERATOR(S) [who paid for the work]

1) Pine Valley Mining Corporation 2) Falls Mountain Coal Inc.

MAILING ADDRESS

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PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):

Gething Formation, Lower Cretaceous, Coal Seams, Thrust Faults

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS 00757, 00560, 00586, 00589, 00590, 00591, 00592

(OVER)

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping	58 outcrops	Coal licenses 327312, 327313, 409343,	\$ 30,650
GEOLOGICAL MODELING AND RESOURCES		409344, 409346, 409347	\$ 200,000
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other down-hole gamma, density, resistivity, caliper, dipmeter, deviation			\$ 248,500
Airborne			
GEOCHEMICAL			
(number of samples analysed for ...)			
Soil			
Silt			
Rock			
Other			
DRILLING			
(total metres; number of holes, size)			
Core 6 holes, 1083.5m, 3" core			\$ 277,850
Non-core 85 holes, 15252.4m, 6"			\$ 1,526,925
RELATED TECHNICAL			
Sampling/assaying Coal quality sampling (1724 samples), ARD sampling (229 samples)			\$ 161,425
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY/PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric			
(scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail 5,695m of new access			\$ 1,138,900
Trench (metres)			
Report Preparation			\$ 60,000
Other Permitting and Environmental			\$ 38,500
		TOTAL COST	\$ 3,682,750

Section 4.3.2, Section 5, Appendix 9, part of the Summary and part of the Conclusions remain confidential under the terms of the Coal Act Regulation, and have been removed from the public version.

[http://www.bclaws.ca/civix/document/id/complete/statreg/251\\_2004](http://www.bclaws.ca/civix/document/id/complete/statreg/251_2004)



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## **Executive Summary**

ResourceEye Services Inc. (ResEye), of Vancouver, BC was retained by Pine Valley Mining Corp (PVMC) in December of 2004 to provide background data compilation services on the company's Pine Pass Property with the aim of carrying out a detailed drilling program to outline the property's coal resources in advance of any future feasibility study on coal mining operations for the property.

This report outlines in detail the exploration program that consisted of the drilling of 91 holes and geological mapping. Sampling for coal quality and Acid Rock Drainage (ARD) was also carried out. Following the field exploration program, several months were spent in the Vancouver office, writing the report and preparing the resource summary, which is compliant with NI 43-101.



Additional exploration work is required to upgrade the resources to the measured category, as well as infill drilling for mine planning activities.

This work should consist of rotary and core drilling, along with bulk sampling of selected coal seams via surface excavation, large diameter core, or adit driveage methods.

# **1 Introduction**

## **1.1 Scope of Report**

This Geological Assessment Report is submitted in compliance with the Mineral Tenure Act Regulation for submission of a Coal Assessment Report for exploration and development in British Columbia.

This report documents the work completed on Pine Valley Mining Corporation's "Pine Pass Property". It includes original data, analysis and interpretations originating from the 2005 Exploration Program. The exploration program and this report were completed by ResourceEye Services Inc. of Vancouver, BC.

## **1.2 Location of Subject Property**

The Pine Pass Property is located in the Peace River Land District of northeast British Columbia, in the Liard Mining Division. The property is approximately 53 km west of the town of Chetwynd and is centred at 55° 37' North Latitude and 122° 20' West Longitude.

Figure 1 shows the regional location of the property. Figure 2 shows the license area.

## **1.3 Access and Infrastructure**

The principal road access to the property is via the John Hart Highway (Highway 97), which links the Peace River District with the city of Prince George. Further ground access is provided by several secondary and tertiary roads, including a good network of forestry and exploration roads built during various programs in the early 1980's and 1990's. Property access was further developed during the 2005 exploration program. See Section 3.2.4 for further information on exploration access development.

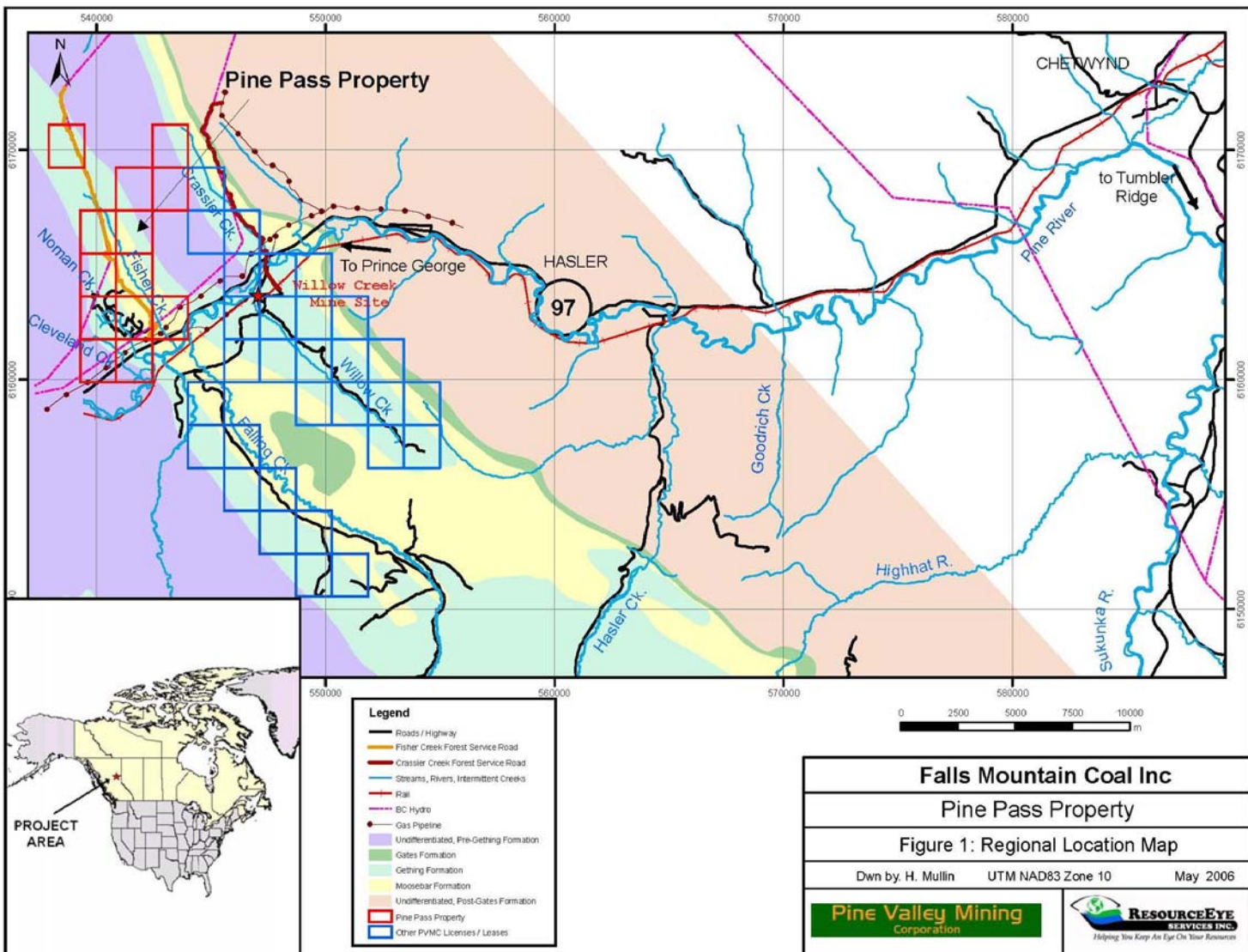
CN Rail currently operates a rail line through the Pine River valley which services the Peace River District. The rail line is immediately south of the property. This provides a link to the Ridley Island Coal Port at Prince Rupert or the Port of Vancouver, both located approximately 1200 km from the property.

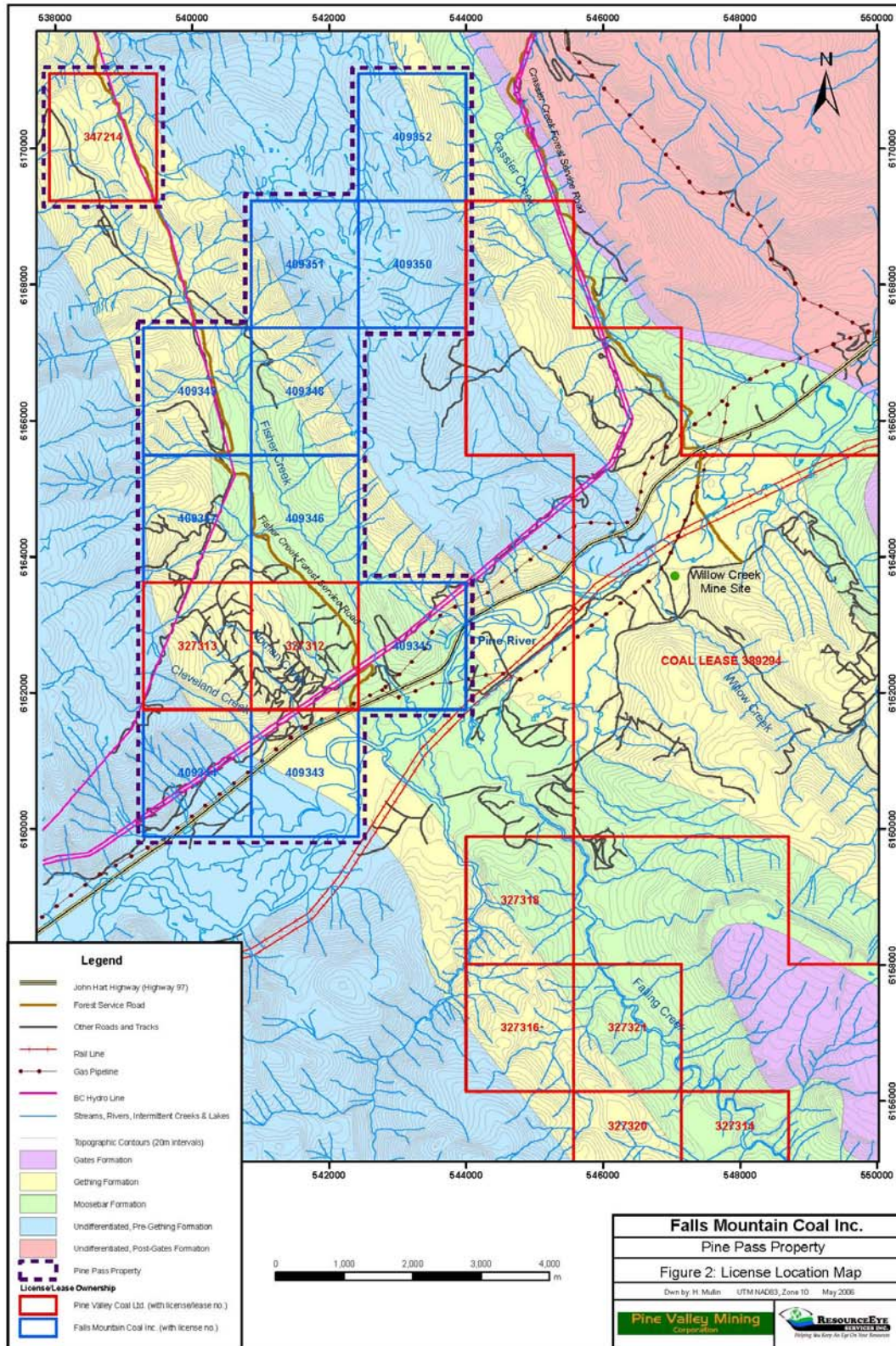
The nearest airports to the site are at Prince George, Dawson Creek and Fort St John, at distances of roughly 250, 150 and 210 km respectively.

Figure 1 indicates the locations of major road and rail networks.

A natural gas pipeline follows the John Hart Highway at the south of the property. There are also two main BC Hydro power transmission lines, one following the Pine River Valley and the other one cutting across the Noman Creek area from the Fisher Creek area to the north. See Figure 2 for the locations of pipelines and power lines.









## 1.4 Land Tenure

The Pine Pass Property coal licenses are under the tenure of the Pine Valley Mining Corporation, through its wholly owned subsidiaries, Falls Mountain Coal Inc. and Pine Valley Coal Ltd. Falls Mountain Coal Inc, is the operator of the project on behalf of the Pine Valley Mining Corporation (PVMC).

The Pine Pass Block covers 3807 hectares over 13 licenses. The Pine Pass Property is comprised of 13 coal license blocks, as presented in Table 1 below. License locations and ownership are shown in Figure 2.

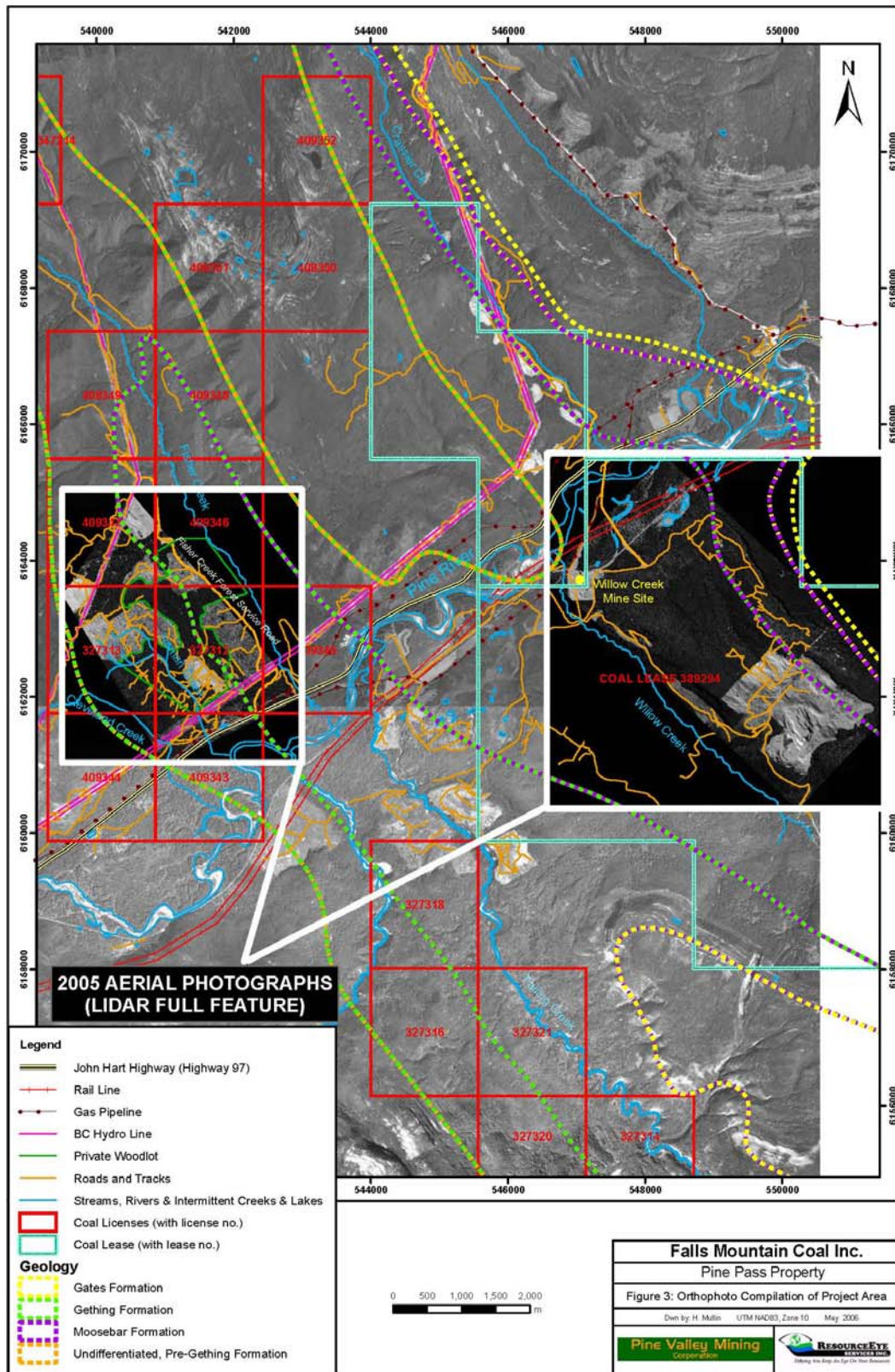
**Table 1: Coal Licenses Within the Pine Pass Property**

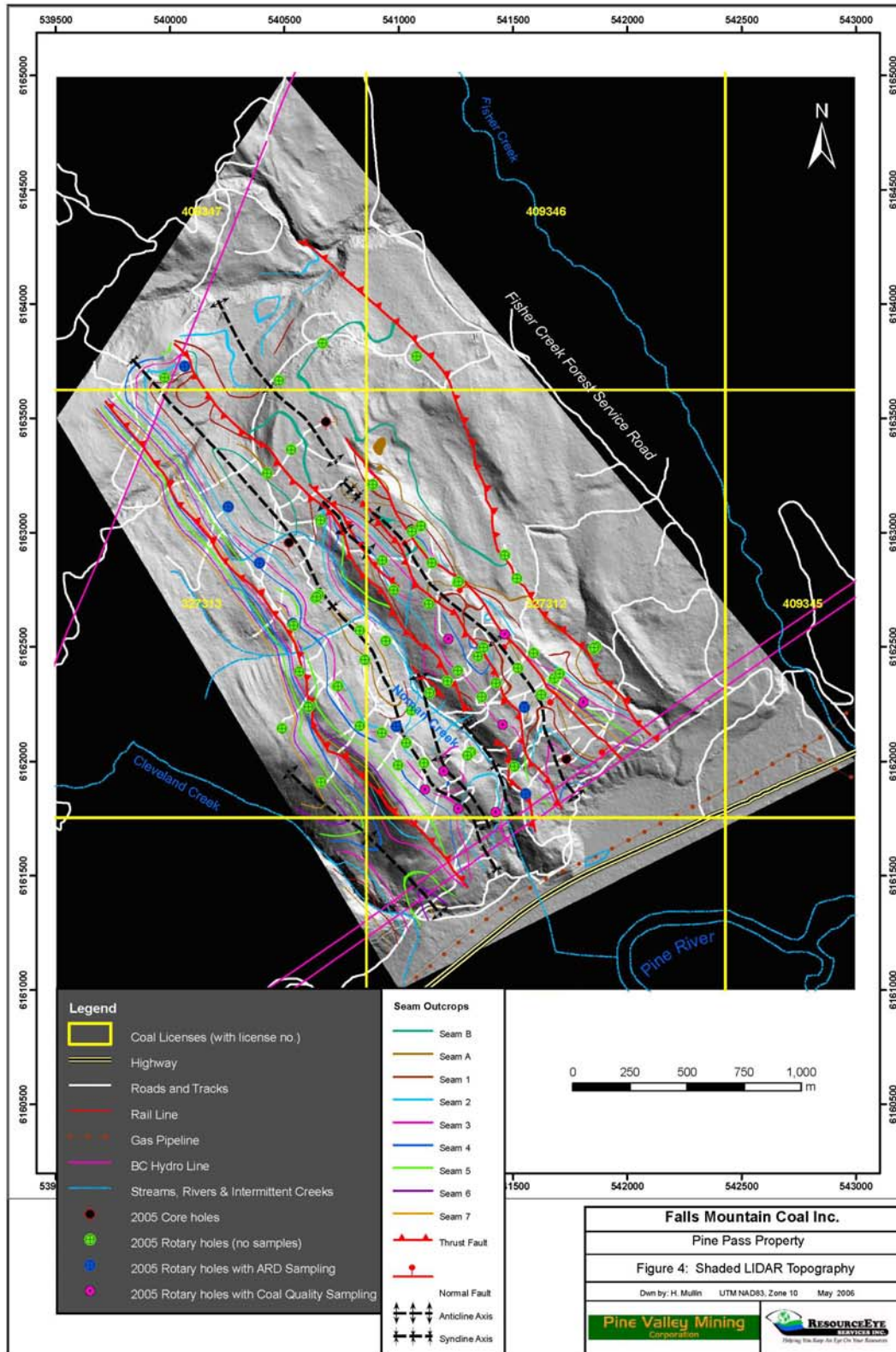
<b>Ownership</b>	<b>Tenure Number</b>	<b>Map Number</b>	<b>Area Hectares</b>
Pine Valley Coal Ltd.	327312	093O09W	293
Pine Valley Coal Ltd.	327313	093O09W	293
Falls Mountain Coal Inc.	347214	093O09W	292
Falls Mountain Coal Inc.	409343	930-9W Blk F	293
Falls Mountain Coal Inc.	409344	930-9W Blk F	293
Falls Mountain Coal Inc.	409345	930-9W Blk F	293
Falls Mountain Coal Inc.	409346	930-9W Blk F	293
Falls Mountain Coal Inc.	409347	930-9W Blk F	293
Falls Mountain Coal Inc.	409348	930-9W Blk F	293
Falls Mountain Coal Inc.	409349	930-9W Blk F	293
Falls Mountain Coal Inc.	409350	930-9W Blk F	293
Falls Mountain Coal Inc.	409351	930-9W Blk F	293
Falls Mountain Coal Inc.	409352	930-9W Blk F	292
<b>total hectares</b>			<b>3807</b>

## 1.5 Physiography

The Pine Pass property is situated in the Rocky Mountain Inner Foothills physiographical region. It lies on the eastern slope of Mount Bickford on the north side of the Pine River. The path of the 1.5 km wide Pine River has developed low, rounded northwest-southeast trending ridges and valleys, separated by several tributaries which, in the license area, include Cleveland Creek, Fisher Creek and Noman Creek.

Figure 3 and 4 help display the prevalent physiographic features using an orthophoto overlay, and a LIDAR (Light Detection and Ranging) shaded relief overlay, respectively.





Elevations throughout the license area range from 655 m in the Pine River Valley to 1570 m in the northwest part of the Noman Creek area. The Pine River watershed drains the property.

Rock exposure is principally in creek areas and along road cuts due to the dense vegetation cover. The lower elevations are forested by poplar and birch and the higher elevations by fir and spruce. The timberline is approx 1300 m above sea level.

The climate is classified as 'northern temperate' with daily temperatures in the range of 7°C to -6°C. Extreme temperatures can range from 32° to -48°C.

Glaciation was widespread throughout the area, and its influence on the surrounding topography is evident by the presence of U-shaped hills and valleys, and abundant glacial deposits and landforms.

## **1.6 Economic and General Assessment of the Property**

PVMC has held crown exploration licenses in the Pine Valley area for many years. Until recently, the company was mainly focused on the Willow Creek area, as a coal mining lease had already been granted for this area. The Willow Creek coal mine, on Coal Lease 389294 commenced operations in July 2004. Its location and proximity to the Pine Pass property is illustrated on Figure 1.

Subsequent exploration has been mainly focused on the Pine Pass block, as it has the potential to host an economic coal deposit that is close enough to supplement production at the existing mine. Pine Pass coal could be hauled by truck from the mining area to the adjacent Willow Creek property. This would allow for treatment in the existing coal processing plant and use of the existing rail load out facilities.



## **2 Geological Setting**

### **2.1 Regional Setting**

The Peace River Coalfield extends for 400 km throughout the northeast part of British Columbia. It forms part of a north-west trending belt of Jurassic-Cretaceous sedimentary rocks (the Inner Foothills) running parallel to the Rocky Mountain foothills in the northeast and southeast of the province. These sediments, including the Lower Cretaceous coal-bearing beds, were deposited along the western margin of the Western Canada Basin in a series of transgressive - regressive cycles which were then folded, thrust and uplifted into faulted, plunging anticlines and synclines during the Columbian Orogeny.

The sediments of the Jurassic-Cretaceous Minnes Group, and the Lower Cretaceous Bullhead and Fort St John Groups are exposed in a succession of northwest trending fold and thrust belts within the Peace River inner foothills area. See Figure 5. Coal occurs in both the Gates and Gething formations (of the Fort St John and Bullhead Groups respectively), however it is the Gething which is the main coal-bearing unit within the license area.

