NI 43-101 Technical Report
New Elk Mine Property
Las Animas County, Colorado
USA

cline
mining corporation

July 5, 2012

AGAPITO ASSOCIATES, INC.

715 Horizon Dr., Ste. 340, Grand Junction, CO 81506
970/242-4220 • FAX 970/245-9234
1726 Cole Blvd., Building 22, Suite 130, Golden, CO 80401
303/271-3750 • FAX 303/271-3891
www.agapito.com

NI 43-101 TECHNICAL REPORT
NEW ELK MINE PROPERTY
LAS ANIMAS COUNTY, COLORADO
USA

Leo Gilbride, P.E.
Tim Ross, P.E.
Agapito Associates, Inc.
715 Horizon Drive, Suite 340
Grand Junction, Colorado 81506 USA

Date:

July 5, 2012
(Effective Date of Technical Report is May 24, 2012)

Prepared For:

New Elk Coal Company LLC
(a subsidiary of Cline Mining Corporation)
136 West Main Street
Trinidad, Colorado 81082 USA

AGAPITO ASSOCIATES, INC.
715 Horizon Dr., Ste. 340, Grand Junction, CO 81506
970/242-4220 • FAX 970/245-9234 • www.agapito.com

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 SUMMARY

1.1 Introduction

Cline Mining Corporation (Cline) is a Toronto, Ontario, Canada, based mining development company. Cline is a Toronto Stock Exchange (TSX:CMK) listed company in the business of acquiring, exploring, and developing mine mineral resource properties to production in Canada, the United States of America (USA), and overseas. Cline's wholly owned USA subsidiary, New Elk Coal Company (NECC), is a Kansas (USA) limited liability company whose principal office is in Trinidad, Colorado (USA). NECC is in the process of reactivating its New Elk Mine metallurgical and thermal coal mine property in Colorado, 24 miles west of Trinidad (Figure 1-1). The New Elk coal mine property (the Property) is the subject of this Technical Report.

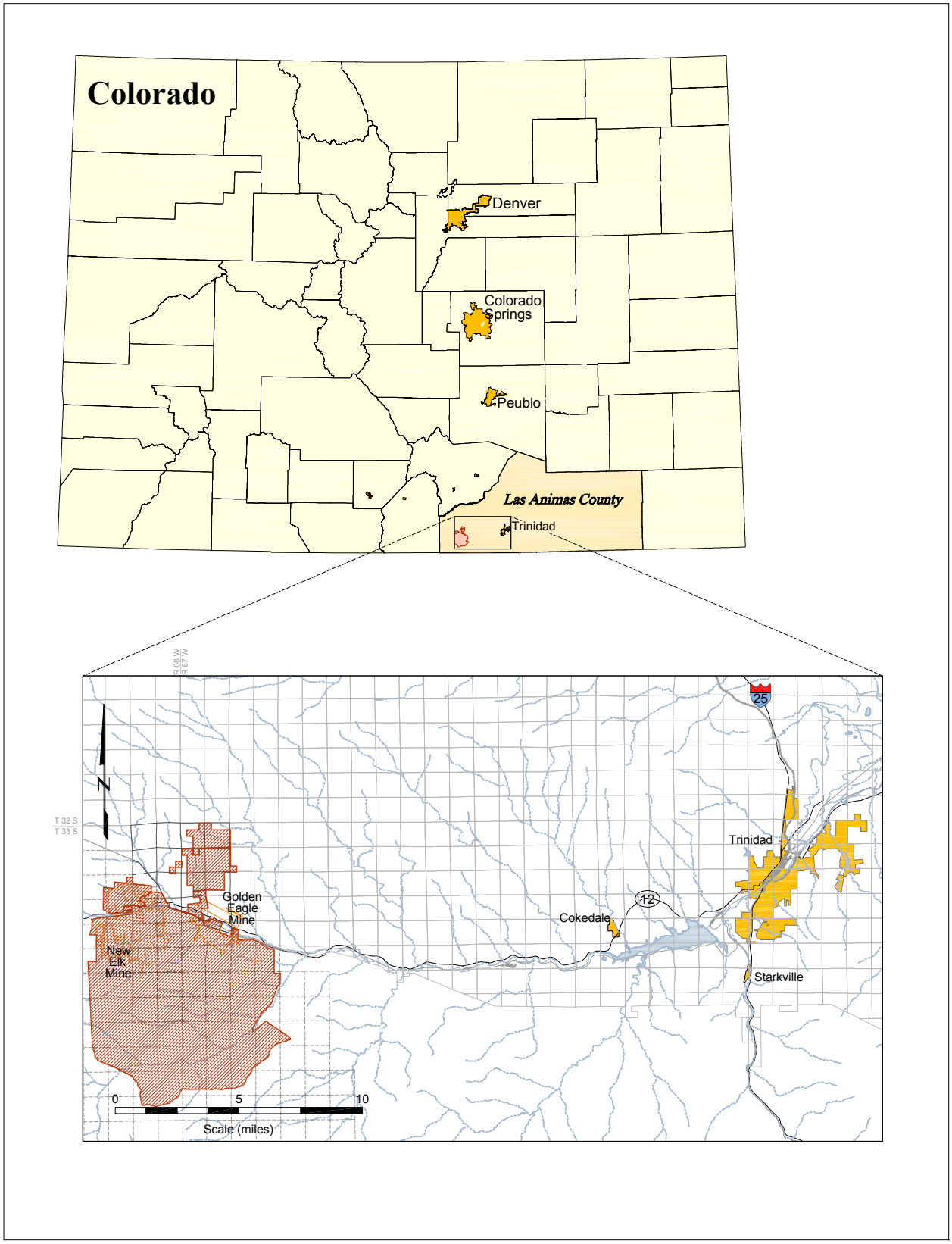
NECC's coal property assets include surface property ownership, coal leases, and water rights located in Las Animas County in southern Colorado. The property rights include the abandoned New Elk underground coal mine (formerly Colorado Fuel & Iron Steel Company [CF&I] Allen Mine). The Golden Eagle Mine (CF&I Maxwell Mine) is not part of the NECC properties.[1] The surface property assets include a coal preparation plant, coal storage silos, various mine facility buildings, surface conveyors, electrical substations, mine waste disposal areas, coal storage areas, ventilation air shafts, belt conveyor and track slopes, and approximately 13 miles of railroad right-of-way from west of the mine site toward Trinidad.