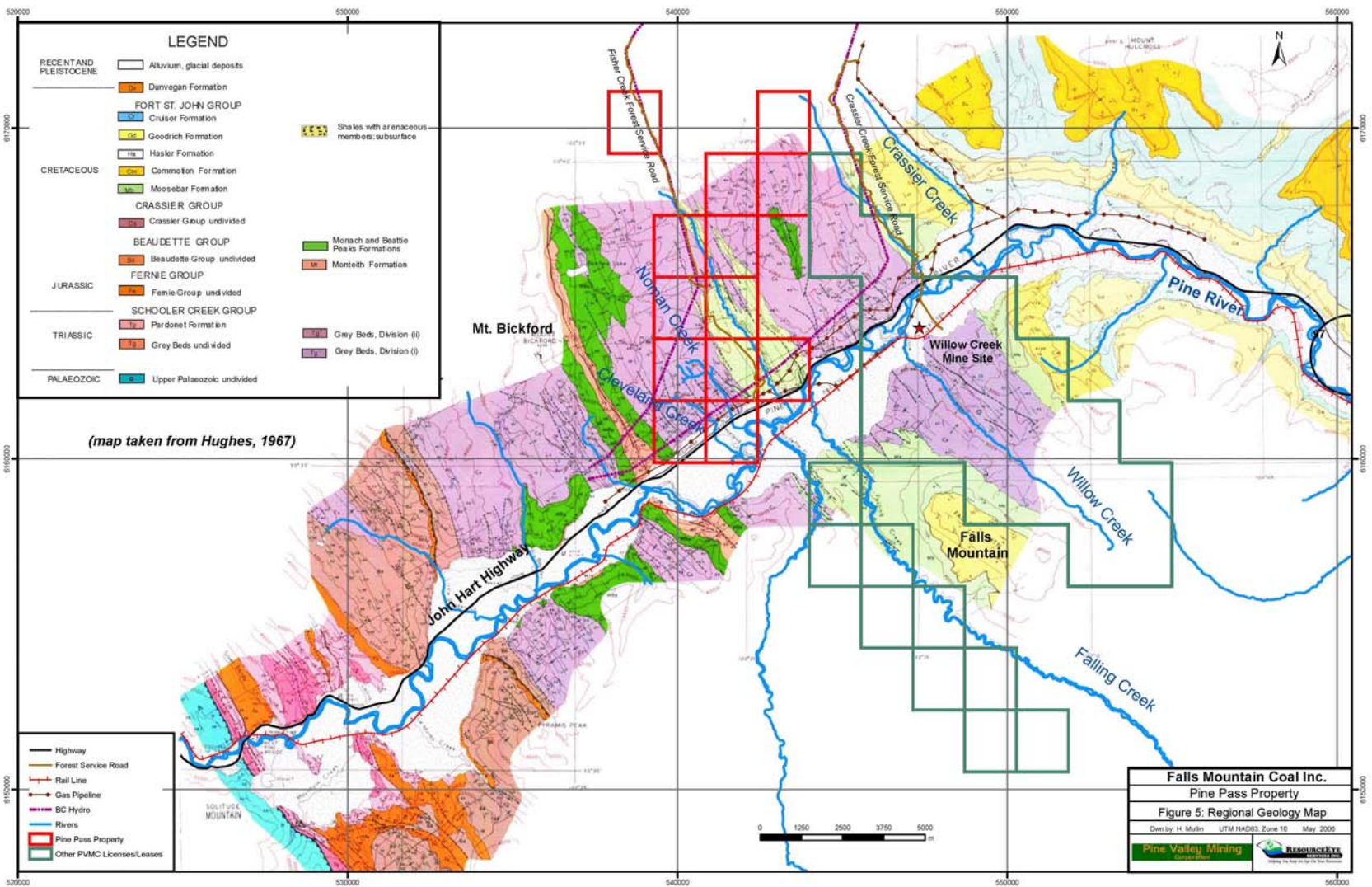
The regional stratigraphy has been studied by the Geological Survey of Canada and published, amongst others, by Hughes, 1967 and Stott, 1982. A comparison of the two classification systems is given in Table 2. Hughes grouped the Gething and the underlying Dresser and Brenot Formations into the Crassier Group. The equivalent formations as classified by Stott are the Gething and Cadomin, but these have been termed the Bullhead Group. Both systems recognize the Moosebar Formation of the overlying Fort St John Group. Figure 5 shows the regional geology from the Hughes classification. The regional stratigraphy of the study area is described in Figure 6.

The steeply dipping nature of the coal measures, combined with favourable topography, has resulted in several near-surface deposits amenable to open pit mining. Geological complexity and the intensity of deformation varies from region to region. The Pine Pass area is fairly geologically complex, containing several fault structures typical of what is referred to as "the triangle zone" that occurs along the margin of the Rocky Mountains. The Pine Pass Block is situated in this tectonic setting.

**Table 2: Comparison of Geological Classification Systems - Hughes (1967) and Stott (1982)**

HUGHES		STOTT	
1967		1982	
FORT ST. JOHNS GROUP	MOOSEBAR FM	MOOSEBAR FM	FORT ST. JOHNS GROUP
CRASSIER GROUP	GETHING FM	GETHING FM	BULLHEAD GROUP
	DRESSER FM	CADOMIN FM	
		UNCONFORMITY	
	BRENOT FM		MINNES GROUP
DISCONFORMITY		BICKFORD FM	
BEAUDETTE GROUP	MONACH FM	MONACH FM	
	BEATTIE PEAKS FM	BETTIE PEAKS FM	
	MONTEITH FM	MONTEITH FM	





SERIES	GROUP	FORMATION	APPROX. THICKNESS (m)	LITHOLOGY
LOWER CRETACEOUS	FORT ST. JOHN	Hulcross	90 - 120	Grey marine mudstone with interlaminated, fine-grained marine sandstone towards the top.
		Boulder Creek	80 - 110	Non-marine sandstone and massive conglomerate; siltstone, sandstone and coal in upper part.
		Gates	80 - 200	Sandstone; siltstone, conglomerate; marine and non-marine mudstone; <b>COAL</b> ; seams are generally thin in Pine River area.
		Moosebar	150 - 300	Dark grey marine mudstone, minor siltstone. Thin bed of conglomeratic sandstone and mudstone, usually glauconitic, at base (Bluesky Member).
	BULLHEAD	Gething	350 - 550	<b>Mudstone, siltstone, sandstone, carbonaceous mudstone; coalified plant debris, minor bentonite, minor conglomerate, occasional thin tuffs in upper part; COAL; coal seams are well developed in Pine River area.</b>
		Cadomin	125 - 250	Medium to very coarse sandstones, grits and conglomerate; discontinuous coal seams.
	MINNES	Bickford	300 - 500	Lithic sandstone, siltstone, mudstone, carbonaceous mudstone, minor coal.
		Monach	150 - 225	Marine lithic and quartzose sandstone, with minor siltstone and conglomerate.
		Beattie Peaks	250 - 300	Sandstone, thinly bedded mudstone, siltstone, minor ironstone bands.
		Monteith	350 - 450	Sandstone, quartzite, minor mudstone, siltstone and thin conglomerate.
JURASSIC	Fernie	Fernie	Incomplete Section	Dark grey to black marine mudstone, minor siltstone.

Figure 6: Regional Stratigraphy (courtesy of Norwest, 2005; adopted from the Geological Survey of Canada (GSC) classification)

## **2.2 Local Geology & Sedimentation**

The area around the Pine Pass license area is underlain by strata of the Cadomin, Gething and Moosebar Formations. The Cadomin and Gething together form the Bullhead Group and are overlain by the Moosebar which is part of the Fort St John Group.

Both the Geological Survey of Canada and the BC Ministry of Energy, Mines and Petroleum Resources have conducted stratigraphy and mapping studies within the license area, these are well documented by Hughes (1964, 1967), McLearn and Kindle (1950) and McKechnie (1955).

A detailed stratigraphic column for the license area is shown in Figure 7, along with a correlation to documented stratigraphy at the Willow Creek Minesite.

### **2.2.1 The Cadomin Formation:**

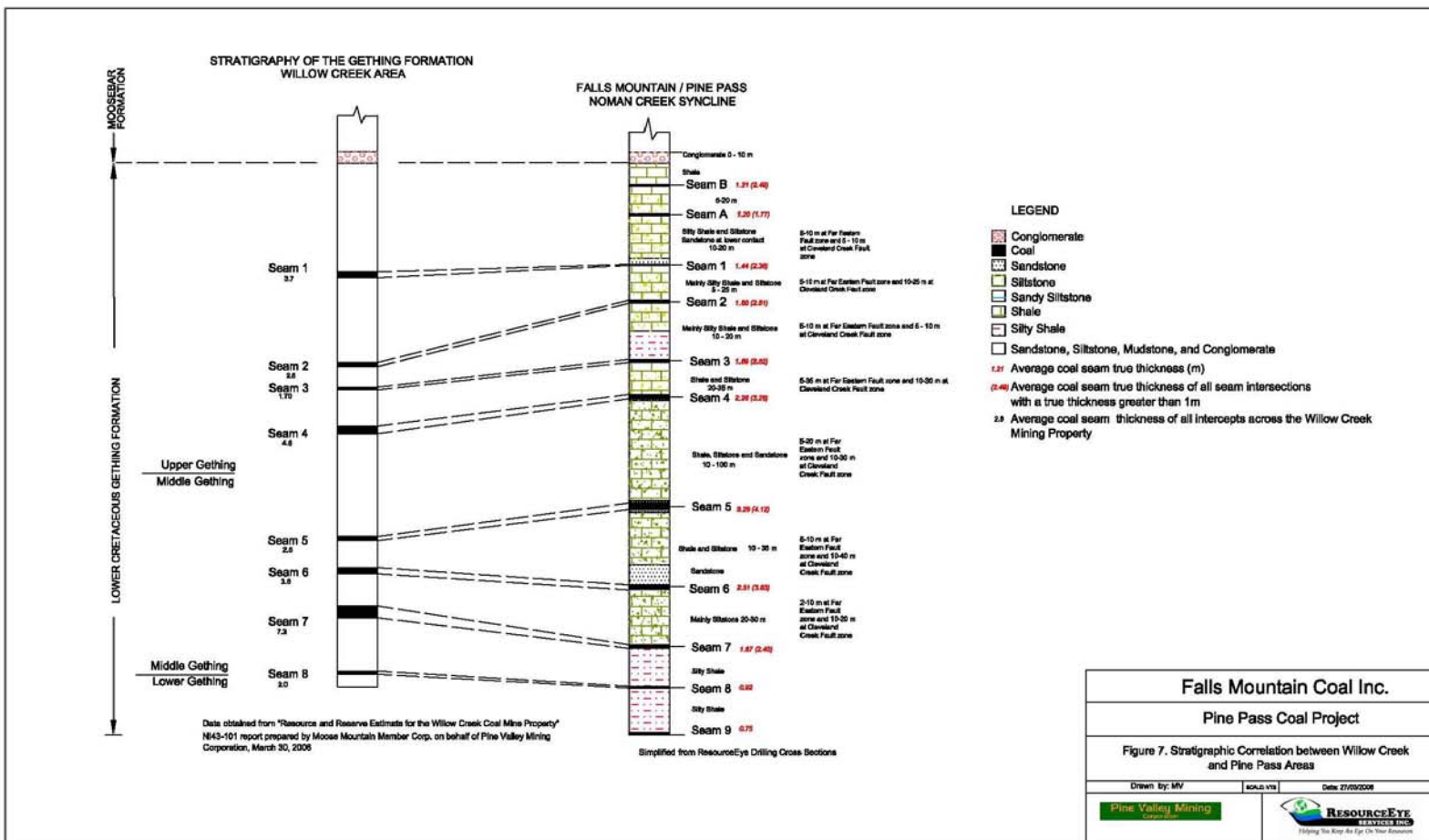
The Cadomin is a massive resistant unit of conglomeratic, light to medium-grey sandstone which extends laterally from the Peace River to Blairmore, Alberta. It forms a distinctive marker in the Lower Cretaceous sediments throughout the Canadian Rockies. It is separated from the underlying Jurassic-Cretaceous Minnes Group by an erosional unconformity.

In the Pine Pass area the Cadomin does not contain the conglomeratic units which occur further to the south of the property and are characteristic of the formation. Instead it is represented by a thick unit (~200 m) of coarse-grained, arenaceous sand and grit, referred to as the Dresser Formation (Hughes, 1964) and thought to be a facies variation of the Cadomin. The Cadomin sediments were deposited in alluvial fans by fast flowing streams near rapidly eroding mountain ranges; the coarser conglomeratic units fall within the proximal to mid-fan region in the Pine Pass area and the Dresser Formation falls within the distal part (Jordan & Acott, 2005).

In the license area, the Cadomin outcrops at the west edge of the property near Cleveland Creek.

### **2.2.2 The Gething Formation:**

The Lower Cretaceous Gething Formation of the Bullhead Group is the main coal-bearing sequence in northeastern British Columbia. It is also the main sedimentary unit in the license area, and the main unit of economic importance. It is a thick sequence of up to 540 m of fluvio-deltaic sediments, made up of siltstones, dark grey mudstones, fine to coarse-grained sandstones, shaley coal and coal, coalified plant debris, black shale, minor conglomerate and occasional tuffs. Fossils including bivalves and worm burrows occur within some of the sandstone units.



The Gething can be subdivided into two main facies: coarse sandstones and conglomerates typical of alluvial and upper delta plains grading laterally into the finer sediments of the lower delta plains. There is a distinctive fining-upwards sequence throughout the formation which represents an intermittent and regressive environment of deposition (Panchy, 1979). The coarser sediments are thought to represent a basal channel with the upper sands being a product of flood plain sedimentation deposited over the now-abandoned channel. The alternating beds of coal, dark siltstones and shales are characteristic of marshy interdistributary regions close to the floodplains.

### **2.2.3 The Moosebar Formation:**

Unconformably overlying the Gething are the dark grey, massive mudstones of the marine Moosebar Formation, which averages 300 m in thickness. The contact is easily recognisable due to its abrupt nature and the common presence of a 1-2 m bed of pebble conglomerate or sandstone – termed the Bluesky Conglomerate - thought to have been deposited in the first stages of a transgressing Albian sea (McKinstry, 1989), and intersected at the top of hole FM05-002C. Immediately below the main body of the Moosebar the conglomerate is typically siltier in nature and there is a distinctive glauconitic zone near the top.

The Moosebar Formation outcrops along Fisher Creek and has been exposed into several trenches and intersected in drillhole PP83-1 at 34 m. The Bluesky Conglomerate was also intersected in this hole, as well as in several trenches at Pine Pass (McKinstry, 1989).

Overlying the Moosebar are the basal sandstones of the Gates Formation which is the main coal-bearing sequence further to the south.

## **2.3 Description of the Coal Measures**

### **2.3.1 Seam Development**

Within the Gething formation are nine coal zones of interest that have been identified through the current drilling program and are included in the resource estimate. Within this study these zones have been termed seams B, A, 1, 2, 3, 4, 5, 6 and 7, with seam 7 being the oldest. Additional, discontinuous seams occur above, below, and between these seams, some of which may reach economic thicknesses, locally.

Previous studies have offered different nomenclature on the seams within the project area. The 1979 study by Crows Nest subdivided the Gething into three target zones for economic coal seams – an Upper Zone 30-40 m below the Moosebar-Gething contact, a Middle Zone approximately 100 m below the Upper Zone, and a Lower Zone approximately 100 m below the Middle Zone.

Further evaluations and correlations in later years were focussed on 2 of the thicker lower seams (seams 78 and 76). Seams 78 and 76 from the earlier studies were thought to be the equivalent of the Middle Zone. Seam 60 possibly equates to the Upper Zone and seams 39 and 40 to the Lower Zone.

In 1983 another study by Crows Nest (White & Fietz, 1983) recorrelated the coal seams into 12 horizons identified alphabetically down the stratigraphy from A to Z. They identified many irregularities in thickness and occurrence of the coal seams between sections.

Norwest's evaluation of the area in 2003 identified 10 coal zones, of which nine (Seams 1-8 and A) were considered mineable.

The different naming conventions and approximate correlations for the coal seams for both the previous and present studies are presented in Figure 8.

### **2.3.2 Coal Quality**

The coal at Pine Pass appears to be of a similar rank and quality to the coal at the existing Willow Creek mine. However, current comparable raw coal data is unavailable for comparison.

Preliminary coal quality testing was originally undertaken by Crows Nest Resources and the results are presented in their various assessment reports between 1979 and 1989. In general they found the coal to be low to medium volatile bituminous, capable of producing a high quality coking coal in addition to PCI or semi-soft coking products (approximately 35% PCI coal and 65% coking coal). Current quality test results indicate about a 90-10 split between MET and PCI coal product, using a 3.0 FSI raw coal cutoff.

## **2.4 Structure**

Structurally, the Inner Foothills of the Pine River area are the surface expression of a large anticlinorium. Deformation was caused by lateral, almost horizontal compressive stresses which also lead to the development of large thrust faults and smaller, related reverse faults. The anticline itself has been subject to several smaller, quasi-parallel, northwesterly-trending folds, generally terminated at their northern ends by faults and their southern ends by smaller, complex folds (Panchy, 1979). As a general rule, fold axes trend northwesterly, with the dip of fold limbs typically in the range of 20 to 50°. The overall brittle and semi-brittle deformation style is evidence of relatively shallow depths of burial.

In the Pine Pass area, the Cretaceous strata of the Gething Formation have been folded, thrust and uplifted into abundant small-scale anticlines and synclines which have exposed the coal seams. The Noman Creek syncline and Noman Creek anticline are the 2 main structures dominating the license area.

There are also several shear zones and several faults of importance, notably the Noman Creek Fault, the Cleveland Creek Fault, the Eastern Fault, and the Far Eastern Fault. The Noman Creek Fault was interpreted in previous studies to be a reverse fault dipping east. It has been reinterpreted as a thrust fault verging in the opposite direction.





Figure 8: Comparison of Coal Seam Stratigraphy and Nomenclature in Previous and Present Studies of the Pine Pass Property

**The Noman Creek Syncline** is an important feature of the property area as many of the coal seams are exposed at surface on its east and west limbs. It is relatively asymmetrical in shape, with dips on the west limb ranging from 45° to almost vertical, and on the east limb from 30 to 70°. Its axis strikes 325 and plunges approximately 10° to the south.

Two fault planes cut the east and west limbs of the syncline and are visible in surface outcrop. Adjacent to the west limb is the Cleveland Creek Fault, a west verging thrust fault with ~100-300 m displacement. Intersecting the east limb is the **Noman Creek Fault**, a thrust fault striking NW and dipping at approximately 60° to the southwest.

The syncline is cut off at its southern end by alluvial deposits in the Pine River Valley but extends in a northerly direction for approximately 7 km.

The **Noman Creek Anticline** occurs immediately to the east of the Noman Creek Fault, separated again by a northwesterly trending axis. Its Northeastern limb is cut by two faults, one of which is referred to as the **Eastern Reverse Fault**, both of which parallel the Noman Creek anticlinal axis. It has moved the northeast limb strata up dip by approximately 135 m, causing a repetition of the Moosebar Gething contact.

East of the Noman Creek anticline is the **Fisher Creek Syncline**, a large, broad, open structure with steeply dipping limbs which continues to the southeast across the Pine River into the Willow Creek area. It is exposed entirely within the Moosebar Formation for 5 km north of the Hart Highway where Gething Formation outcrops on the west limb. Previous mapping and cross-sections in the area of the syncline have led to the identification of several south-westerly-dipping reverse faults in its core (McKinstry, 1989).

The structure of the Pine Pass/Noman Creek area was reinterpreted in 1983 by Crows Nest Resources. They interpreted the folds as being cut by 3 to 4 east dipping reverse faults and several minor ones (White & Fietz, 1983), which differs from previous interpretations and is a departure from the regional trend of southwest dipping thrust faulting throughout the foothills. Their hypothesis was of minor east dipping thrusts related to the Fisher Creek syncline, but within a small area bracketed by major west dipping thrust faults. The ResourceEye interpretation incorporates elements of all the above.

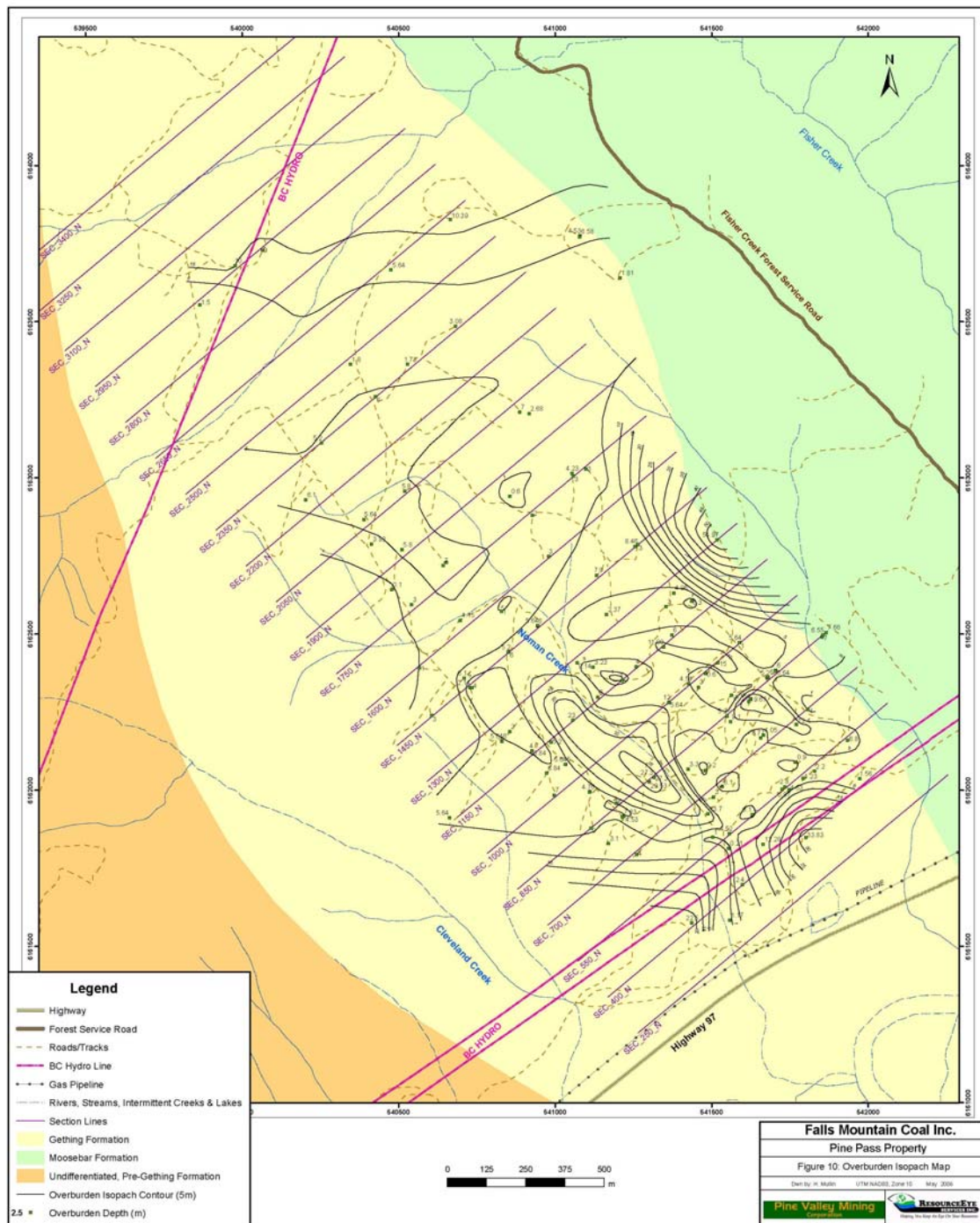
Figure 9 is a schematic cross-section through the deposit which illustrates the main structural features present in the study area. Detailed geological cross-sections at 50 m spacings are presented in Appendix 5.

## 2.5 Surficial Geology

Overburden depths were logged in 153 of 175 historical and current drillholes throughout the property. The overburden material is predominantly composed of glacial till. In the property area, the overburden has an average thickness of 7.85 m, with a pronounced thickening as we approach the Pine River and Crassier Creek Valleys. Figure 10 shows the overburden isopachs for the area.







## **3 Exploration**

### **3.1 History of Pine Pass Property Exploration**

Coal was discovered in the Peace River District over 200 years ago, in 1793. Although the first coal licenses were granted in 1908, the area was so remote that a lack of infrastructure limited mining to small localised operations. Prior to 1980, less than 100,000 tonnes had been mined. Initial exploration in the Pine Pass area was conducted between 1946 and 1951 by the British Columbia Department of Lands and Forests. This work consisted of geological mapping, trenching, core drilling and preliminary reserve estimates. The exploration work was intended to find a fuel source close to the proposed route for the Pacific Great Eastern Railroad into the Peace River District.

Several subsequent exploration programmes were conducted in the area. They are outlined below.

#### **1948 - 1951: BC Dept. of Lands and Forests**

N.D. McKechnie, a geologist with the Coal Division of the Dept. of Lands and Forests, carried out field mapping in the area, plus a core drilling program of 26 holes (for 4827 m) in the Noman Creek area (which includes the Pine Pass Block) and subsequent coal quality testing. Results are documented in B.C. Bulletin 36, authored by McKechnie and published in 1955.

#### **1964 & 1967: BC Dept. of Mines and Petroleum Resources**

Reconnaissance mapping and regional mapping of the Pine Pass area were undertaken by JE Hughes in 1964 and 1967 respectively. For details for this work refer to the BC Dept. of Mines and Petroleum Resources Bulletins no. 51 and 52. Results of assays from 2 seams showed average ash contents of 7% for Seam A and 6.8% for Seams B/C.

#### **1968: Pine Pass Coal Company**

In 1968 the Pine Pass Coal Company drove an adit 37 m along the strike of a thick coal seam (Seam B/C) in the Noman Creek Syncline. A bulk sample was taken and sent for analysis at Warnock Hersey. Results indicated an ash content of 5%, volatiles of 23% and an F.S.I of 8.

#### **1969: Brameda Resources Ltd.**

In 1969 additional exploration was done by Brameda Resources in the Hasler Creek, Willow Creek and Noman Creek areas. The latter comprised extensive road work, trenching, 23 core drillholes for 4786 m (16 of which were on the Pine Pass Block), topographic mapping and coal testing. Initial reserves were calculated for seams greater than 1.5 m thick and were estimated at 11,618,600 tonnes. Results of this program are described further in Trenholme, 1969.

## **1979 - 1989: Shell Canada Resources Ltd / Crows Nest Resources Ltd**

Shell Canada Resources Ltd and its wholly owned subsidiary, Crows Nest Resources Ltd., conducted exploration programs and subsequent studies of the property area in each year from 1979 to 1984, and again in 1989. These are summarized below.

In 1979 a field program was implemented in the Noman Creek area consisting of 1:5000 geological mapping and hand trenching of coal seams. Channel samples from the trenches were sent to the company's lab in Fernie, BC for analysis. Subsequent preliminary reserve estimates indicated 5 to 10 million tonnes of open pit mineable geological in-place reserves at an overburden ratio of between 5:1 and 10:1.

In 1980 a further program of exploration was conducted by Singhai Engineering on behalf of Crows Nest Resources which focussed on the correlation of coal seams, increasing coal reserves, and gaining more information on the structural setting. Field work consisted of detailed geological mapping, 30 backhoe trenches and sampling of exposed coal seams. Detailed geological and structural cross-sections were prepared on completion of the field program and used to calculate in-situ coal reserves of 25 million metric tonnes open pit mineable geological in place reserves with 4.6:1 overburden ratio. Reserves were calculated both west and east of Noman Creek (East and West pits) and the above reserve figure was for both areas. Coal quality assays returned ash values of between 6% and 11% for all seams, and volatile matter content of 28% to 32%.

In 1981, further exploration on the Noman Creek block included mapping, 30 backhoe trenches and 23 rotary drillholes for 2600 m, 16 of which were on the Pine Pass Block.

A further study was undertaken in 1983 in order to review the existing data and revise previous geological interpretations of the property. Field work consisted of drilling two core holes for 633 m (plus subsequent geophysical logging and geotechnical examination), 12 backhoe trenches for 1130 m, geological mapping and a surface geophysical (resistivity) survey to locate the contact between the Moosebar and Gething Formations. A cross section grid was laid out and 8 new cross sections were generated at 200-600 m intervals. Structural reinterpretation highlighted a system of folds and east dipping thrust faults, which differed from the original theories of west dipping thrust and transverse faults. Difficulties were encountered in cross-referencing and correlating using previous drilling and trenching and some re-correlation was undertaken using the geophysical log responses from the 1981 and 1983 programs. Reserves were not recalculated during this study.

In 1984, a further five core holes were drilled for 553 m to verify seam continuity and thickness from previous drilling. These were also geophysically logged. Results served to confirm existing data and did not conflict with the 1983 structural reinterpretation. Coal samples were sent for analysis, which reconfirmed the rank of the coal as medium volatile bituminous.

During the final phase of exploration in 1989, Crows Nest Resources drilled a further 11 core holes for a total depth of 1095.5 m, in order to further verify seam continuity

and thickness from previous drilling / trenching campaigns. Their ensuing report highlighted the difficulty in seam correlation, the steeply dipping seam attitudes, thickness variability and complexity of geology. They recommended a program of more detailed angled drilling throughout the license block. Coal quality samples from drilling were submitted to Loring Laboratories of Calgary for assay. Results identified relatively thick, low raw-ash (<15%), metallurgical/thermal coal seams.

Further details of the Crows Nest studies are documented in Panchy, 1979; Singhai, 1980; White & Fietz, 1983 and 1985; and McKinstry, 1989.

### **1992 - present: Pine Valley Mining Corporation**

In 1992 Globaltex Industries, now Pine Valley Mining Corporation, acquired the 14 coal licenses comprising the Willow Creek Coal Project and the Pine Pass license block.

In 2003, Norwest Corporation of Calgary was commissioned to produce a technical report and Preliminary Feasibility Survey for the Willow Creek and Pine Pass areas, in compliance with National Instrument 43-101 and associated reporting guidelines, including Geological Survey of Canada Paper 88-21.

Reserves in the Pine Pass Block were estimated at 9,546 kt (recoverable) and 8,924 kt (saleable). Mine plans were also developed for the Pine Pass mining region with the proposed development of two separate pits, the East Pit and the West Pit. Further details of reserve estimation methods, results and mine designs can be found in Norwest, 2003.

In July 2004, PVMC commenced operations on the Willow Creek coal mine. The mine is currently exporting raw low ash low-volatile bituminous coal for pulverized coal injection (PCI) and aims to reach an annual production of up to 1 million tonnes per year.

## **3.2 2005 Exploration Program**

### **3.2.1 Objective and Scope**

In December of 2004, ResourceEye Services Inc. was retained by Pine Valley Mining Corporation to plan and implement a detailed drilling and mapping program in the Pine Pass Project Area. See Figure 11. This field program was to be followed by the preparation of a geological model, and the reporting of all work to the appropriate regulatory agencies.

This work was conducted with the aim of upgrading as much of the current resources to measured category as possible based on both new and historical data, and to obtain further coal quality data on the coal seams intersected by the drilling. This work is herein referred to as the 2005 Exploration Program.





### **3.2.2 Permitting**

The 2005 Exploration Program was conducted under Permit Number CX-9-017. Notice of Work permits and Annual Summary of Work forms were completed by ResourceEye Services Inc. and submitted to the Ministry of Energy, Mines and Petroleum Resources in Prince George, in accordance with current B.C. government regulations.

These included the following:

- Mineral & Coal Notice of Work & Reclamation Programs - completed and submitted for the two separate phases of drilling in February and October 2005.
- Mineral & Coal Annual Summary of Work for Exploration Activities Pursuant to Part 9.2.1(3) of the H.S.R. Code - completed and submitted December 2005 on completion of field activities. (annual work approval number: 05-1640446-1012)

### **3.2.3 Field Program Summary**

The field program included exploration access road development, core and rotary drilling, geophysical logging, core logging, sampling, coal quality testing, site reclamation and permitting, GPS surveying, and geological mapping.

As part of ResourceEye's Quality Management System, a Daily Exploration Activity Report (DEA) was produced for each day of the field program, providing a detailed summary of the activities on site each day. These DEAs can be found in Appendix 1.

See Sections 3.2.3- 3.2.12 for details of the above referenced project components.

### **3.2.4 Exploration Access Road and Drillsite Development**

During the 2005 exploration program, access to and within the property utilized existing roads and tracks, including the Fisher Creek Forest Service Road (FSR), wherever possible. In many cases, old exploration trails had to be reopened in order to access drill sites, or new trails were logged, excavated and leveled.

Photos 1 and 2 show log decking of trees in preparation for hauling. Several stream crossings were existing in key areas, resulting in a limited number of crossings that needed to be constructed.

Additionally, logging operations were carried out over Ken Stewart's woodlot, by Mr. Stewart, during the latter part of the program. This logging is clearly seen in the orthophoto overlay presented in Figure 3

The locations of pre-existing and newly installed stream crossings are shown on Figure 12. Additionally, all recommendations were followed regarding site access construction as outlined in "Handbook for Mineral and Coal Exploration in British Columbia".



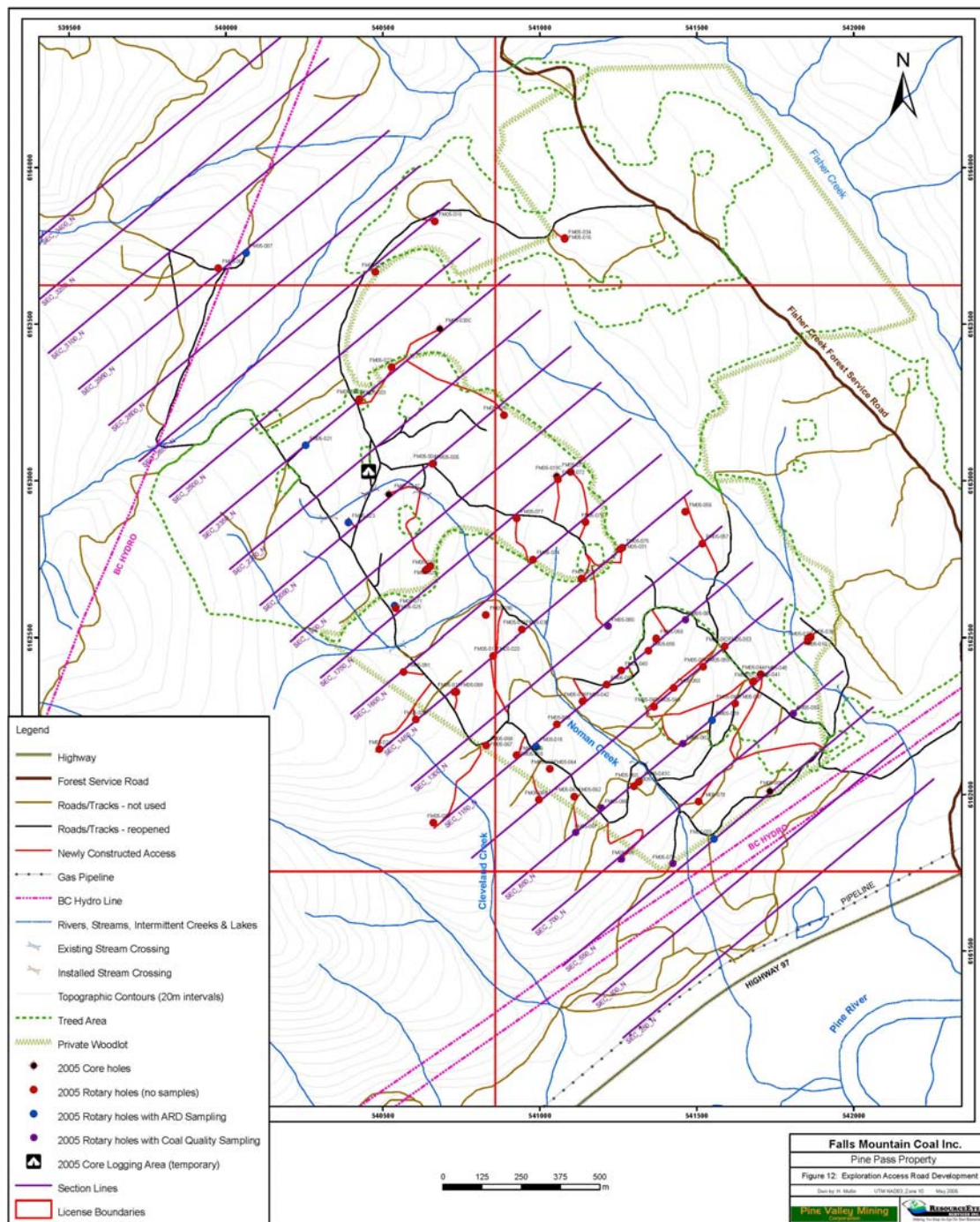


**Photo 1: Access to timber log deck areas**



**Photo 2: Log decking of timber prior to removal from site**





A summary of utilized and constructed access roads and drill sites is outlined in Table 3.

**Table 3: Summary of Exploration Road Access Usage and Development**

<b>ACCESS ROAD CLASS</b>	<b>AREA (HA)</b>	<b>KM / #</b>
Fisher Creek Forestry Service Road	2.4	3 km
Existing roads/trails – reopened	6.1	12.1 km
Newly constructed access	2.9	5.7 km
Drillsites - new	4.7	52

New accesses were built with the aid of Kearah & Weri Environmental Contracting Ltd. A 230 Hitachi Excavator (see Photo 3), and D65 Komatsu and D7 Caterpillar bulldozers were used for levelling roads and preparing the drill sites and sumps. See Photo 4, which shows drill pad construction and road building. Dunne-Za Ventures LP, of Moberley Lake, B.C. were also contracted for skidder, water trucks and logging services.



**Photo 3: Hitachi 230 excavator operated by Kearah & Weri Environmental Contracting Ltd.**





**Photo 4: Road and Drill Pad Construction**

In many cases, it was noted that the existing trails were a bit wider than the standard 5 m common in the industry. Where these trails were re-opened, ResourceEye made every attempt to keep the new disturbance to a 5 m maximum.

Photo 5 shows an example of this situation. In several cases, aggravating factors led to wider than anticipated excavations for a number of reasons, including:

- Soft ground conditions necessitates clearing a wider area in order to construct ditches to allow for proper drainage;
- The requirement to recover all merchantable timber necessitates constructing wider accesses for logging equipment;
- Soft ground conditions often require hole locations to be moved after initial site excavation indicates softer than expected ground conditions.

Photo 6 displays an example of typical erosion / sedimentation control measures used on site.



**Photo 5: Example of pre-existing access (very wide) that was re-opened.  
Note the utilized width was kept to a minimum.**



**Photo 6: Example of erosion control for roads**



### **3.2.5 Drilling**

A two phase program concentrated on drilling on 300 m sections in the initial phase, with 150 m section line infilling during phase 2. Photo 7 shows an SDS rotary drill rig.



**Photo 7: Rotary drilling rig operated by SDS Drilling Inc.**

A total of 91 drillholes, for 16,336 m, were completed between April and November 2005. Six were 3" core holes for a total of 1,083.5 m, and 85 were conventional or reverse circulation rotary for a total of 15,252 m. Figure 13 shows the location of all 2005 drillholes, as well as historic drilling locations. Table 4 presents a summary of drillholes from the 2005 exploration program. Detailed drillhole information is provided in Appendices 2a-h.

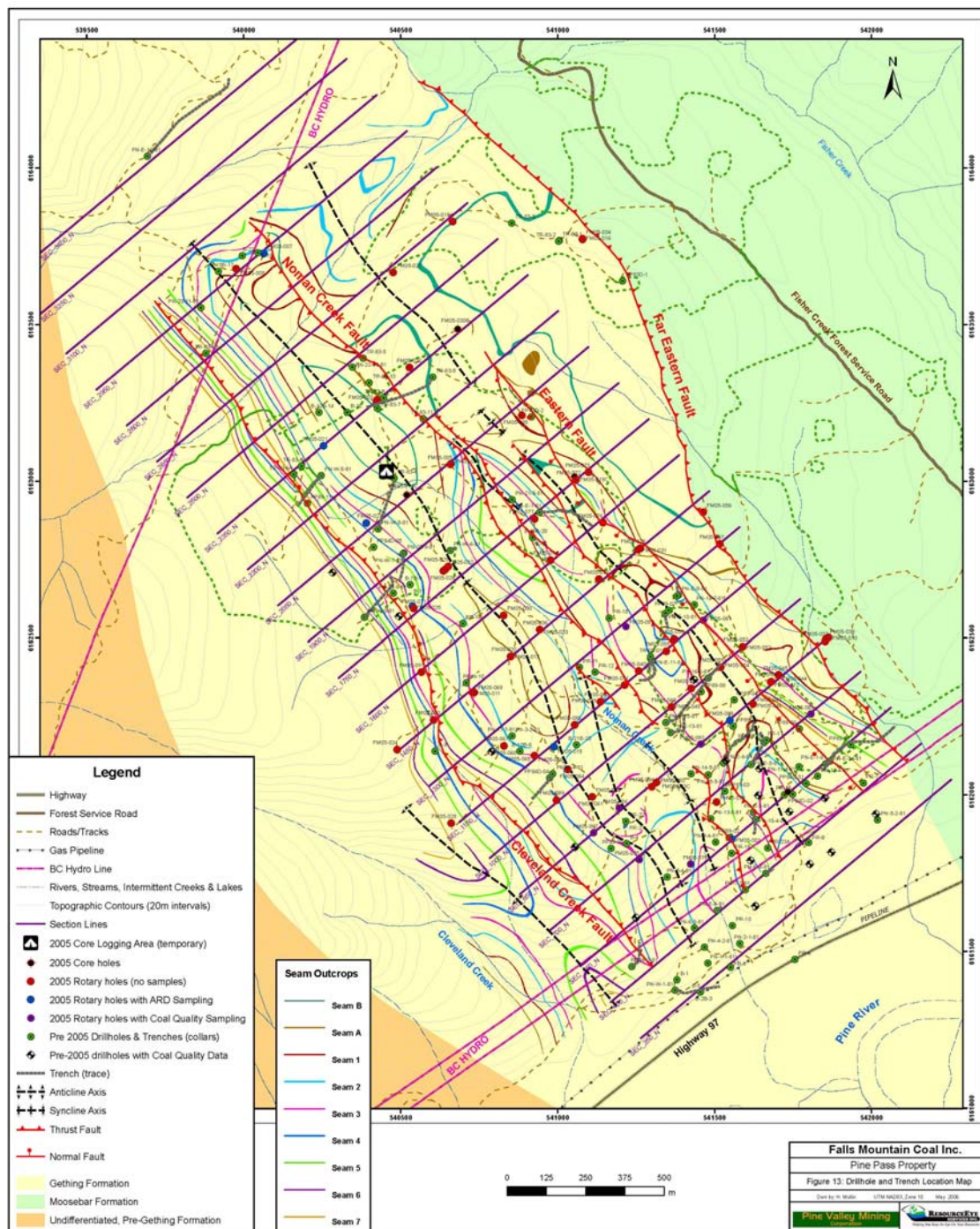


Figure 13: Drillhole and Trench Location Map



Table 4: Pine Pass – Summary of Drillholes from 2005 Exploration Program

Hole ID	Easting (UTM)	Northing (UTM)	Elev (m)	Azimuth	Dip	Total Depth (m)	Type	Section	No. Coal Quality Samples	No. ARD Samples	Comments
FM05-001	6161859.15	541555.15	774.00	30	-50	294.5	Rotary	550		374	
FM05-002C	6163257.00	540426.86	1020.07	0	-90	21	Core	2350	2		drill burnt through 2 bits in first 5 m. Sent drill home. Re-logged Oct 05
FM05-003	6163259.67	540425.39	1020.13	0	-90	270	Rotary	2350			
FM05-004	6163055.87	540660.52	996.43	230	-55	120.5	Rotary	2050		50	hole abandoned due to excessive water flow of 100 gpm.
FM05-005	6163054.15	540658.32	996.56	0	-90	300	Rotary	2050			logged through rods; picks from neutron log
FM05-006C	6162010.81	541733.49	751.55	0	-90	221	Core	550	25		
FM05-007	6163728.45	540064.23	1035.00	0	-90	208	Rotary	2950		199	ARD hole.
FM05-008	6163678.73	539976.46	1048.35	0	-90	207	Rotary	2950			
FM05-009	6162237.78	541549.36	840.24	230	-60	232	Rotary	850		176	ARD sampling.
FM05-010	6162502.45	541862.66	765.51	50	-50	170	Rotary	850			Dip meter cancelled due to no coal
FM05-011	6162328.33	540728.45	987.46	230	-50	168	Rotary	1450			deviation and dipmeter log only to 48.5 m, as hole too shallow dipping for tool

Hole ID	Easting (UTM)	Northing (UTM)	Elev (m)	Azimuth	Dip	Total Depth (m)	Type	Section	No. Coal Quality Samples	No. ARD Samples	Comments
											to go any deeper.
FM05-012	6162360.27	541679.10	814.81	230	-60	240	Rotary	850			intersections preliminary - from driller's log, waiting for additional logs to be run
FM05-013	6162688.31	541131.61	928.94	0	-90	156	Rotary	1450			
FM05-014C	6162957.21	540518.96	1008.67	0	-90	267	Core	2050	30		
FM05-015	6162154.15	540987.75	922.14	230	-60	165	Rotary	1150		162	ARD Hole
FM05-016	6163775.25	541079.08	899.41	230	-65	116	Rotary	2350			Hole abandoned at 116 m on June 16, 2005 due to poor pad conditions - will do work on pad and come back to redrill. (FM05-031)
FM05-017	6162442.64	540850.54	948.93	0	-90	330	Rotary	1450			
FM05-018	6163828.72	540666.44	954.31	230	-60	280	Rotary	2650			Changed to Rock bit - basically redrilling entire hole. No driller's log available - Overburden depth uncertain.
FM05-019C	6163015.06	541054.06	955.79	230	-70	240	Core	1750	35		
FM05-020	6162442.64	540850.54	948.93	230	-60	250	Rotary	1450			



Hole ID	Easting (UTM)	Northing (UTM)	Elev (m)	Azimuth	Dip	Total Depth (m)	Type	Section	No. Coal Quality Samples	No. ARD Samples	Comments
FM05-021	6163113.04	540253.85	1051.17	230	-60	200	Rotary	2350		194	ARD Sample Hole
FM05-022	6163363.33	540528.13	1014.70	230	-60	285	Rotary	2350			
FM05-023	6162867.29	540389.59	1037.46	230	-70	157	Rotary	2050		165	
FM05-024	6162144.73	540489.23	1025.52	50	-70	165	Rotary	1450			
FM05-025	6162602.33	540536.96	1010.81	230	-70	153	Rotary	1750		149	
FM05-026	6162714.40	540636.40	974.80	230	-70	243	Rotary	1800			
FM05-027	6163666.94	540475.65	980.45	230	-70	202	Rotary	2650			
FM05-028	6161910.41	540661.28	945.96	50	-70	196	Rotary	1150			
FM05-029	6162728.25	540651.15	972.42	50	-70	231	Rotary	1800			
FM05-030C	6163486.11	540682.13	991.29	230	-70	122	Core	2350	7		
FM05-031	6162781.52	541256.19	901.41	230	-70	201	Rotary	1450			All logs run except dip (tool broken). Dip log redone 25/8/05
FM05-032	6162719.17	540641.57	972.62	0	-90	201	Rotary	1800			
FM05-033	6162525.57	540943.09	908.22	0	-90	190	Rotary	1450		146	Dip/deviation tool broke
FM05-034	6163772.60	541078.87	897.04	230	-70	201	Rotary	2350			Dip log re-run Oct05
FM05-035	6163210.42	540886.40	980.12	0	-90	207	Rotary	2050			Dipmeter redone 26/08/05
FM05-036	6162525.57	540943.09	908.22	50	-70	190	Rotary	1450			Washout below casing, could not run anything but neutron
FM05-037	6162490.04	541852.69	754.24	0	-90	122	Rotary	850			
FM05-038	6162497.00	541855.00	765.00	230	-70	124	Rotary	850			

Hole ID	Easting (UTM)	Northing (UTM)	Elev (m)	Azimuth	Dip	Total Depth (m)	Type	Section	No. Coal Quality Samples	No. ARD Samples	Comments
FM05-039	6162298.07	541135.89	867.51	0	-90	222	Rotary	1150			
FM05-040	6162395.56	541258.97	896.73	0	-90	196	Rotary	1150			
FM05-041	6162361.90	541680.53	815.89	0	-90	100	Rotary	850			
FM05-042	6162298.07	541135.89	867.51	230	-70	150	Rotary	1150			
FM05-043C	6162040.73	541314.72	825.50	0	-90	212.5	Core	850	10		
FM05-044	6162383.50	541703.88	813.10	0	-90	104	Rotary	850			
FM05-045	6162382.95	541703.98	813.90	230	-70	110	Rotary	850			
FM05-046	6162291.08	541622.68	834.62	0	-90	70	Rotary	850			Had to pull and reset casing, site abandoned as saturated due to rain. Redrilled 23/8/05
FM05-047	6162291.08	541622.68	825.50	230	-70	50	Rotary	850			
FM05-048	6162281.31	541363.16	874.89	0	-90	101	Rotary	1000			
FM05-049	6162281.08	541362.73	874.55	230	-70	116	Rotary	1000			
FM05-050	6162341.14	541426.01	875.69	230	-60	150	Rotary	1000			
FM05-051	6162350.95	541213.13	889.49	0	-90	258	Rotary	1150			
FM05-052	6162472.55	541588.84	860.46	0	-90	150	Rotary	1000			
FM05-053	6162472.55	541588.84	860.46	230	-70	122.7	Rotary	1000			
FM05-054	6162407.85	541519.63	869.42	230	-70	122.7	Rotary	1000			
FM05-055	6162458.63	541345.88	901.47	0	-90	250	Rotary	1150			
FM05-056	6162901.23	541463.46	882.48	230	-70	242	Rotary	1450			
FM05-057	6162800.39	541516.97	866.95	0	-90	178	Rotary	1300			
FM05-058	6162496.76	541371.41	899.34	0	-90	240	Rotary	1150			
FM05-059	6162407.85	541519.63	869.42	0	-90	150	Rotary	1000			

Hole ID	Easting (UTM)	Northing (UTM)	Elev (m)	Azimuth	Dip	Total Depth (m)	Type	Section	No. Coal Quality Samples	No. ARD Samples	Comments
FM05-060	6162040.73	541314.72	825.50	0	-90	50	Rotary	850			This is a redrill of FM05-043C which stopped at 214m in the middle of a large coal seam. Could not get casing to seal up, hole making too much water, abandoned hole at 50m.
FM05-061	6161994.49	541109.77	888.19	0	-90	146	Rotary	950			
FM05-062	6161994.43	541109.79	886.62	230	-70	146	Rotary	950			
FM05-063	6162082.47	541032.43	916.34	0	-90	160	Rotary	1050			
FM05-064	6162082.47	541032.43	916.34	230	-70	120	Rotary	1050			
FM05-065	6162126.11	540926.42	948.34	230	-70	126	Rotary	1150			
FM05-066	6162126.11	540926.42	948.34	230	-50	123	Rotary	1150			
FM05-067	6162156.85	540829.14	975.34	0	-90	100	Rotary	1250			
FM05-068	6162156.85	540829.14	975.34	230	-70	113	Rotary	1250			
FM05-069	6162328.49	540733.53	1000.90	0	-90	116	Rotary	1450			
FM05-070	6162239.74	540605.16	1019.81	0	-90	110	Rotary	1450			
FM05-071	6162594.33	540540.83	1019.66	0	-90	219	Rotary	1750			
FM05-072	6163005.10	541057.68	967.12	0	-90	80	Rotary	1750			
FM05-073	6163028.82	541097.70	960.05	0	-90	80	Rotary	1750			
FM05-074	6162748.80	540978.25	960.05	0	-90	172	Rotary	1600			
FM05-075	6162785.92	541263.34	915.36	0	-90	200	Rotary	1450			
FM05-076	6162867.92	541144.70	946.33	0	-90	170	Rotary	1600			

Hole ID	Easting (UTM)	Northing (UTM)	Elev (m)	Azimuth	Dip	Total Depth (m)	Type	Section	No. Coal Quality Samples	No. ARD Samples	Comments
FM05-077	6162879.69	540926.65	982.41	0	-90	231	Rotary	1750			
FM05-078	6161977.88	541505.76	800.27	0	-90	201	Rotary	700			All logs run but dipmeter- tool broken; dipmeter rerun at later date.
FM05-079	6161780.28	541422.91	780.04	0	-90	184	Rotary	550	15		
FM05-080	6162535.96	541217.30	930.18	0	-90	200	Rotary	1300	55		
FM05-081	6162555.78	541464.21	887.90	0	-90	225	Rotary	1150	25		
FM05-082	6162162.23	541455.35	860.56	230	-70	250	Rotary	850	8		Geophysical Log stops at 147m. Coal interval at 151 to 152 recorded on drillers log.
FM05-083	6162257.77	541806.87	784.54	0	-90	180	Rotary	700	42		
FM05-084	6162027.16	541299.82	839.29	0	-90	219	Rotary	850			The is the 3rd redrill of FM05-043C (hole terminated in coal seam) and FM05-060C which was not completed due to ground conditions.
FM05-085	6161793.72	541259.72	809.99	0	-90	210	Rotary	700	30		Rig had to ream out hole and log through pipe
FM05-086	6161957.61	541195.80	866.12	0	-90	244	Rotary	850	36		
FM05-087	6161879.06	541114.12	879.17	0	-90	260	Rotary	850	18		

Hole ID	Easting (UTM)	Northing (UTM)	Elev (m)	Azimuth	Dip	Total Depth (m)	Type	Section	No. Coal Quality Samples	No. ARD Samples	Comments
FM05-088	6162223.75	541055.23	893.27	0	-90	200	Rotary	1150			
FM05-089	6161984.15	540996.58	938.33	0	-90	202	Rotary	1000			
FM05-090	6162572.41	540827.84	958.52	0	-90	208	Rotary	1600			Dipmeter broke
FM05-091	6162391.70	540566.13	1025.94	0	-90	150	Rotary	1600			
TOTALS	92 holes					16335.9			338	1615	

The drilling portion of the exploration program was multi-faceted. Initially, two rigs provided by SDS Drilling Inc. of Calgary, were brought on site to start rotary and core drilling simultaneously. Photo 8 shows SDS rotary drilling on site. The initial attempt at coring proved problematic. The core rig was re-configured for rotary drilling and another core rig was brought in a few weeks into the program.