The Allen Mine (New Elk Mine) was opened in 1951 in the Allen seam by CF&I to supply metallurgical coal to its Pueblo iron and steel production facility. CF&I ceased production from the Allen and Maxwell Mines in the early 1980s and allowed the Allen Mine to partially flood. Subsequent owners constructed a coal preparation plant on the Allen Mine East portals site in 1984 and operated the nearby Golden Eagle Mine until around 1995. Later, the preparation plant processed coal from the Lorencito surface mine until the early 2000s when it was closed.

NECC has re-opened and is in the process of developing the New Elk Mine in order to supply coal to the domestic and international metallurgical and/or Pulverized Coal Injection (PCI) coal markets, with the option to supply coal to the domestic thermal markets. The re-opening and developing steps to date include dewatering a portion of the flooded area of the mine, re-establishing mine ventilation, rehabilitating the East portals slopes, development of mains from the slopes in the Apache coal seam, constructing the Bates portals and slopes to access the Blue seam, development of mains in the Blue seam, rehabilitation and upgrading of the coal preparation plant plus other surface facilities, and modifying existing and acquiring new mining permits. NECC mined 176,000 tons of coal in 2011 through February 2012, and has shipped a limited amount to test markets.

Prior to this Technical Report, Agapito Associates, Inc. (AAI) prepared three Technical Reports on the New Elk Property dated March 13, 2010, November 1, 2010, and May 21, 2011.

[1] The names "Allen Mine" and "New Elk Mine" are used interchangeably in this report. The names "Maxwell Mine" and "Golden Eagle Mine" are used interchangeably in this report.



723-01 Cline New Elk[Colo_Loc_Map_6-19-2012.dwg]:rjl/smvf (06-19-2012)

Figure 1-1. Regional Map

AAI evaluated the project economics as part of two Preliminary Economic Assessments (PEA), the first completed in March 2010 (summarized in the March 13, 2010 Technical Report) and the second completed in May 2011 (summarized in the May 21, 2011 Technical Report). This Technical Report updates the status of the Property as of June 1, 2012. Material changes since the May 21, 2011 Technical Report include expansion of the Department of Wildlife—State of Colorado coal lease from 15,553 to 29,940 acres, acquisition of the 1,346-acre Secora Ranch property, and completion of 20 new exploration drill holes over the Property. As a result, four new coal seams were added to the resource base and the Mineral Resource substantially increased.

This report was prepared in accordance with National Instrument 43-101 (NI 43-101) standards. As required by NI 43-101, Canadian Institute of Mining's (CIM) Definition Standards on Mineral Resources and Mineral Reserves (CIMDS) (2010), and Geological Survey of Canada (GSC) Paper 88-21 (1989), none of the Mineral Resources are classified as Mineral Reserves because neither a Preliminary Feasibility Study nor Feasibility Study has been completed on the Property.