**Photo 8: SDS drill crew drilling angle hole**

SDS was the primary drilling contractor on site for rotary holes. Anderson Air Drilling, based out of Fort St John, took over coring after SDS, but was replaced by Geotech Drilling in June 2005 for cost and production reasons. Geotech drilling also failed to be cost effective. As a result, it was decided to discontinue coring in favour of rotary drilling with some coal quality sampling in selected holes.

Drilling was conducted along 150 and 300 m spaced section lines using existing access roads where possible. Table 5 provides a summary of drilled intersections by seam.



**Table 5: 2005 Drilling – Summary of Drilled Seam Intersection by Seam**

<b>2005 drilling - seam intersection statistics</b>		
<b>seam</b>	<b>Average intersection thickness (m)</b>	<b># hole intersections</b>
B	2.7	3
A	2.4	12
1	2.7	17
2	3	31
3	3.2	50
4	4.3	76
5	5.3	85
6	4.6	51
7	4.0	34
Totals	4.1	356

All surface holes were 6" in diameter and were cased to bedrock. The hole size for rotary drilling was 6". Core drilling produced 3" core. Upon completion and logging of the hole, the casing was removed and plugged with a stump indicating the hole identifier. Driller's logs were completed by the drillers for each hole, making note of main lithological intervals, water inflow, and other general comments. See Appendix 2a for Driller's Logs.

### 3.2.5.1 Core Drilling

Core drilling was performed by three contractors during the course of the program. See Table 6 for contractor details. Geotech and Anderson rigs are shown on Photos 9 & 10.

**Table 6: Coring Contractor Details**

<b>Hole ID</b>	<b>TD</b>	<b>Operator</b>	<b>Rig Type</b>
FM05-002C	21.0	SDS Drilling	TH100 601-21
FM05-006C	221.0	Anderson Air Drilling	Ingersol Rand Rotary
FM05-014C	267.0	Anderson Air Drilling	Ingersol Rand Rotary
FM05-019C	240.0	Anderson Air Drilling	Ingersol Rand Rotary
FM05-030C	122.0	Geotech Drilling	Rotary-Track Mounted B-53 Drill/Rubber Track
FM05-043C	212.5	Geotech Drilling	Rotary-Track Mounted B-53 Drill/Rubber Track



**Photo 9: GeoTech Ltd coring rig**



**Photo 10: Anderson drilling rig on site**

All core recovered was 3" in diameter and was stored in boxes for transportation to the core logging area. See Photo 11, which shows stacked boxes of core. On final completion of field work, the boxed core was moved to a specially constructed storage bin at the Willow Creek Minesite.



**Photo 11: Stacked boxes of core**

#### **3.2.5.2 Rotary Drilling**

The primary purpose of the rotary (conventional and reverse circulation) drilling was to obtain geophysical logs of the coal and interburden lithologies. Two contractors, with three different drill rigs, were utilized during the program.

See Table 7 for rotary contractor details. See Photo 12 showing SDS rig set up on angle hole.



**Table 7: Rotary Contractor Details**

<b>Operator</b>	<b>No. Holes</b>	<b>Total m</b>	<b>Rig Type</b>
Rocky Mt Drilling	3	627	Ingersol Rand Air Rotary Rig (reverse circulation)
SDS Drilling	82	14625.4	(2) Rotary Rig No. 601-12 CSR 1000 (conventional circulation)



**Photo 12: SDS drilling rig set up on angle hole**

### **3.2.6 Core Logging**

Once the core was received at the core logging tent, shown in Photo 13, the boxes were photographed.



**Photo 13: Core logging tent**

After the boxes of core were photographed, the core was logged for geological parameters including rock type, sedimentology and structural features and measurements, and geotechnical parameters including Rock Quality Designation (RQD%), core recovery, and core quality.

Geological Core Log Reports and Geotechnical Core Log Reports are located in Appendix 2d and 2e respectively. Core photographs are found in Appendix 2c. A sample is presented in Photo 14.





Photo 14: Example of drill core photography

### 3.2.7 Sampling

During the course of the exploration program, a number of core and rotary cutting samples were collected. Table 8 shows a breakdown of the sample types and numbers. Refer to Appendix 2g for detailed sample interval information.

Table 8: Sampling Summary

SAMPLE TYPE	ANALYSIS	# OF SAMPLES	RESULTS RECEIVED
Core	Coal quality	109	Yes
Rotary - conventional circulation	ARD	229	No: samples stored at Willow Creek Mine site
Rotary - reverse circulation	Coal quality	1615	Yes



### 3.2.7.1 Core Sampling

All drill core received at the core log area was photographed and logged prior to sampling. Refer to Appendix 2g for a list of holes and associated samples.

Upon completion of lithological, structural, and geotechnical logging, the core was prepared for sampling. Sample intervals were determined using the following parameters:

- For coal samples, lengths were limited to 1 m or less;
- Sample intervals must match lithological intervals, with the exception of hanging wall or footwall samples; and
- Hanging wall and footwall samples were taken for 10 cm intervals of the roof-floor-rock for significant seam intersections. These hanging wall and footwall samples were obtained for most coal seams, in order to facilitate dilution calculations for mine planning.

Sample ID's and intervals were noted and marked on the core box, and on the sample tags, where a coal quality sample was taken. These lithological intervals were subsequently corrected according to the signature on the geophysical logs that matched the relevant lithological zone, where available, in order to calculate core loss. See Section 3.2.9 for further details on geophysical logging.

Once marked for sampling, the sample tags are laid out on the core and photographed, as shown in Photos 15-18, below.

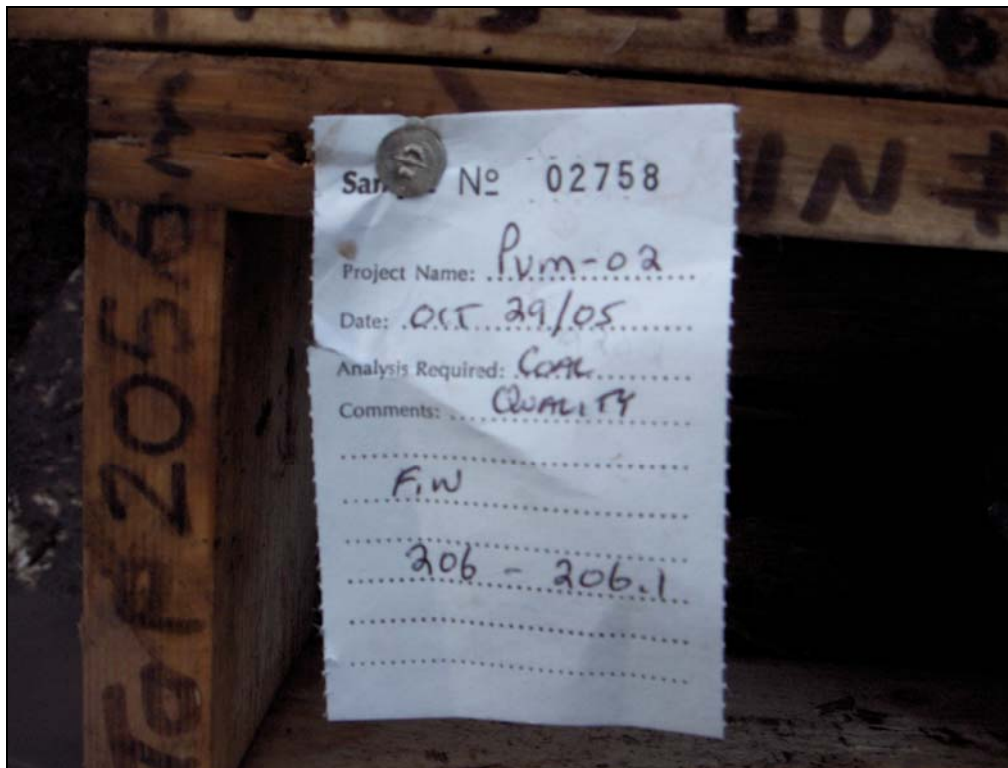


Photo 15: Core sampling tag attached to core box



Photo 16: Core box with coal sample marked for removal



Photo 17: Core box showing core sample with sample tag attached



**Photo 18: Core box with coal sample removed and sample tag affixed to the core box**

See Appendix 2c for photographs of the boxed core. After being photographed, the entire core is then bagged for sampling, with the corresponding sample tag placed in the bag and another stapled into the core box and photographed again after the sample was removed. A photograph of the sample, as removed from the box, was taken. Samples were then put into 5 gallon pails for shipment to the laboratory. Samples were sent to the lab for testing of coal quality parameters. Coal quality testing is further discussed in Section 3.2.8.

### **3.2.7.2 Rotary Sampling**

Rotary drilling of 6" diameter holes was the primary method of exploration during the program. Sampling of the cuttings from conventional (SDS Drilling) and reverse (Rocky Mtn Drilling) circulation was performed in order to obtain samples for ARD studies and coal quality.

ARD sampling was undertaken in select holes and obtained samples every metre during drilling, where recovery allowed. These samples were stacked on pallets, shrink wrapped and are stored at the Willow Creek Plant Site.





**Photo 19: ResourceEye personnel splitting, bagging and tagging ARD samples**

Reverse (RC) circulation samples obtained by Rocky Mountain Drilling were packaged and sent to SGS for coal quality testing. See Table 9.

**Table 9: Rotary Sampling Summary**

<b>SAMPLE TYPE</b>	<b>#</b>	<b>LOCATION</b>
Rotary ARD	1615	PVM minesite
Rotary Coal Quality	229	sent to lab

### **3.2.8 Coal Quality Testing**

All core and RC samples were submitted to the laboratory for testing of coal quality and Acid Rock Drainage (ARD) parameters.

SGS Canada Inc (Minerals Service Division) of Delta B.C. was the analytical laboratory contracted for coal quality testing.

A summary and discussion of coal quality results are found in Section 4.3.

### **3.2.8.1 Sample Preparation**

Upon receipt of the samples from the lab, the samples were weighed as received and then floor dried. After floor drying, each sample was then crushed using a Jaw Crusher to break it down to ½". It was then split down to 2 pans (the weight depending upon sample size received). If the sample received was in excess of ~6 kg, then a wet reserve sample was kept. The 2 pans were then air-dried. Upon air-drying the samples were then mixed together and crushed through a Hammermill to -8 mesh. These samples were then mixed thoroughly and split down using riffles. One portion was pulped into a -60 mesh sample for analysis and the remainder kept as dry reserve although in the case of small samples, nothing could be saved.

### **3.2.8.2 Testing Parameters**

Following sample preparation, the lab conducted testing for the following coal quality parameters:

- Moisture %
- Ash %
- Volatile Matter %
- Free Swelling Index (FSI)
- Fixed Carbon %
- Sulphur %
- Chlorine %
- Phosphorus %
- P<sub>2</sub>O<sub>5</sub> %

The analysis was done using American Society for Testing and Materials (ASTM) Standards as follows:

- D 3302-02a: Standard test method for total moisture in coal
- D 3174-02: Test method for ash in the analysis of coal and coke from coal
- D 3175-02: Test method for volatile matter in the analysis sample of coal & coke
- D 720-91(1999): Test method for Free Swelling Index of coal
- D 4239-02a: Sulphur in the analysis sample of coal & coke using high temperature tube furnace combustion methods
- D 4208-02: Standard test method for total Chlorine in coal by the Oxygen Bomb Combustion/ Ion Selective Electrode Method.
- D 4208-02e1: Standard Test Method for Total Chlorine in Coal by the Oxygen Bomb Combustion/Ion Selective Electrode Method

### **3.2.9 Geophysical Logging**

Upon completion of each drillhole, Century Geophysical Ltd of Tulsa, Oklahoma, performed geophysical logging of the hole while the drill rig was still on the hole. See Photo 20 of geophysical logging in progress.



**Photo 20: Geophysical logging being performed on site by Century Geophysical**

Utilizing a suite of tools, a number of geophysical parameters were measured, depending on the hole conditions. Table 10: Geophysical Logging Tools, shows the various tools and the geophysical parameters measured by each tool.

Where the stability of the hole was in question, a preliminary run was made through the drill steel to the bottom. Following this, an attempt was made at logging open hole. If unsuccessful, the driller was asked to clean out the hole, and another attempt at open hole logging was made. It is not uncommon to require several attempts to get a good open hole log.



Table 10: Geophysical Logging Tools

	TOOL NUMBER						
	9033	9410	9067	9068A	9055A	9139A	9411A
Natural Gamma (API-GR)	x	x	x	x	x	x	
Gamma-Gamma (cps)				x			
Density (g/cc)	x						
Neutron (API-N)	x		x				
Resistivity (Ohm-m)	x					x	
Caliper (cm)	x					x	x
Dip							x
Vertical Deviation					x		
Neutron Porosity					x		
Por Den (Percent)						x	
DEN (LS)						x	
DEN (SS)							
COMP DEN(CDL)						x	

On several occasions during the program, the dipmeter/deviation tool malfunctioned, making it unavailable. In these cases, the rest of the logging tools were run, and casing left in the hole. Upon receiving the repaired tool, Century attempted to log as many holes as possible that had been previously missed See Table 11: Holes vs Logs Completed, for list of holes with no dipmeter.

Table 11: Holes vs Logs Completed

Geophysical logging									
HOLE-ID	LENGTH	DEVIATION	GAMMA	DENSITY	RESISTIVITY	CALIPER	NEUTRON	DIPMETER	COMMENTS
FM05-001	294.50	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-002C	21.00	No	No	No	No	No	No	No	drill burnt through 2 bits in first 5 m. Sent drill home. Re-logged Oct 05
FM05-003	244.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-004	120.50	No	Yes	Yes	Yes	Yes	Yes	No	hole abandoned due to excessive water flow of 100 gpm.
FM05-005	300.00	No	Yes	No	No	No	Yes	No	logged through rods; picks from neutron log
FM05-006C	220.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-007	208.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	ARD hole.
FM05-008	207.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-009	232.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	ARD sampling.
FM05-010	170.00	No	Yes	Yes	Yes	Yes	Yes	No	Dip meter cancelled due to no coal
FM05-011	168.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	deviation and dipmeter log only to 48.5 m, as hole too shallow dipping for tool to go any deeper.
FM05-012	240.00	No	Yes	Yes	Yes	Yes	Yes	No	intersections preliminary - from driller's log, waiting for additional logs to be run
FM05-013	156.00	Yes	Yes	Yes	No	Yes	No	Yes	
FM05-014C	267.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-015	165.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	ARD Hole
FM05-016	116.00	No	No	No	No	No	No	No	Hole abandoned at 116 m on June 16, 2005 due to poor pad conditions - will do work on pad and come back to redrill. (

Geophysical logging									
HOLE-ID	LENGTH	DEVIATION	GAMMA	DENSITY	RESISTIVITY	CALIPER	NEUTRON	DIPMETER	COMMENTS
									FM05-031)
FM05-017	330.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-018	280.00	No	Yes	Yes	Yes	Yes	Yes	No	Changed to Rock bit - basically re-drilling entire hole. No driller's log available - Overburden depth uncertain.
FM05-019C	240.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-020	250.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-021	200.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	ARD Sample Hole
FM05-022	285.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-023	157.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-024	165.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-025	153.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-026	243.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-027	202.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-028	196.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-029	231.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-030C	122.00	No	Yes	Yes	Yes	Yes	Yes	No	
FM05-031	201.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	All logs run except dip (tool broken). Dip log redone 25/8/05
FM05-032	201.00	No	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-033	190.00	No	Yes	Yes	Yes	No	Yes	No	Dip/deviation tool broke
FM05-034	201.00	No	Yes	Yes	Yes	Yes	Yes	Yes	Dip log re-run Oct05
FM05-035	207.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Dipmeter redone 26/08/05
FM05-036	190.00	No	Yes	No	No	No	Yes	No	Washout below casing, could not run anything but neutron
FM05-037	122.00	No	Yes	Yes	Yes	Yes	Yes	No	
FM05-038	124.00	Yes	Yes	Yes	Yes	Yes	Yes	No	
FM05-039	222.00	Yes	Yes	Yes	Yes	Yes	Yes	No	
FM05-040	196.00	Yes	Yes	Yes	Yes	Yes	Yes	No	
FM05-041	100.00	Yes	Yes	Yes	Yes	Yes	Yes	No	
FM05-042	150.00	No	Yes	Yes	Yes	Yes	Yes	No	
FM05-043C	212.50	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

Geophysical logging									
HOLE-ID	LENGTH	DEVIATION	GAMMA	DENSITY	RESISTIVITY	CALIPER	NEUTRON	DIPMETER	COMMENTS
FM05-044	104.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-045	110.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-046	70.00	No	No	No	No	No	No	No	Had to pull and reset casing, site abandoned as saturated due to rain. Redrilled 23/8/05
FM05-047	50.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-048	101.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-049	116.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-050	150.00	No	Yes	Yes	Yes	Yes	Yes	No	
FM05-051	258.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-052	150.00	No	Yes	Yes	Yes	Yes	Yes	No	
FM05-053	122.70	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-054	122.70	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-055	250.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-056	242.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-057	178.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-058	240.00	No	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-059	150.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-060	50.00	No	No	No	No	No	No	No	This is a redrill of FM05-043C which stopped at 214m in the middle of a large coal seam. Could not get casing to seal up, hole making too much water, abandoned hole at 50m.
FM05-061	146.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-062	146.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-063	160.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-064	120.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-065	126.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-066	123.00	Yes	Yes	No	No	No	Yes	Yes	
FM05-067	100.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-068	113.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-069	116.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-070	110.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

Geophysical logging									
HOLE-ID	LENGTH	DEVIATION	GAMMA	DENSITY	RESISTIVITY	CALIPER	NEUTRON	DIPMETER	COMMENTS
FM05-071	219.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-072	80.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-073	80.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-074	172.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-075	200.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-076	170.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-077	231.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-078	201.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	All logs run but dipmeter- tool broken; dipmeter rerun at later date.
FM05-079	184.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-080	200.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-081	225.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-082	250.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Geophysical Log stops at 147m. Coal interval at 151 to 152 recorded on drillers log.
FM05-083	180.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-084	219.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The is the 3rd redrill of FM05-043C (hole terminated in coal seam) and FM05-060C which was not completed due to ground conditions.
FM05-085	210.00	No	Yes	No	No	No	Yes	No	Rig had to ream out hole and log through pipe
FM05-086	244.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-087	260.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-088	200.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-089	202.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
FM05-090	208.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Dipmeter broke
FM05-091	150.00	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

Geophysical logging was completed on 87 of the 91 drillholes. At one point during the program, Weatherford Inc. of Grande Prairie, had to be called out to retrieve the tool, after it became stuck in hole FM05-012. See Photo 21.



**Photo 21: Geophysical logging tool being retrieved by Weatherford Inc. of Grande Prairie**

The geophysical logs were received by the ResourceEye office in hard copy and electronic form. The logs were then processed and interpreted. Geophysical logs are found in Appendix 2f.

### **3.2.10 GPS Surveying**

A GEOExplorer GPS unit was used to survey and layout all holes. See Photo 22 which shows ResourceEye personnel surveying.

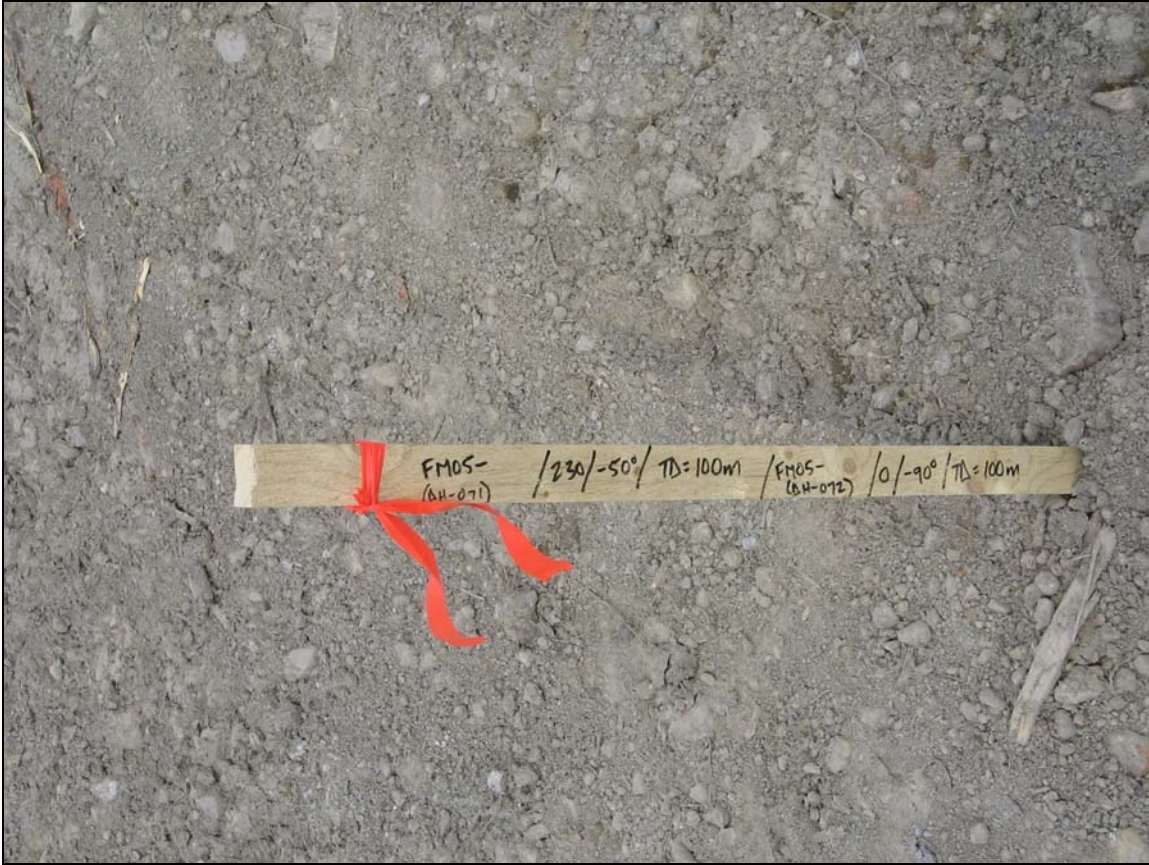




**Photo 22: ResourceEye personnel GPS surveying**

Hole positions were initially located with a GPS receiver, and flagged for site preparation. Upon site completion, the hole location was marked with a stake indicating the required drilling parameters. See Photo 23, which shows a marked stake.

Post processing of the GPS data was done using a base station operated by Cansel Surveys in Prince George. Refer back to Table 4 for the GPS survey locations of the drillholes.



**Photo 23: Drillhole staked with drilling instructions**

Easting and northings surveyed are accurate to 10 cm. Surveyed elevations are accurate to about 1 m. The property was recently flown with LIDAR sensing equipment, giving a 1 m by 1 m grid of surface elevation points accurate to 0.1 m.

Refer to Figure 4 for shaded relief LIDAR Map. The collar locations used in the geological model utilized elevations from the topographic model at each collar location.

### **3.2.11 Outcrop Mapping**

An outcrop mapping program was undertaken throughout the property to supplement the data obtained from drilling. Structural measurements from 58 newly excavated or previously unmapped rock exposures were obtained, as well as lithological descriptions, photographs and field sketches.

See Photo 24 which shows outcrop mapping.





**Photo 24: Mapping outcrop of coal seams exposed at drill site**

The locations of each outcrop point were surveyed using a handheld GPS unit. Additionally, during the course of mapping new rock exposures, existing structural measurements obtained from previous mapping exercises were checked for validity. (i.e. position, rock type, strike and dip). A >95% accuracy in the previous mapping was found.

Appendix 3 contains outcrop information sheets for the program.

A summary of the outcrop mapping is provided in Table 12.

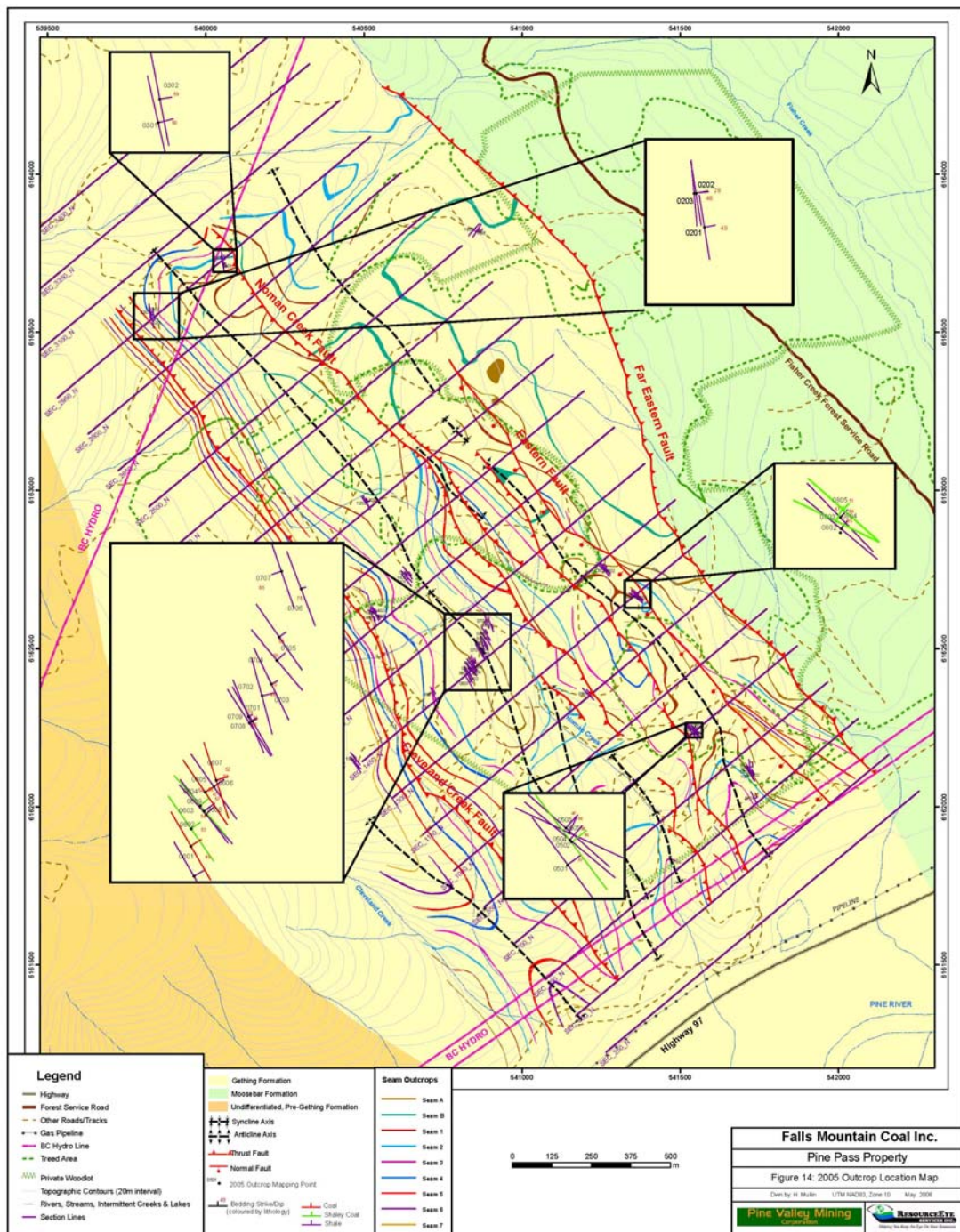
See Figure 14 for outcrop locations.

**Table 12: Pine Pass – 2005 Outcrop Mapping Summary**

<b>Outcrop ID</b>	<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>	<b>Lithology</b>	<b>Dip Direction</b>	<b>Bedding Dip</b>
101	541733.74	6162025.49	767.25	Shaley Coal	63	31
201	539830.66	6163537.03	1100.89	Coal/Shale	81	49
202	539824.30	6163563.00	1090.31	Coal/Shale	81	46
203	539822.90	6163563.00	1090.12	Shale	85	29
301	540052.78	6163717.15	1052.52	Shale	77	50
302	540053.64	6163729.45	1049.05	Shaley Coal	79	59
401	540720.13	6162355.12	1020.53	Shale	66	63
501	541540.78	6162229.34	857.04	Shale	53	56
502	541542.31	6162239.11	860.97	Shaley Coal	53	50
503	541540.01	6162245.05	857.17	Shale	42	58
504	541541.70	6162240.00	858.14	Coal/Shale	40	50
505	541541.30	6162243.00	857.83	Coal/Shale	25	47
601	540832.29	6162393.99	963.23	Shale	60	49
602	540830.35	6162412.88	962.49	Shale	60	53
603	540830.50	6162424.07	957.29	Shale/Coal	55	54
604	540836.31	6162438.56	957.93	Shale/Coal	49	56
605	540839.46	6162447.07	958.16	Coal/coaly shale	56	54
606	540844.92	6162450.70	962.35	Shale	55	52
607	540846.43	6162454.56	956.98	Siltstone	72	52
608	540839.90	6162433.00	967.27	Coal/Shale	48	51
609	540838.70	6162435.00	964.59	Coal/Shale	53	47
701	540869.29	6162492.23	939.70	Siltstone	60	74
702	540875.29	6162508.16	947.80	Shale	75	48
703	540881.33	6162515.68	958.03	Shale	64	70
704	540884.83	6162530.33	952.25	Fissile Shale	50	58
705	540886.24	6162544.76	945.06	Sandstone	55	65
706	540900.04	6162575.39	956.65	Shale	69	75
707	540887.64	6162586.45	924.38	Shale	251	60
708	540867.30	6162491.00	949.08	Coal/Shale	57	66
709	540866.80	6162495.00	945.22	Coal/Shale	67	78
801	541362.22	6162664.17	908.62	Shaley Coal	46	64
802	541362.40	6162656.00	913.52	Coal/Shale		
803	541362.70	6162658.00	915.94	Coal/Shale	40	65
804	541360.20	6162662.00	909.24	Coal/Shale	26	47
805	541364.00	6162668.00	914.54	Coal/Shale	42	71
901	541208.43	6162356.33	891.94	Shaley coal	44	59

<b>Outcrop ID</b>	<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>	<b>Lithology</b>	<b>Dip Direction</b>	<b>Bedding Dip</b>
1001	541720.75	6162102.88	777.03	Shale	57	57
1002	541719.31	6162108.61	776.84	Shale	65	49
1003	541718.83	6162111.98	777.59	Shale	65	41
1004	541719.61	6162124.97	779.61	Siltstone	84	43
1101	540634.10	6162715.40	982.01	Shale	52	56
1102	540634.26	6162726.76	979.56	Shale	46	69
1103	540637.81	6162738.55	973.27	Shale	54	67
1201	540507.87	6162960.79	1007.71	Shale	62	90
1202	540506.50	6162958.00	1009.26	Coal/Shale	56	49
1301	541260.10	6162749.00	923.78	Shale	56	82
1302	541262.60	6162753.00	918.23	Coal/Shale	47	63
1303	541259.80	6162746.00	918.01	Coal/Shale	45	63
1401	540527.80	6162599.00	1019.07	Shale	70	78
1402	540535.90	6162610.00	1021.12	Shale	64	79
1403	540534.60	6162609.00	1013.08	Coal/Shale	26	84
1404	540534.90	6162611.00	1009.29	Coal/Shale	50	62
1501	540474.80	6162129.00	1036.09	Shale	55	86
1502	540473.20	6162138.00	1035.40	Shale	49	89
1503	540427.80	6162147.00	1033.06	Coal/Shale	66	69
1504	540472.10	6162152.00	1035.61	Coal/Shale	52	79
1601	540857.00	6163821.00	935.40	Shale	122	24
1602	540847.30	6163824.00	933.61	Shale	132	15





### **3.2.12 Site Reclamation**

Road deactivation and interim reclamation was undertaken on the site after the exploration program was complete. This included establishing cross-ditches to control run-off, as well as seeding and fertilizing of all disturbed areas. Drill sumps were backfilled immediately upon completion of drilling.

See Appendix 4 for a copy of a photographic report demonstrating typical hole completion during the program.

Photos 25-27 below demonstrate cross-ditching and reclamation on a decommissioned road.



**Photo 25: Cross ditching for road deactivation**





**Photo 26: Reclaimed trail access showing roll backs**



**Photo 27: Seeding reclaimed areas**

### 3.3 Geological Data Compilation, Interpretation and Reporting

#### 3.3.1 Data Compilation

Prior to commencing the 2005 program, ResourceEye undertook a detailed geological data compilation of all existing information from the property. This enabled the development of cross sections for exploration planning.

This included the digitizing of various maps and cross sections, development of a comprehensive geological database in MS Access. This information provided the basis for planning the 2005 program.

Table 13 lists the historical data was compiled into the database during the course of the compilation work. Refer back to Figure 13 for compiled drillhole and trench locations.

**Table 13: Historical Data Summary**

ITEM	# DATA FEATURES
Trenches	41
Rotary holes	23
Core holes	60
Structural measurements	147

#### 3.3.2 Geological Interpretation

New geophysical logs were utilized in conjunction with the historical logs and all coal seams were assigned new seam codes based on a regional correlation with the Willow Creek Mine stratigraphy. Refer back to Figure 7.

The geological model was developed using MineSight® software to create solids for each seam, and to construct a 3D block model for resource estimation and future reserve calculations by Falls Mountain Coal's engineering group.

Additionally, all historical and new trenching, mapping and sampling data was used as a guide to interpretation. A compilation of the surface geology is presented in Figure 15.







### **3.4 Cost Summary and Personnel**

The total program cost was approximately \$3,421,708. This works out to about \$209.4 per metre of drilling. This is less than the project's budgeted overall rate of \$222 per metre.

See Table 14 for a breakdown of project costs.

**Table 14: 2005 Exploration Program Cost Summary**

CATEGORY	COMPANY	FUNCTION	COST	\$/m
<b>Permitting</b>	Allnorth Consultants Limited	assist with timber cutting permit	\$18,761.75	\$1.15
	North Fork Resources Inc.	assist with timber cutting permit	\$500.00	\$0.03
<b>sub total Permiting</b>			<b>\$19,261.75</b>	<b>\$1.18</b>
<b>Geological Services</b>	ResourceEye Services Inc.	geological program management and services, exploration program reporting	<b>\$612,953.88</b>	<b>\$37.52</b>
		Exploration report preparation, including resource calculation	<b>\$ 260,000.00</b>	<b>\$15.92</b>
<b>sub total Geological Services</b>			<b>\$872,953.88</b>	<b>\$53.44</b>
<b>Drilling</b>	SDS Drilling Services	rotary drilling, one core hole	\$1,180,444.46	\$72.26
	Geotech Drilling Services Ltd	core drilling	\$97,043.76	\$5.94
	Cora Lynn Drilling Partnership	core drilling	\$150,146.00	\$9.19
	Rocky Mountain Drilling Inc	reverse circulation drilling	\$40,002.00	\$2.45
<b>Sub Total Drilling</b>			<b>\$1,467,636.22</b>	<b>\$89.85</b>
<b>Drill Support</b>	Aim Trucking	core box transportation	\$900.00	\$0.06
	Kearah and Weri Environmental	heavy equipment support	\$634,238.85	\$38.83
	Dunne-Za Ventures LP	timber removal, water truck	\$381,052.56	\$23.33
	Century Geophysical Corporation	Geophysical logging	\$187,188.49	\$11.46
<b>Sub Total Drill Support</b>			<b>\$1,203,379.90</b>	<b>0.97</b>
<b>Environmental</b>	Environmental Dynamics Inc.	environmental studies	\$18,522.01	\$1.13
	Allnorth Consultants Limited	environmental studies	\$725.42	\$0.04

CATEGORY	COMPANY	FUNCTION	COST	\$/m
<i>Sub total Environmental</i>			<b>\$19,247.43</b>	<b>\$1.18</b>
<b>Laboratory Analysis</b>	SGS Canada Inc.	coal quality testing	\$95,341.00	\$5.84
	ALS Environmental Canada Ltd.	chlorine testing	\$3,888.00	\$0.24
<i>Sub Total Lab Analysis</i>			<b>\$99,229.00</b>	<b>\$6.07</b>
<b>TOTAL FIELD PROGRAM COST</b>			<b>\$3,421,708.18</b>	<b>\$209.47 - not including report preparation</b>
<b>TOTAL FIELD PROGRAM PLUS REPORT PREPARATION</b>			<b>\$3,681,708.18</b>	<b>\$225.37 – including report preparation</b>

## 4 Geological Model

### 4.1 Data Interpretation

#### 4.1.1 Driller's Logs

Drillers logs were completed by the drilling company for each hole. These are presented in Appendix 2a. The logs were utilized along with the geophysical logs, primarily to determine overburden depth. In cases where no geophysical log or core log was available for a particular hole, the driller's log was used as the primary source of information for the geological database.

#### 4.1.2 Geophysical Logs

Geophysical information, in the form of .LAS (log – ASCII) format digital files were provided by Century Geophysical Corp. for all parameters logged. See Section 3.2.9. This digital data was loaded to ResourceEye's Pine Pass geological database.

Several steps were involved in the data interpretation:

1. determine overburden depth by comparing casing length as recorded on the geophysical log to the driller's log.
2. determine coal intersections using Century Geophysical logging software. Copies of these interpreted logs are included in Appendix 2f.
3. determine interburden lithologies using one of the two following methods:
  - a. manually interpret interburden lithologies, using Century Geophysical logging software, or;
  - b. utilize Minesight Geological Modeling software to assign rock types for interburden lithologies based on gamma response.

Where no geophysical log is available, the coal and interburden lithologies were input into the database from the driller's log.

Interburden lithology was then interpreted by utilizing the gamma value ranges from the gamma logs. This was accomplished either manually using Century Software or using an automatic routine within Minesight. Table 15 below is a listing of gamma value ranges used for each lithology for the Minesight interpretation of interburden lithologies. The results are stored in ResourceEye's Pine Pass geological database.

**Table 15: Gamma Value Ranges for Interburden Lithologies**

LITHOLOGY	GAMMA RANGE (API)
Clean sandstone (SSC)	0 - 100
Argillaceous sandstone (SSA)	100 - 150
Shaley Sandstone or Siltstone (SHS)	150 - 200
Mudstone or Shale (SH)	200 - 999

### **4.1.3 Core Log Information**

Core log information was recorded on field logs as laid out in ResourceEye's Quality Management System (QMS). This data was entered into the database and the information presented in the form of a Core Log Coversheet, a Geological Core Log Report and a Geotechnical Core Log Report. These are presented in Appendices 2d and 2e.

This information was utilized to compare and correlate cored intersections with geophysical log intervals in order to determine precise core recovery, especially in the coal seams.

The descriptions and bedding angles measured and provided in the core log were also used as an aid in the structural interpretation of the geological model.

## **4.2 Solids Modeling**

The purpose of the solids modeling is to provide an accurate representation of the various geological features such as coal seams (solids) and faults (surfaces).

The geological model was constructed utilizing cross sections at a 50 m spacing oriented at an azimuth of 50 degrees for 2650 metres. Drilling information (See Section 3.2.5) was projected perpendicular to these from 25 m on either side of the section.

Additional information utilized to construct the cross sections included historical trenching and geological mapping data. See Section 3.3.1. Due to the complex nature of the geology and time constraints, the drillhole intersections were not matched in true 3D.

Seam bottoms for all 9 seams and 7 faults were digitized on each cross section. The seam bottom dips were then coded to the drillholes, utilizing routines developed by Minesight® known as the True Thickness Methodology.

Structure contour maps illustrating the seam bottom elevations in plan view are presented in Appendix 6. Seam isopachs representing the true seam thickness are presented in Appendix 7. These maps illustrate the modeled thicknesses; where seams overlap, the contours were "averaged" to provide a simplistic picture of the variations in seam thickness over the area.

Closed polygons of the seams were then created by interpolation of the calculated true thickness on each 50 m section. A cutoff of 1 m seam true thickness was used in the construction of the seam polygons.

The seam polygons were then used to construct the geological solids by linking seams on adjacent sections and extruding by 25 m along strike, any seam polygons that exist on one section but not an adjacent section.

Table 16 shows the volume calculations obtained from the solids constructed in Minesight.



**Table 16: Geological Solids Volume**

seam	total modeled solid volume (includes partings) cubic metres
B	852,363
A	894,981
1	2,328,325
2	3,147,991
3	5,135,780
4	8,420,447
5	13,060,564
6	10,740,538
7	7,011,653
<b>Total</b>	<b>51,592,642</b>

Each seam that was present in each of the 7 fault blocks, numbered 501 to 507, was linked as a separate solid for clipping against the bedrock surface and intersected faults. See Table 17.

**Table 17: Cross reference of seams present in each fault block**

FAULT BLOCK		SEAMS PRESENT - YOUNGEST TO OLDEST								
<i>Code</i>	<i>Name (if applicable)</i>	<i>B</i>	<i>A</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
501	Cleveland Creek		X	X	X	X	X	X	X	X
502	Noman Creek	X	X	X	X	X	X	X	X	X
503				X	X	X	X	X	X	X
504	Eastern	X	X	X	X	X	X	X	X	X
505	Far Eastern	X	X	X	X	X	X	X	X	X
506			X	X	X	X				
507		X	X	X	X	X	X	X		

Model codes utilized in the drillhole data and for polylines are shown in the following table.

**Table 18: Minesite model codes for coal seams**

<b>SEAM</b>	<b>MINESIGHT CODE</b>
B	111
A	110
1	101
2	102
3	103
4	104
5	105
6	106
7	107

Refer back to Figure 9 for a schematic illustrating the fault blocks on section. Figures 16-22 show various 3D views illustrating the block locations. Cross-sections on 50 m spacings for the entire model are located in Appendix 5.

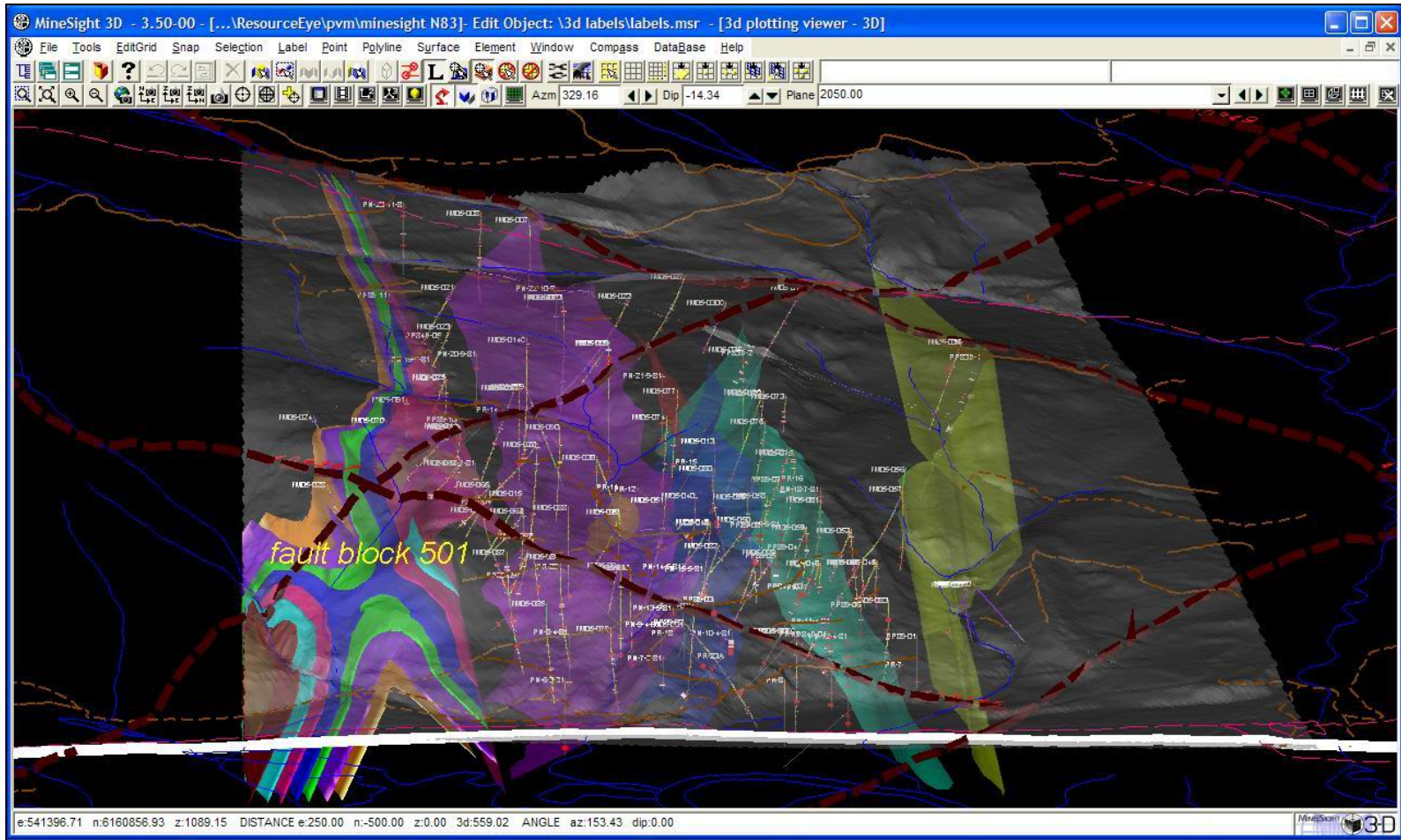


Figure 16: Rendered 3-D image showing coal seam, 3D solids and faults in the Cleveland Creek fault block (Fault Block 501). View looking NW. Hwy 97 is shown by the white stripe in the foreground. Topographic overlay lease boundaries are shown in brown. Topographic surface from LYDAR is the grey, semitransparent surface.