AAI based its evaluation on information provided by NECC, information acquired via public documents including other Technical Reports, reports authored by other technical consultants, geologic and laboratory data collected as part of NECC's 2011 and 2012 exploration drilling programs, and on-site visits by report authors Leo J. Gilbride, P.E. (September 28, 2010) and Timothy A. Ross, P.E. (multiple visits between October 9, 2009, and June 13, 2012).

1.2 Property Overview

The New Elk Mine portals site is located approximately 24 miles west of the city of Trinidad, Las Animas County, Colorado, USA, via Colorado State Highway 12, a paved, all-weather two-lane highway. The Property encompasses platted parcels and various coal leases and fee parcels totaling approximately 34,060 acres. The coal leases are with XTO Energy, Inc. (XTO) and the State of Colorado's Department of Natural Resources Division of Wildlife and Wildlife Commission (DOW). Fee coal parcels are held by North Central Energy (NCE), a company wholly owned by NECC. A lease application filed in 2007 for three separate tracts is pending with the Bureau of Land Management (BLM) and is in the review process.

The Property is located on the western limb of the Raton Basin near the eastern edge of the Sangre de Cristo Mountain range within the Rocky Mountains. The local climate is characterized as semi-arid. The prevailing wind is from the southwest and annual precipitation averages around 15 inches with annual average snowfall of 43 inches. The length of the growing season varies from 90 to 120 days. The middle fork of the Purgatoire River flows through the mine portals site.

The city of Trinidad provides local resources for employee housing and other community services, including a hospital. Several small unincorporated settlements exist along Route 12 between the project site and Trinidad. Trinidad was historically a mining and railroad town. Interstate Highway 25 runs north-south and connects Trinidad to major metropolitan centers. The Burlington Northern Santa Fe Railroad (BNSF) provides connections to other major rail lines.

The Property is located in a regional area that has produced coal for over 150 years. The Allen Mine (later renamed the New Elk Mine) commenced operations in 1951. Underground mining ceased on the Property in the 1980s and the preparation plant was shut down in the early 2000s. The railroad track from the mine to within 2 miles of the BNSF connection in Trinidad was removed in 2004, although the roadbed and bridges remain in place, with three separate entities owning different segments of the right-of-way. NECC has agreements in place for use of the Jansen Yard coal storage and loadout facility in Trinidad and right-of-way between Mile Posts 0.0 and 15.0 for the purposes of reinstalling the rail line.

The Property has had a progression of five owners, with CF&I the first, followed by Wyoming Fuel Company, Basin Resources Inc., Picketwire Processing LLC, and NECC.

NECC holds a mining permit with the State of Colorado's Department of Natural Resources Division of Reclamation, Mining and Safety (DRMS) which permits NECC to produce coal from the Apache, Allen, Maxwell and Blue seams within a 4,198-acre area. A permit revision has been submitted to DRMS to expand the permit boundary by an additional 1,618 acres.

NECC has the U.S. Mine Safety and Health Administration (MSHA) plan approvals required for room-and-pillar mining in the Allen and Blue seams. Plans are expected to be submitted to MSHA in 2012 for pillar recovery (secondary) mining.

1.3 Geology

The New Elk Mine is located in the Raton Basin, a crescent-shaped structural trough and depocenter that extends from Huerfano Park, Colorado, to Cimarron, New Mexico. The Raton Basin contains a large coal resource contained in Late Cretaceous and Paleocene formations. The coal in the Raton Basin is historically well known for its high quality coking characteristics and coal bed methane (CBM).

The coal-bearing strata are underlain by Late Cretaceous sedimentary rocks of the Pierre Shale and Trinidad Sandstone. The Upper Cretaceous Vermejo Formation conformably overlies the Trinidad Sandstone. Overlying the Vermejo Formation is the Upper Cretaceous and Paleocene Raton Formation which contains the coal seams of mining interest. The New Elk Mine coal resource includes, in descending stratigraphic order, the Green, Loco, Blue, Bing Canyon Upper (BCU), Red, Maxwell, Apache, and Allen seams contained in the lower coal zone of the Raton Formation. The Raton Formation coals are also targets for the gas industry and numerous CBM wells are active on the New Elk Property and in the surrounding area.

The regional geologic type is "low complexity" (per GSC Paper 88-21), with regional dip on the order of 2 to 3 degrees to the north-northeast. The geologic type is conducive to room-and-pillar and/or longwall mining. The Property has no significant potential for surface mining because of the depth of seams and environmental restrictions.