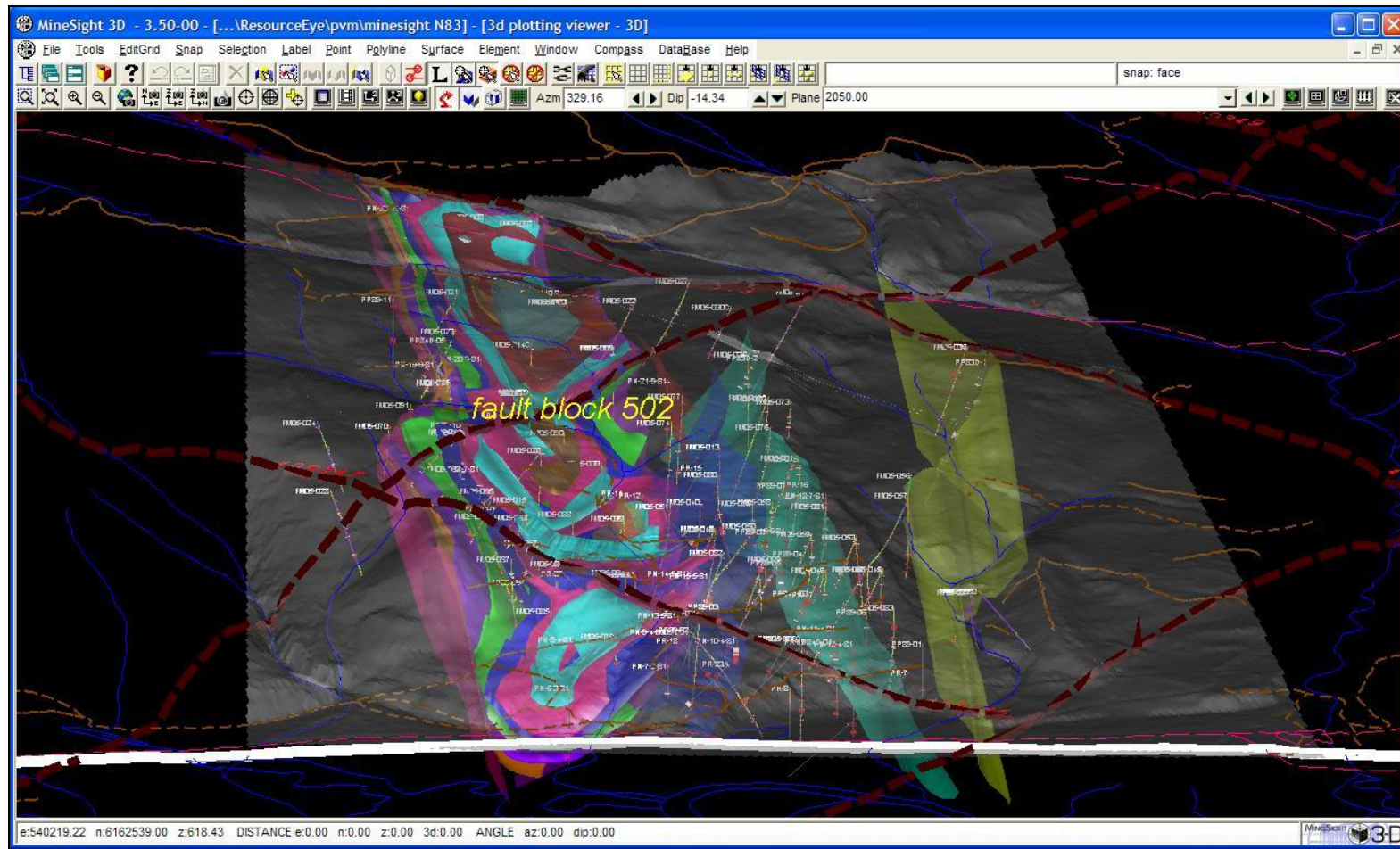


Figure 17: Rendered 3-D image showing coal seam, 3D solids and faults in the Noman Creek fault block (Fault Block 502). View looking NW. Hwy 97 is shown by the white stripe in the foreground. Topographic overlay lease boundaries are shown in brown. Topographic surface from LYDAR is the grey, semitransparent surface.



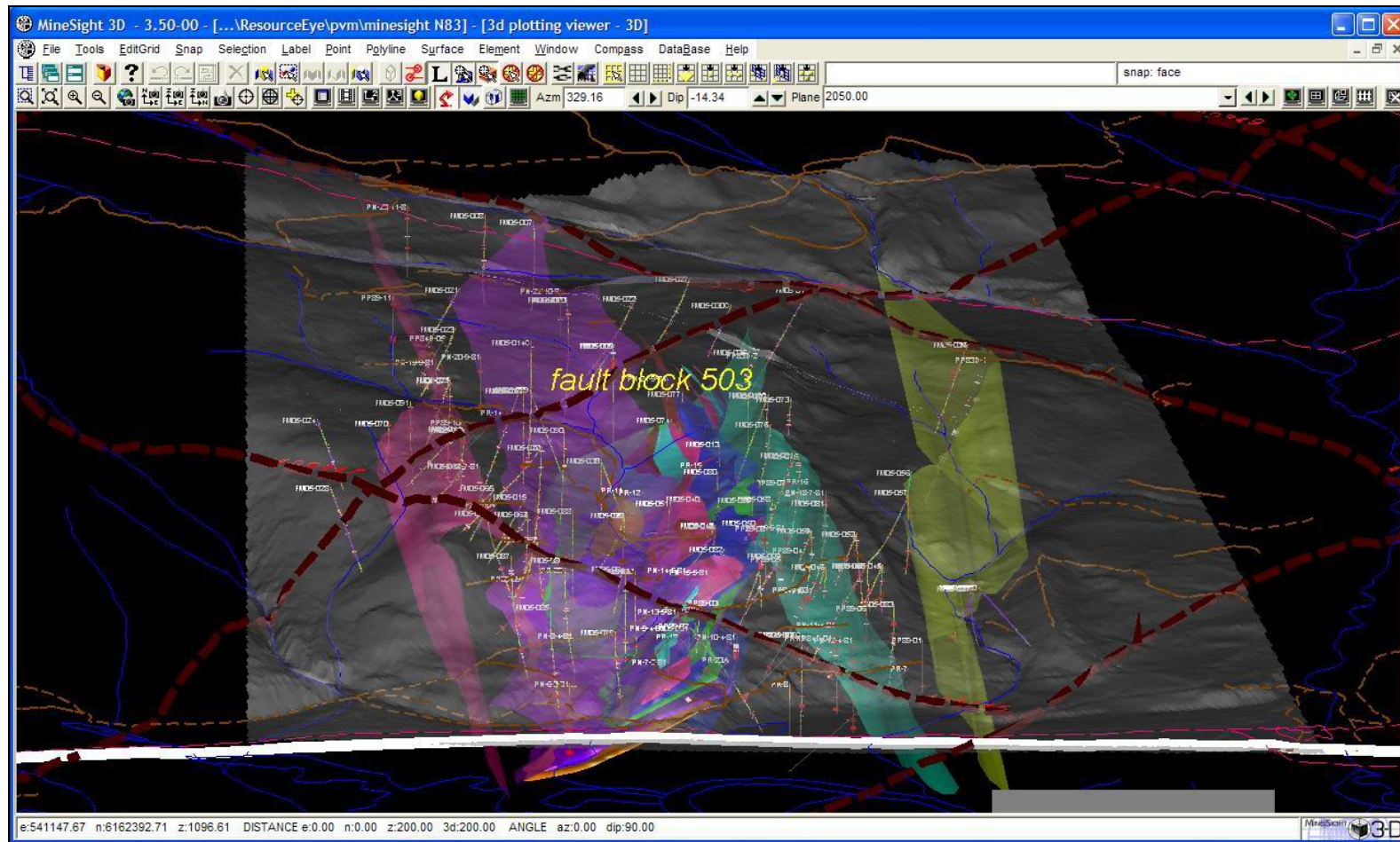


Figure 18: Rendered 3-D image showing coal seam, 3D solids and faults in Fault Block 503. View looking NW. Hwy 97 is shown by the white stripe in the foreground. Topographic overlay lease boundaries are shown in brown. Topographic surface from LYDAR is the grey, semitransparent surface.

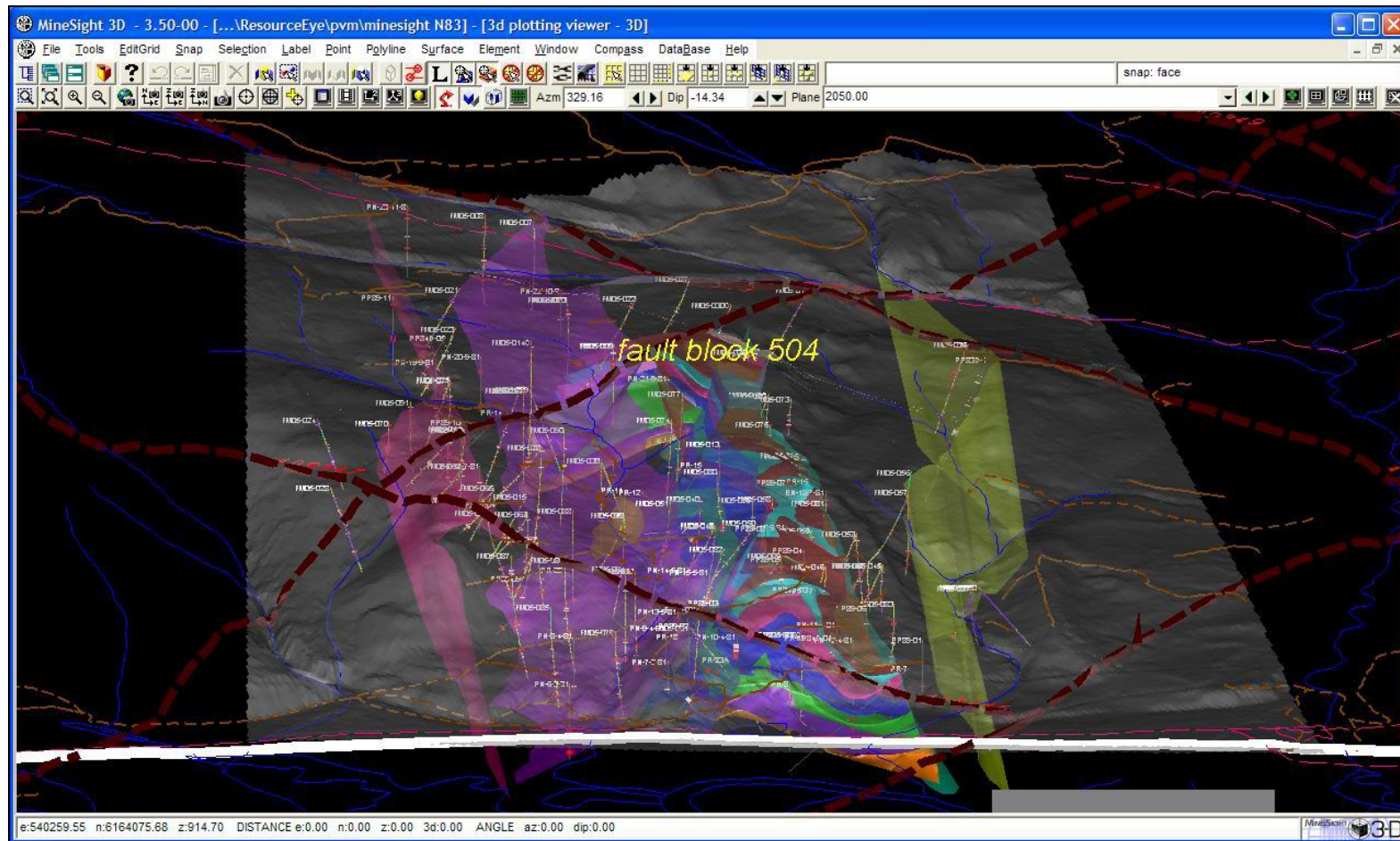


Figure 19: Rendered 3-D image showing coal seam, 3D solids and faults in the Eastern Fault Block (Fault Block 504). View looking NW. Hwy 97 is shown by the white stripe in the foreground. Topographic overlay lease boundaries are shown in brown. Topographic surface from LYDAR is the grey, semitransparent surface.



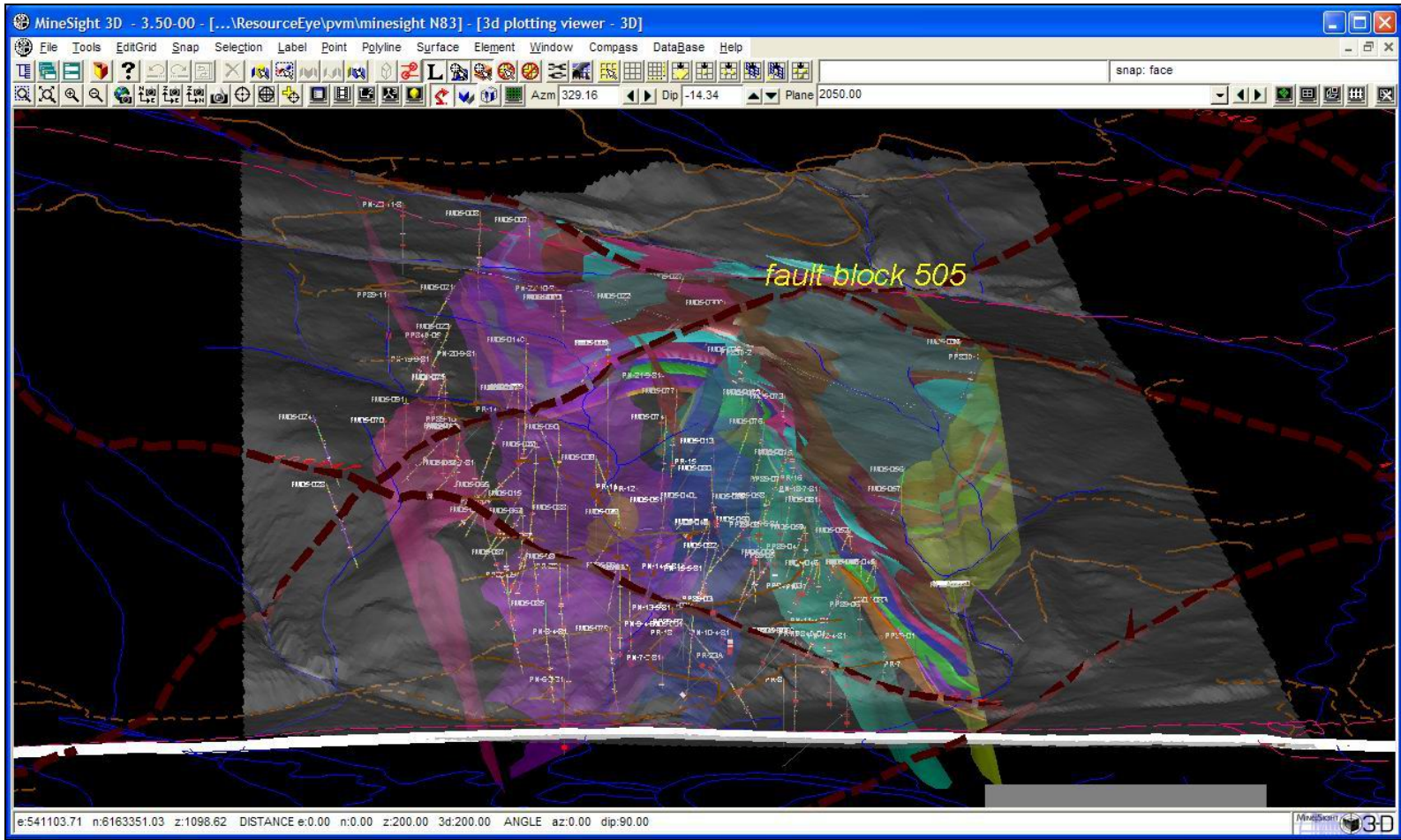


Figure 20: Rendered 3-D image showing coal seam, 3D solids and faults in the Far Eastern Fault Block (Fault Block 505). View looking NW. Hwy 97 is shown by the white stripe in the foreground. Topographic overlay lease boundaries are shown in brown. Topographic surface from LYDAR is the grey, semitransparent surface.

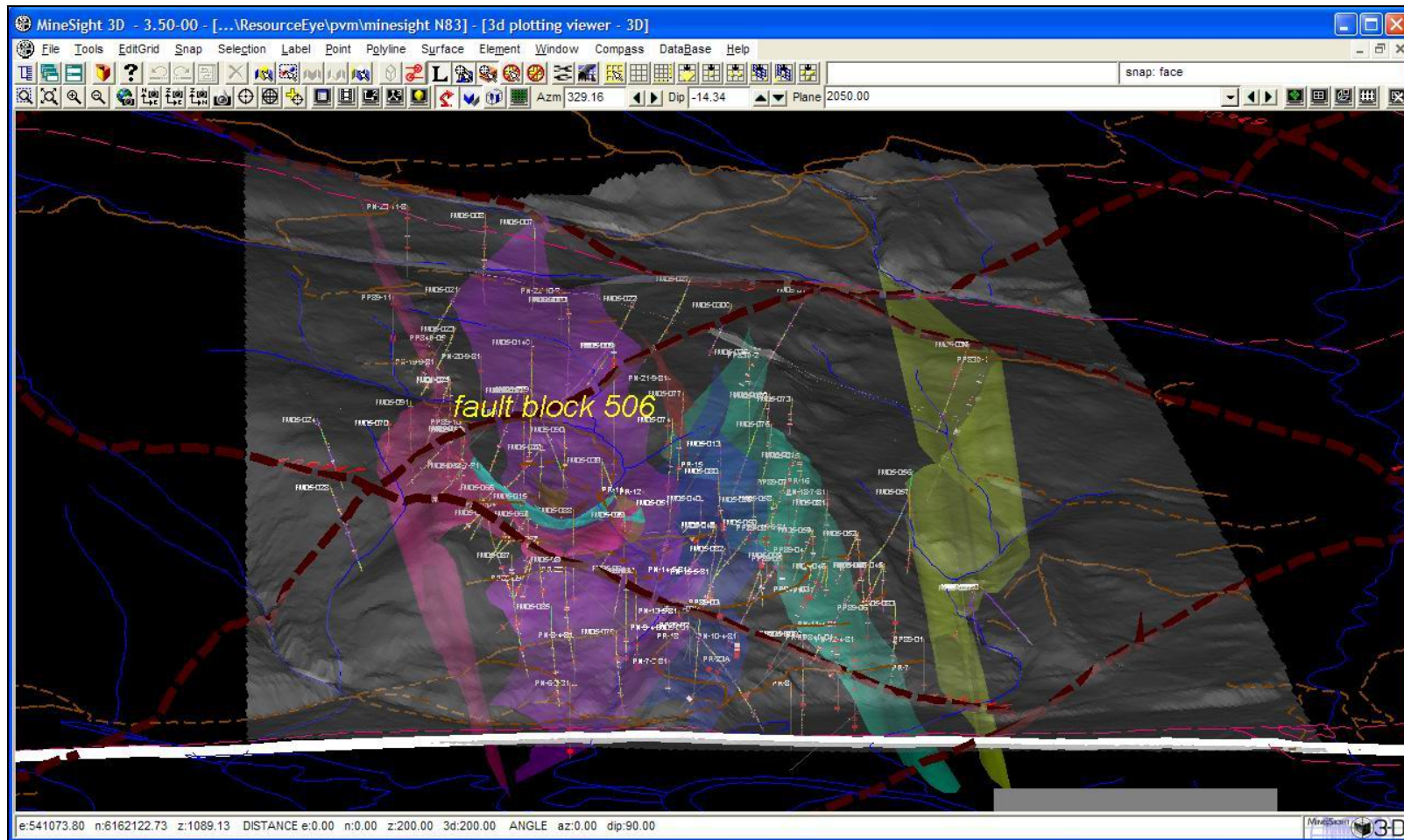


Figure 21: Rendered 3-D image showing coal seam, 3D solids and faults in Fault Block 506.  
View looking NW. Hwy 97 is shown by the white stripe in the foreground. Topographic overlay lease boundaries are shown in brown.  
Topographic surface from LYDAR is the grey, semitransparent surface.



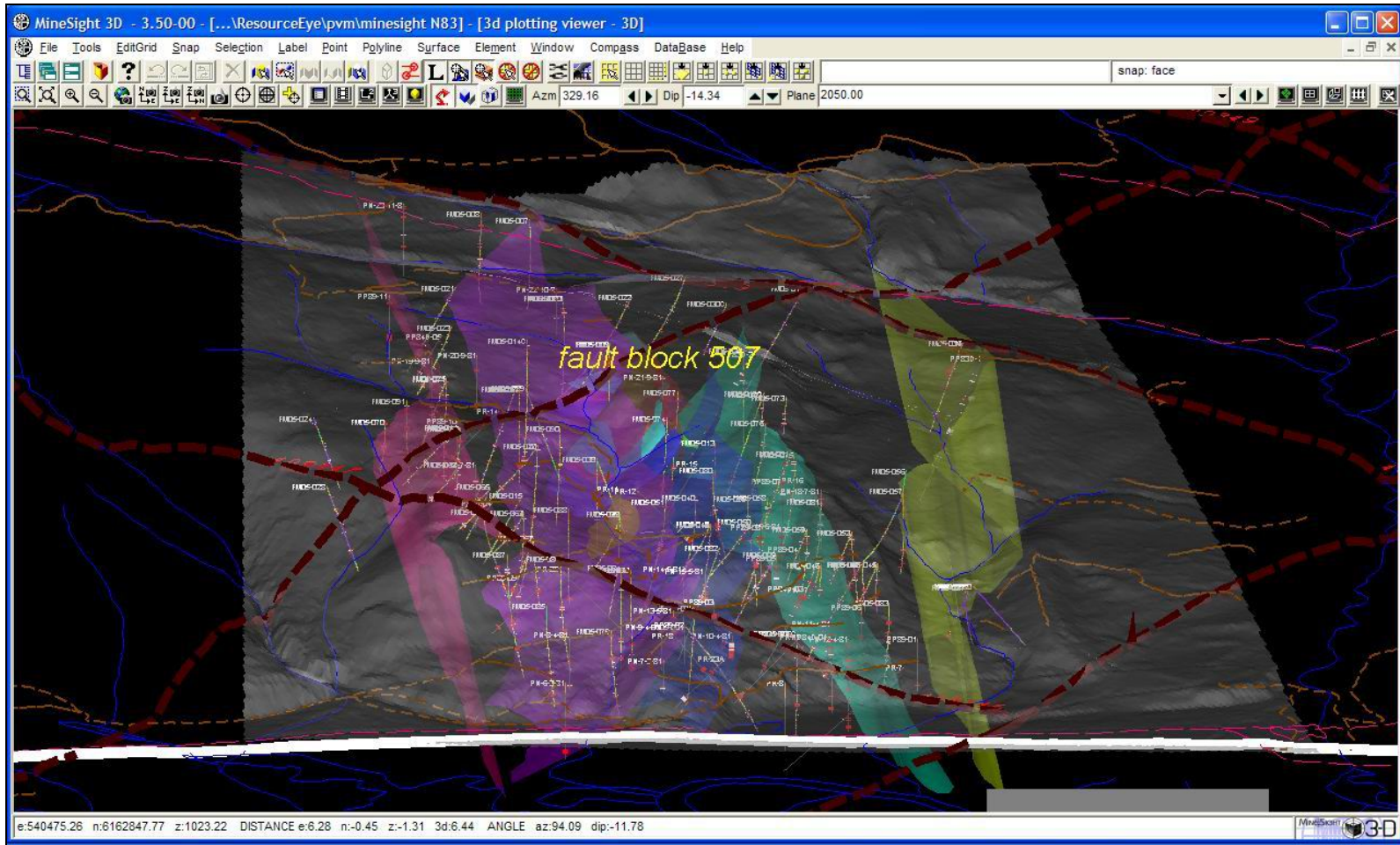


Figure 22: Rendered 3-D image showing coal seam, 3D solids and faults in Fault Block 507.  
View looking NW. Hwy 97 is shown by the white stripe in the foreground. Topographic overlay lease boundaries are shown in brown.  
Topographic surface from LYDAR is the grey, semitransparent surface.

## 4.3 Coal Quality Results and Statistical Analysis

### 4.3.1 Raw Coal Quality

Coal quality samples were obtained during the field program, and sent for coal quality analysis. Selected samples were also sent for float-sink testing. A discussion of sampling and analytical methodology are provided in Sections 3.2.7 and 3.2.8 respectively. A total of 109 Drill core and 229 rotary chip samples were obtained during the course of the exploration program. Detailed results are included in Appendix 8.

Once the new data was combined with the historical data, individual sample results were then composited by seam, in order to come up with a weighted average value of assay results representing the entire thickness of the seam, including partings.

Appendix 8 lists the individual sample composite results by drillhole. Table 19 shows the results of the statistical analysis of the combined coal quality data set. Pertinent sections of the analyses will be discussed further.

#### 4.3.1.1 Proximate analyses

Raw seam ash, on an air dried basis, is generally between 3 and 25% for 7 of 9 seams. Seams 1 and 2 show the highest average ash content at 30.48% and 42.85% respectively. Volatile matter on a dry, ash free basis is in the medium volatile range (~22-31%), with the exception of Seam 2, which has high volatiles on a dry, ash free basis due to its high ash content. See Table 20 for detailed proximate analysis by seam.

The adjusted fixed carbon, normalized to 100%, is fairly consistent, at between 55% and 66%, with Seam 2 being the anomaly again at 36.3%.

All moisture contents were within acceptable limits for typically mined seams, at 0.9%-3.6%

#### 4.3.1.2 Other quality parameters

Sample analyses were also conducted to determine sulphur, chlorine, phosphorus and  $P_2O_5$ . See Table 21 for a summary of other coal quality parameters.

##### **Sulfur**

The sulphur content of all seams averages between 0.28 and 0.83%, which is in the acceptable ranges for creating a coking coal as an end product.

##### **Chlorine**

All seams have an extremely low chlorine content, averaging 0.02-0.03%, indicating again, the good coking availability of these coals.

##### **Phosphorus & $P_2O_5$**

The average phosphorus content is between 0.03 and 0.09%. Coking coals should have a maximum phosphorus content of 0.1% (air dried). Corresponding  $P_2O_5$  levels are favourable as well.

Table 19: Coal quality summary by seam

Seam	# coal quality sample composites	ASH %*		Volatile Matter % **		Fixed Carbon % **		Residual Moisture %		Sulfur %		Free Swelling Index		Chlorine % **		Phosphorous % **		P <sub>2</sub> O <sub>5</sub> **	
		average	standard deviation	average	standard deviation	average	standard deviation	average	standard deviation	average	standard deviation	average	standard deviation	average	standard deviation	average	standard deviation	average	standard deviation
Seam B	1	2.88						0.92		0.28		4.50							
>1 m	0																		
Seam A	7	8.73	5.25	23.52	3.44	57.61	0.25	3.64	3.83	0.83	0.97	3.70	2.20	0.02	0.01	0.09	0.10	1.00	1.21
>1 m	4	6.93	2.85					3.67	4.99	0.45	0.06	3.50	1.30						
Seam 1	4	30.48	28.70					0.91	0.09	0.44	0.27	4.40	3.10						
>1 m	3	38.30	29.43					0.89	0.09	0.38	0.29	3.10	3.10						
Seam 2	4	42.85	19.71	19.71		42.83		1.12	0.89	0.42	0.22	4.30	3.20	0.03		0.03		0.20	
>1 m	4	42.85	19.71	19.71		42.83		1.12	0.89	0.42	0.22	4.30	3.20	0.03		0.03		0.20	
Seam 3	9	24.46	20.86	16.46	5.57	34.48	17.63	1.88	1.32	0.54	0.18	3.00	2.40	0.02	0.01	0.09	0.07	0.50	0.29
>1 m	5	31.13	26.04	13.60	3.59	24.57	5.62	2.30	1.70	0.40	0.12	2.76	1.80	0.02	0.01	0.11	0.08	0.48	0.40
Seam 4	12	19.95	10.37	22.91	1.68	52.88	12.94	1.63	1.27	0.56	0.18	4.00	2.00	0.02	0.01	0.06	0.05	0.86	1.07
>1 m	9	20.91	11.42	22.91	1.68	52.88	12.94	1.93	1.34	0.53	0.20	3.78	1.94	0.02	0.01	0.06	0.05	0.83	1.07
Seam 5	10	18.12	10.85	22.29	2.63	55.42	8.41	2.14	1.92	0.59	0.12	3.67	2.66	0.03	0.01	0.02	0.01	0.37	0.18
>1 m	7	15.87	10.11	22.29	2.63	55.42	8.41	2.14	1.92	0.59	0.12	3.67	2.66	0.03	0.01	0.02	0.01	0.37	0.18
Seam 6	5	8.90	4.29	22.72	1.19	62.46	3.21	2.40	1.52	0.74	0.37	4.50	3.76	0.04	0.01	0.04	0.03	0.94	0.80
>1 m	2	12.72	3.79	22.04	0.18	62.38	4.53	2.86	0.93	0.40	0.03	1.25	0.35	0.04	0.01	0.03	0.01	0.49	0.09
Seam 7	7	15.46	17.72	20.61	5.36	56.42	18.17	1.95	1.09	0.59	0.18	3.73	2.74	0.03	0.01	0.04	0.03	0.90	0.77
>1 m	5	9.69	4.71	22.98	3.03	65.40	3.52	2.05	1.12	0.59	0.14	4.28	2.67	0.04	0.01	0.03	0.03	1.10	0.81

\* all quality items are on an air dried basis

\*\* these items were only analyzed in 2005 sampling

Table 20: Proximate Analyses

Seam	ASH % (air dried basis - adb)*	Volatile Matter % (adb)*	Fixed Carbon % (adb)*	Adjusted Fixed Carbon % **	Moisture % (adb) *	VM % (dry, ash free basis - daf)	ASTM rank
B	2.88				0.92		medium volatile Bituminous (assumed) ***
A	8.73	23.52	57.61	64.11	3.64	25.77	medium volatile Bituminous
1	30.48				0.91		medium volatile Bituminous (assumed) ***
2	42.85	19.71	42.83	36.32	1.12	34.49	high volatile Bituminous
3	24.46	16.46	34.48	57.20	1.88	21.79	medium volatile Bituminous
4	19.95	22.91	52.88	55.51	1.63	28.62	medium volatile Bituminous
5	18.12	22.29	55.42	57.45	2.14	27.22	medium volatile Bituminous
6	8.90	22.72	62.46	65.98	2.40	24.94	medium volatile Bituminous
7	15.46	20.61	56.42	61.98	1.95	24.38	medium volatile Bituminous
*values are averages, and are not balanced to 100 %							
**adjusted fixed carbon, corrected to 100%							
*** no volatile matter determinations available							



Table 21: Other coal quality parameters

Seam	Sulfur %	Chlorine %	Phosphorous %	P <sub>2</sub> O <sub>5</sub> **	Free Swelling Index
<b>B</b>	0.28				4.50
<b>A</b>	0.83	0.02	0.09	1.00	3.70
<b>1</b>	0.44				4.40
<b>2</b>	0.42	0.03	0.03	0.20	4.30
<b>3</b>	0.54	0.02	0.09	0.50	3.00
<b>4</b>	0.56	0.02	0.06	0.86	4.00
<b>5</b>	0.59	0.03	0.02	0.37	3.67
<b>6</b>	0.74	0.04	0.04	0.94	4.50
<b>7</b>	0.59	0.03	0.04	0.90	3.73

[REDACTED]

[REDACTED]

[REDACTED]

### **4.3.3 Comparison With Geophysical Results**

With the availability of coal quality data and corresponding digital geophysical data, an attempt was made to derive a correlation between ash content and the gamma response in holes where both a core or rotary sample were obtained. The consequence of establishing a correlation, which exists in nature (that is, the gamma response is directly related to the concentration of K-bearing clay minerals in the ash of the coal assuming that the concentration of K-bearing clay minerals is proportional to the total ash content of the seam), would be the establishment of a method to predict ash content from the gamma signature of a coal seam.

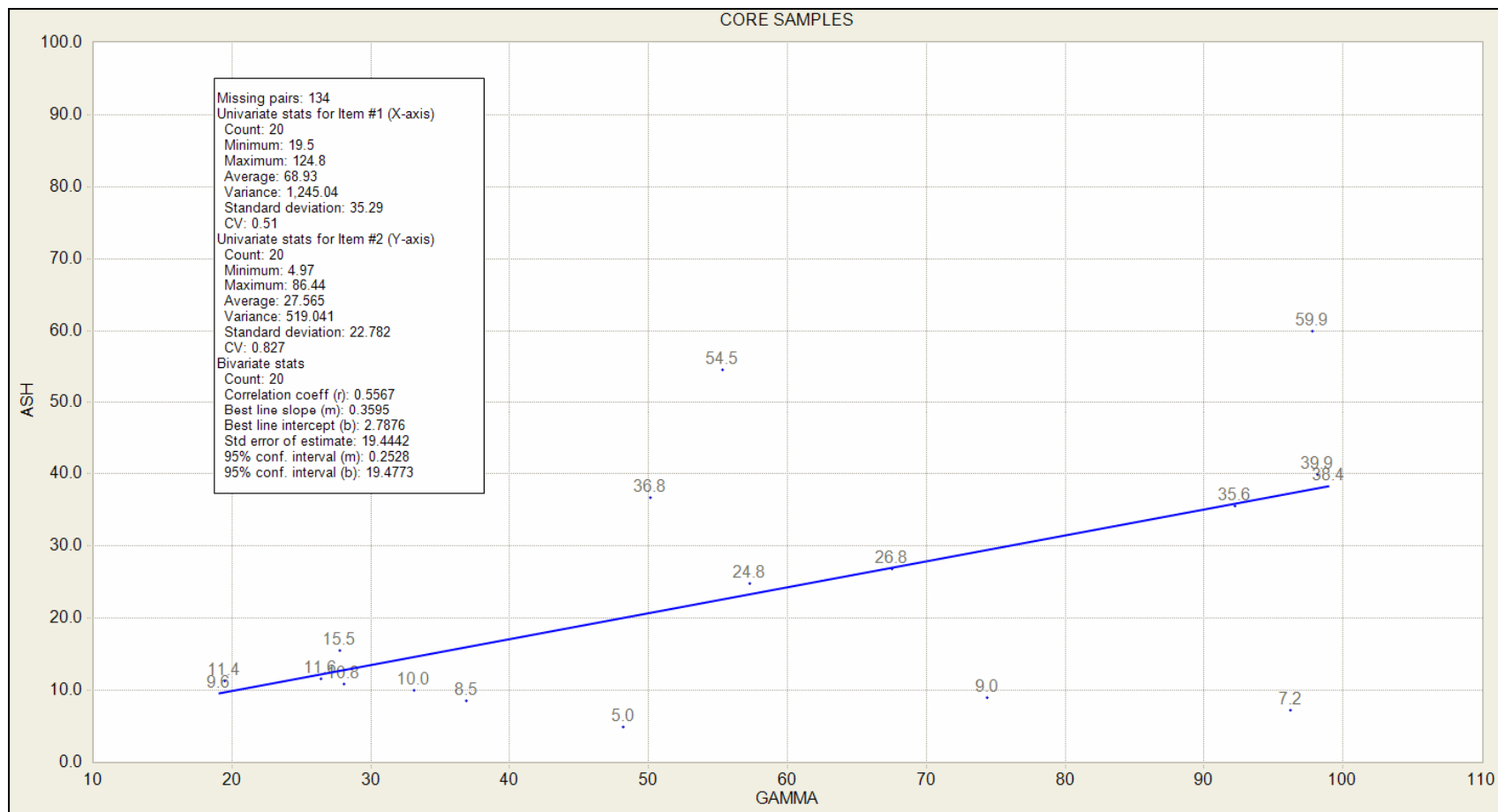
Scatterplots shown below were analyzed to see which provided the best correlation. The data had a fairly wide scatter, but a definite correlation exists.

Other factors that are not taken into consideration but are most likely responsible for the wide scatter in the data are:

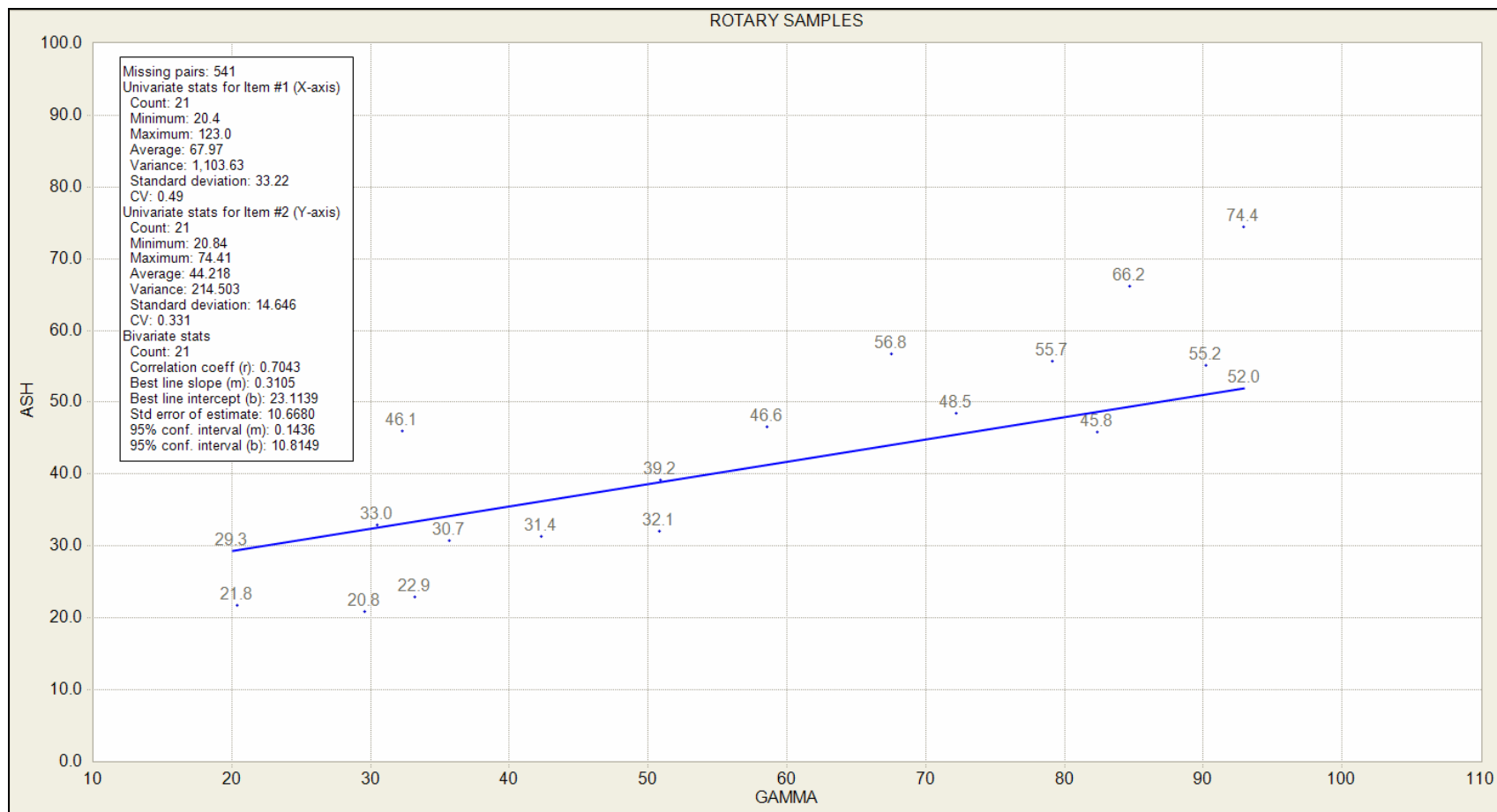
1. Borehole conditions such as caving or mud caking can have an adverse affect on the geophysical log response.
2. Thin coal seams generally don't respond as well as thicker ones, due to the geophysical tool configuration

Despite the limitations discussed above, the data analysis does lend itself to the conclusion that such a correlation exists within the data set, however, further investigation involving analysis of other log parameters such as density and resistivity, may help refine this method.

Graphs 1-4 are scatterplots and statistics which illustrate the correlation between the gamma and ash values for core and rotary samples, as well as all samples together.

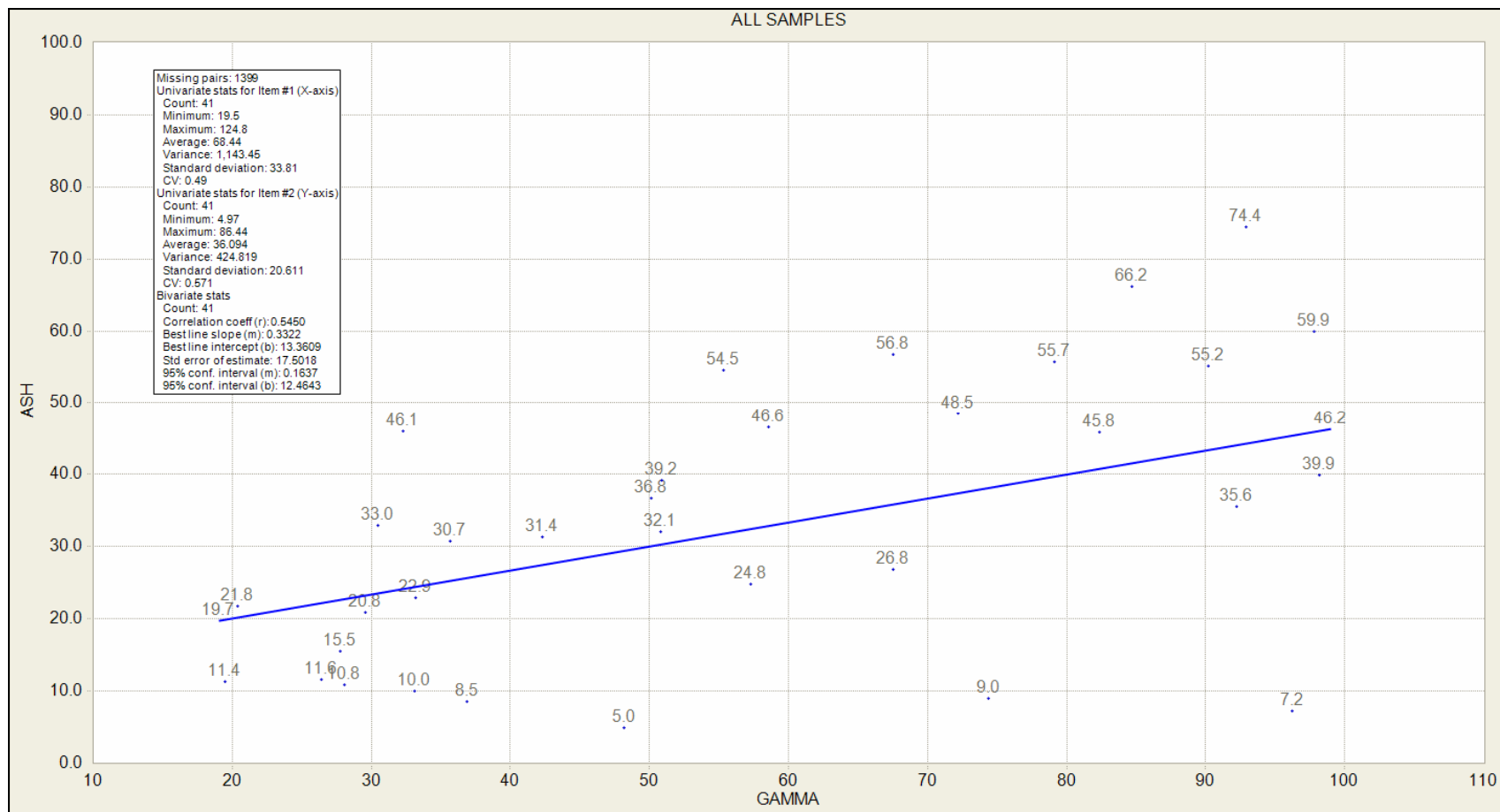


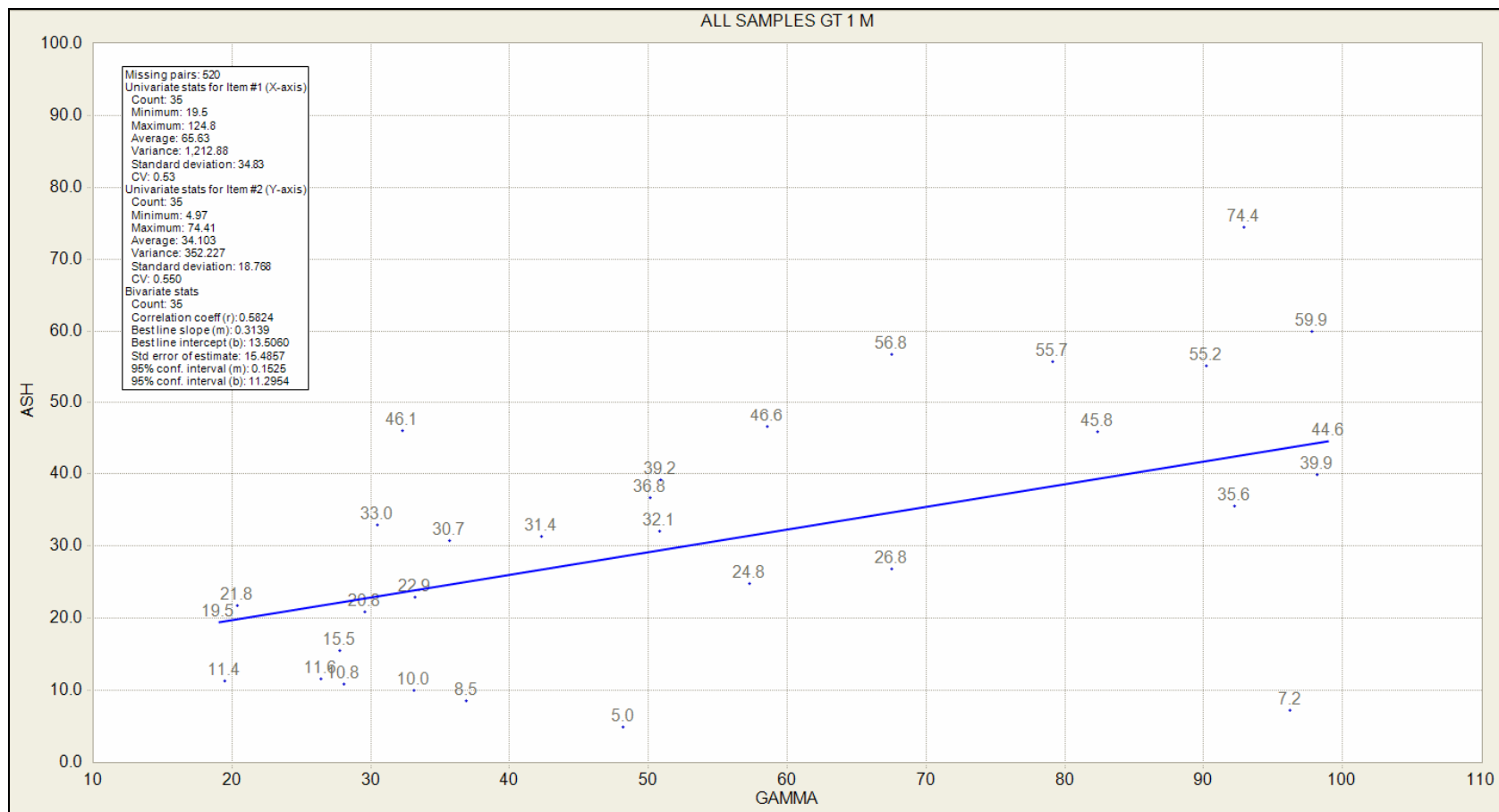
Graph 1: Scatterplot of gamma value vs ash content for CORE samples



Graph 2: Scatterplot of gamma values vs ash content for ROTARY samples

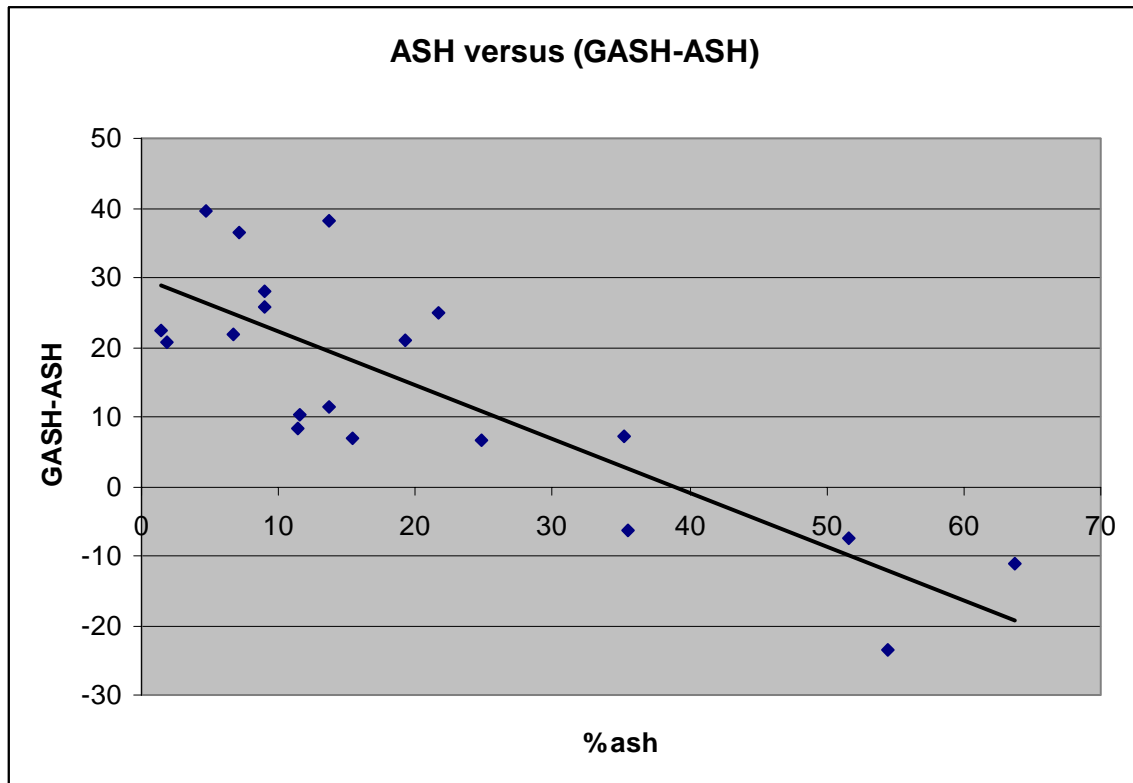






Graph 4: Scatterplot of gamma value vs ash content for all samples greater than 1 m intersected thickness.

From these observations, it would appear that the best correlation is where samples are considered together ( $R^2=0.54$ ). This led us to the calculation of a new item, know as GASH (Gamma Predicted Ash) value, which served as an estimate of the likely ash content from seams where no coal quality is available. This method requires some fine tuning, as the data shows that it tends to overestimate the ash content from lower gamma seams less than 35% ash, and underestimate the ash content for seams greater than 35% ash. See Graph 5.



Graph 5: Cross plot showing difference between the gamma predicted (GASH) and actual ash as a function of ash content from composite data.

#### 4.3.4 Block Modeling of Quality Parameters

Coal quality was interpolated using the drillhole data composited on a whole seam basis, including partings. Three steps were taken to interpolate the block quality from the composite data.

1. Performing inverse distance interpretation with a factor of 0 (or averaging) on a 2500 m search radius for all coal quality items from the sampling, including a GASH value (representing the calculated ash value based on the log response ( $GASH = 0.3139 * GAMMA + 13.506$ ), matching on a seam by seam basis.
2. Performing inverse distance interpretation with the above parameters on the true thickness (TTK) and parting thickness (PTK) for all seams ONLY where their true thickness is greater than 1 m, which was the cutoff for the solids model. This will give us a rough guide as to the expected seam thickness and parting amount in any given block. The ratio of PTK to TTK is calculated and stored into the PRT items as a percent.
3. Any blocks not assigned a coal quality value, were assigned a default value using the procedure Modfil.dat in Minesight. See Table 23: Default coal quality values for filling model grades.

**Table 23: Default coal quality values for filling model grades**

CODE	SEAM	ASH	VM	RM	FC	S	CL	P	P <sub>2</sub> O <sub>5</sub>	FSI
110	Seam A	8.73	23.51	3.64	64.12	0.83	0.02	0.09	1	3.7
111	Seam B	2.88	23.19	0.92	73.01	0.28	0.03	0.06	0.66	4.5
101	Seam 1	30.48	19.89	0.92	48.7	0.44	0.03	0.05	0.66	4.4
102	Seam 2	42.85	19.71	1.12	36.32	0.42	0.03	0.03	0.24	4.3
103	Seam 3	24.46	16.46	1.88	57.2	0.53	0.02	0.09	0.49	3
104	Seam 4	19.94	22.91	1.63	55.52	0.56	0.02	0.08	0.68	4
105	Seam 5	18.11	22.29	2.14	59.6	0.59	0.03	0.02	0.37	3.7
106	Seam 6	8.9	22.71	2.4	65.99	0.74	0.04	0.04	0.94	4.5
107	Seam 7	15.46	20.61	1.94	61.99	0.59	0.03	0.04	0.9	3.7
* all quality items are on an air-dried basis										



## **6 Conclusions and Recommendations**

The Pine Pass Property was the subject of an extensive exploration program in 2005.

This program of drilling, mapping and sampling [REDACTED]

[REDACTED] The coal is of good quality and suitable for producing a soft to semi-soft metallurgical coal product.

It is recommended that a feasibility study be carried out in order to further evaluate the deposit's mining potential.

The following items need to be addressed in support of a detailed feasibility study.

1. bulk sampling should be undertaken in at least two locations for each seam;
2. there are several discontinuous seam intersections encountered which were of significant thickness, that may be modelled in future, detailed models confined to smaller areas; and,
3. additional drilling should be completed on the west limb of the Cleveland Creek anticline.

Taking these items into consideration, a program of coring and/or bulk sampling in areas of specific economic interest should be conducted. The bulk sampling may be carried out from surface, or potentially using large diameter core (9"-12"). The coring may be carried out using a rotary / core drill, drilling a pilot hole, and then coring selected intervals in an adjacent hole. Coring may also be carried out to obtain geotechnical parameters for pit design along proposed highwalls.

Additionally, further rotary drilling and sampling should be carried out in areas where the surface resources are inferred or indicated in order to upgrade these to the measured category.

## **7 Statement of Qualifications**

I, Ronald R. Parent, P.Geol, of 9328 Larkspur Ave. Mission, BC, do hereby certify that:

1. I am a Professional Geologists, and co-owner of ResourceEye Services Inc. with offices at #715-675 West Hastings St. Vancouver, BC.
2. I am a graduate of the University of Alberta with a B.Sc (Honours) in Geology (1990).
3. I am a member, in good standing of the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC), license #27031.
4. I have worked as a professional Geologist / Geoscientist for more than 15 years since graduation.
5. I have read the definition of “qualified person (QP)” set out in National Instrument 43-101 (NI 43-101) and certify that by reason of education, experience, independence and affiliation with a professional association, I meet the requirements of an Independent Qualified Person as defined in National Policy 43-101.
6. The 2005 Exploration Program described in this report was carried out under the management of ResourceEye Services Inc, with myself, Chief Geologist, responsible for all project activities.
7. I spent several weeks on the property over the course of the program between April and November of 2005.
8. Neither myself, nor ResourceEye Services Inc., or any of its owners or affiliates have an interest, directly, or indirectly in Pine Valley Mining, Falls Mountain Coal, or its associates.
9. The information contained in this report is free of any significant errors or omissions that would or could negatively impact the potential economics of the property, as indicated in the report.
10. I consent to filing this Assessment Report with the Ministry of Energy and Mines as required under sections 8, 13, and 18 of the Coal Act.

Dated this June 1, 2006.

  
Ron Parent, P.Geol



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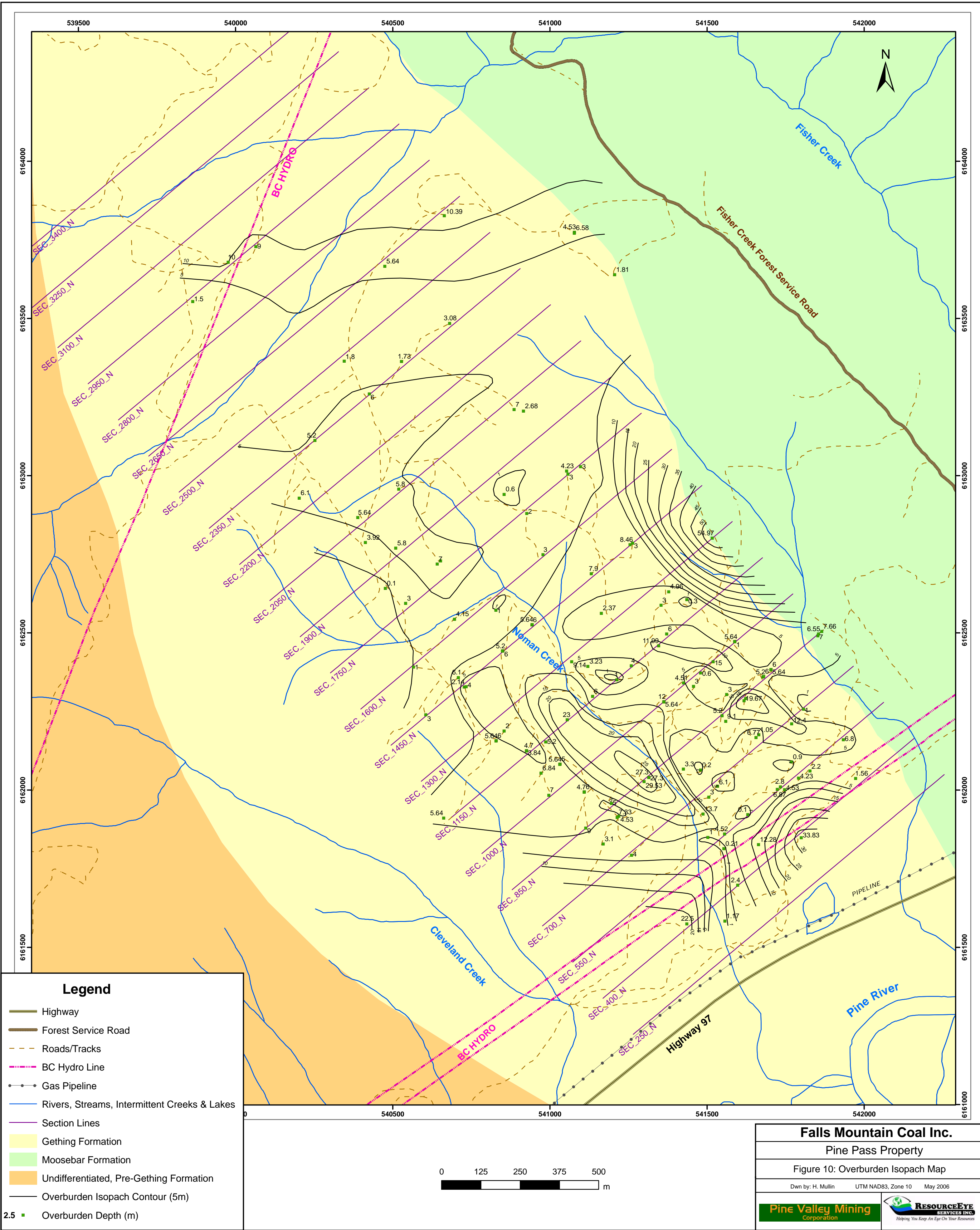
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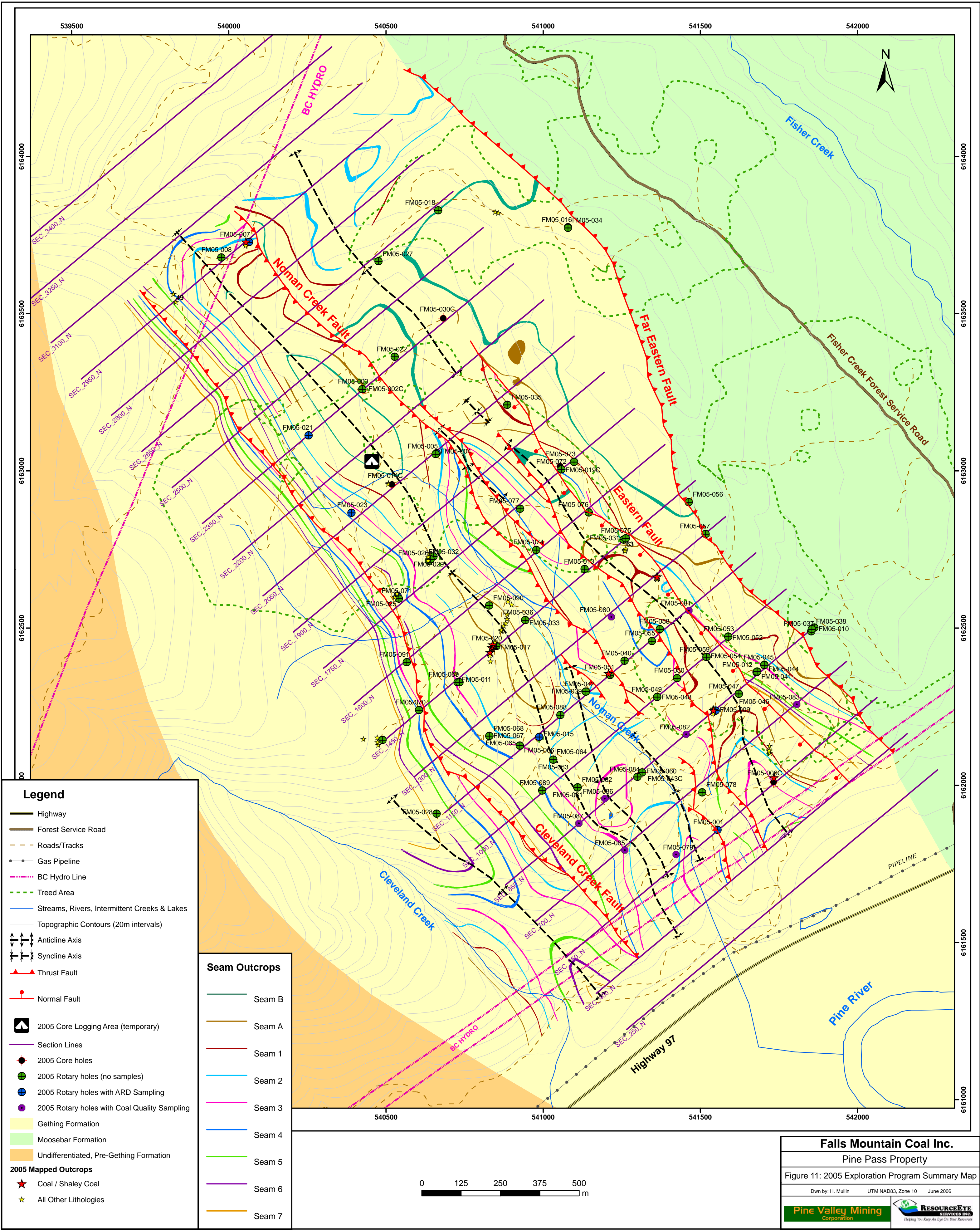
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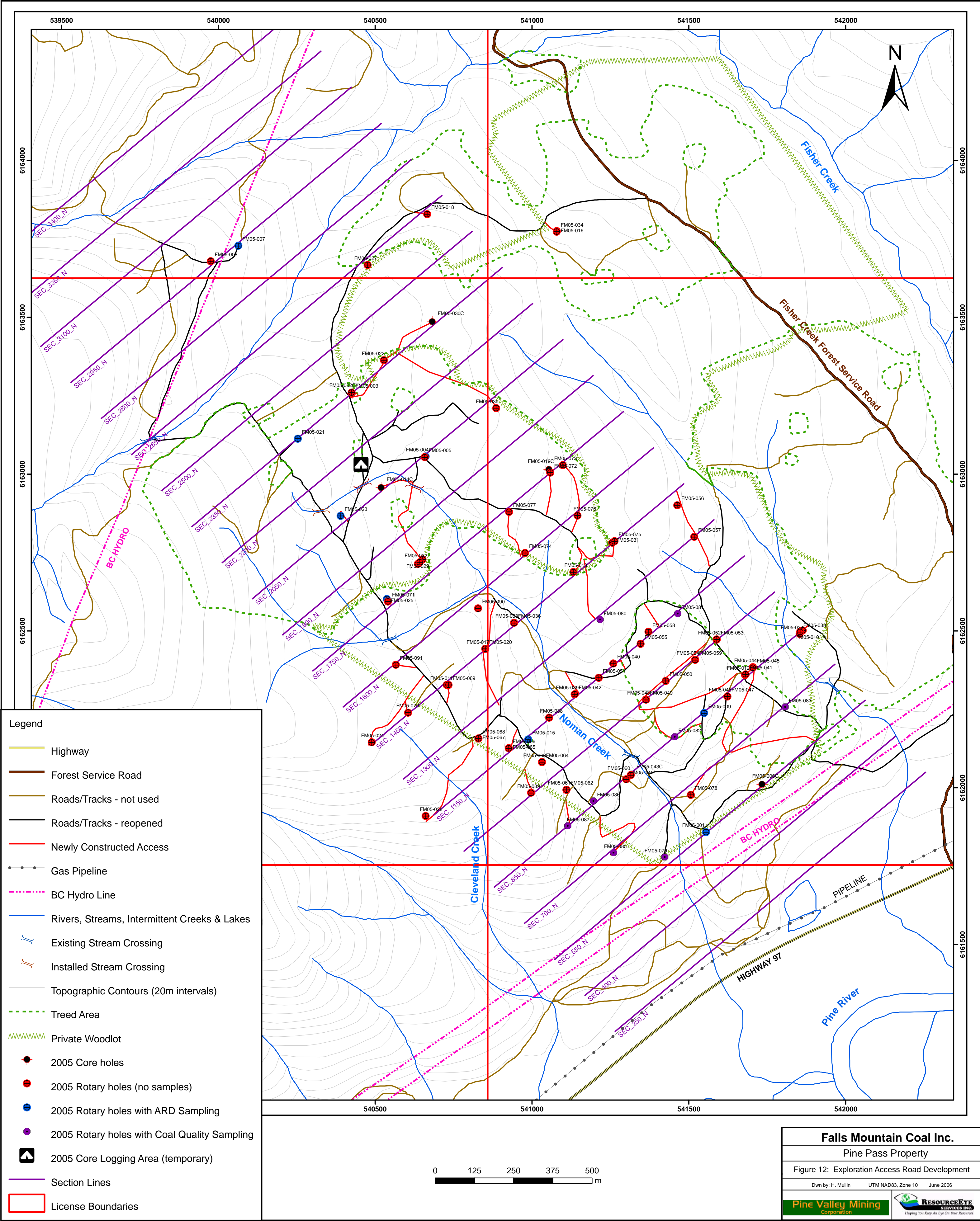




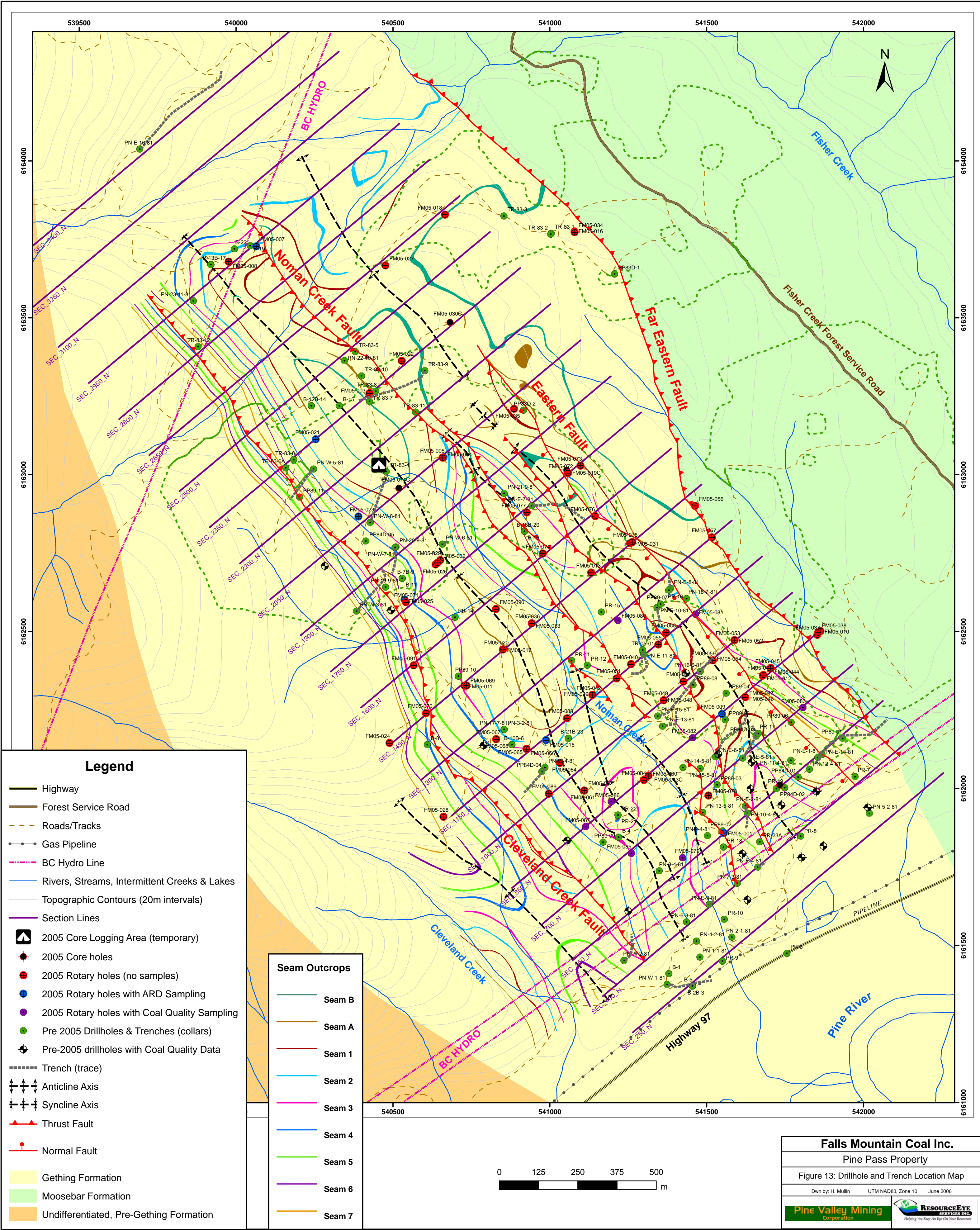




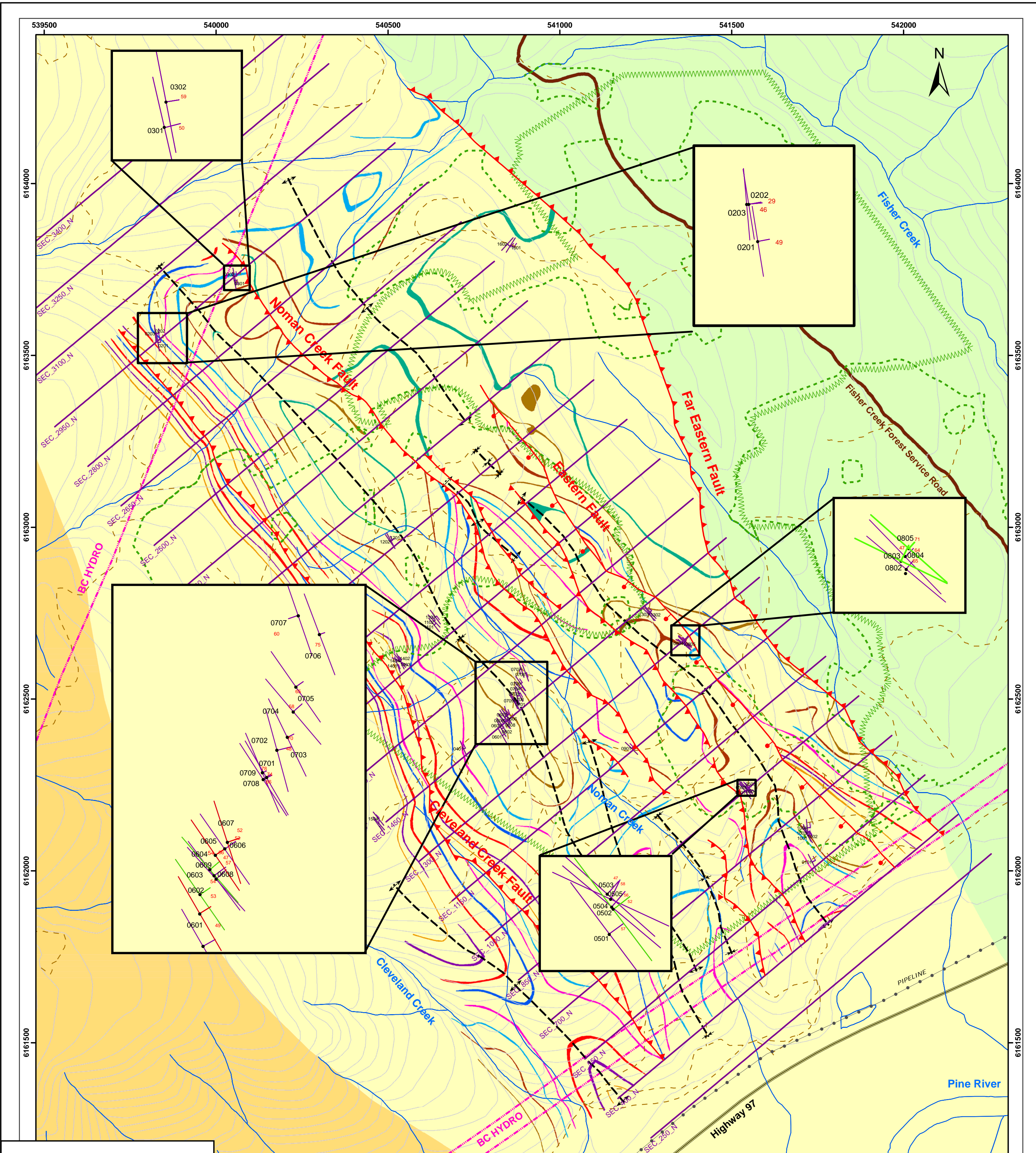












### Legend

- Highway
- Forest Service Road
- Other Roads/Tracks
- Gas Pipeline
- BC Hydro Line
- Treed Area
- Private Woodlot
- Topographic Contours (20m interval)
- Rivers, Streams, Intermittent Creeks & Lakes
- Section Lines

- Gething Formation
- Moosebar Formation
- Undifferentiated, Pre-Gething Formation
- Syncline Axis
- Anticline Axis
- Thrust Fault
- Normal Fault
- 2005 Outcrop Mapping Point
- Bedding Strike/Dip (coloured by lithology)
- Coal
- Shaley Coal
- Shale

### Seam Outcrops

- Seam A
- Seam B
- Seam 1
- Seam 2
- Seam 3
- Seam 4
- Seam 5
- Seam 6
- Seam 7

0 125 250 375 500 m

## Falls Mountain Coal Inc.

### Pine Pass Property

Figure 14: 2005 Outcrop Location Map

Dwn by: H. Mullin UTM NAD83, Zone 10 June 2006