The seams vary from less than 2 feet to over 12 feet thick, with a mineable coal thickness considered to be from 3 feet to the maximum seam thickness. The coal resource is based on a minimum coal thickness of 3 feet. The overburden depths vary from outcrop to over 1,400 feet.

1.4 Exploration Drilling

NECC completed three separate exploration drilling programs in 2010, 2011, and 2012. The maiden exploration program conducted in the summer and fall of 2010 included 21 vertical rotary-core holes drilled from surface at 16 sites in the north and central part of the Property. Some sites required re-drilling because of limited core recovery or multiple water well completions.

In 2011, an additional 28 vertical rotary-core holes drilled at 19 sites were completed in the southern and central parts of the Property. Between January and March 2012, an additional 12 vertical rotary-core holes drilled at 6 sites were completed in the southern and central parts of the Property. To date, NECC has completed a total of 26,118 feet of surface-based rotary and 10,063 feet of core drilling, and an additional 373 feet of core drilling at 4 underground locations in the East portals slopes.

The drilling programs included detailed lithologic and structural logging, high-resolution geophysical logging, extensive hydrologic packer testing, *in situ* horizontal stress measurements, gas desorption testing, geomechanical testing, coal quality analysis, and the installation of multiple water monitoring wells.

The drilling and coal quality testing programs were administered by AAI per NI 43-101 standards. Coal samples were tested for metallurgical and thermal properties, and washability. Analyses were performed by SGS North America, Inc. at three USA facilities and GWIL Industries' Birtley Coal & Minerals Testing Laboratory in Calgary, Alberta, both reputable and recognized laboratories within the mining industry.

1.5 Coal Quality

The New Elk Mine seams are of sufficient quality to be classified as low sulfur, high-volatile, B bituminous coal, which can be marketed as a metallurgical grade coal, a PCI coal, or a thermal coal. All run-of-mine (ROM) coal produced will require washing for market. NECC anticipates washing the coal between a 1.30 and 1.60 specific gravity (SG) float, depending upon market requirements and the tradeoff between pricing and plant yield. Average washed qualities by seam, derived from laboratory testing of core samples, are summarized in Table 1-1 for a 1.40 and 1.50 SG float.

The New Elk Mine coal is suitable for blending in the coking or PCI markets.

1.6 Coal Resources and Reserves

Coal resources for the New Elk Mine Property are summarized in Table 1-2. Coal tonnages are stated in imperial short tons (2,000 pounds). The Property is estimated to contain 299.8 million tons Measured and 319.1 million short tons of Indicated in-place low-sulfur, high-volatile, B bituminous coking coal in the Green, Loco, Blue, Bing Canyon Upper, Red, Maxwell, Apache, and Allen seams, excluding in-seam partings and including only coal exceeding 3.0 feet in thickness within a seam.

Table 1-1. Average Washed Coal Seam Composite Quality (dry basis)

	Green Seam		Loco Seam		Blue Seam		BCU Seam		Red Seam		Maxwell Seam		Apache Seam		Allen Seam	
1.50 SG Float																
Wash recovery (wt %)[1]	75.8	(3)	49.4	(2)	74.8	(20)	81.8	(3)	81.8	(17)	71.3	(22)	77.0	(25)	81.6	(16)
Btu/lb	13,675	(3)	13,222	(2)	13,599	(19)	13,712	(3)	13,993	(16)	13,869	(21)	14,047	(24)	14,037	(16)
Volatile matter (wt %)	36.8	(3)	35.4	(2)	35.5	(20)	36.3	(3)	36.0	(17)	35.3	(22)	35.7	(25)	36.0	(16)
Sulfur (wt %)	0.65	(3)	0.66	(2)	0.58	(20)	0.59	(3)	0.52	(17)	0.53	(22)	0.57	(25)	0.58	(16)
Ash (wt %)	9.8	(3)	12.7	(2)	10.7	(20)	9.5	(3)	8.9	(17)	10.1	(22)	8.6	(25)	9.0	(16)
Rank Index	2.74	(3)	2.99	(1)	3.06	(19)	2.92	(3)	3.20	(15)	3.24	(20)	3.25	(18)	3.19	(13)
Fluidity (ddpm)	7,394	(3)	3,582	(1)	15,985	(19)	20,628	(3)	22,930	(15)	20,000	(20)	17,800	(18)	24,869	(13)
CBI	1.21	(3)	0.74	(1)	0.96	(19)	0.92	(3)	0.93	(15)	0.94	(20)	1.22	(18)	1.01	(13)
FSI	6.0	(3)	5.3	(2)	6.7	(20)	7.2	(3)	7.4	(17)	7.1	(22)	7.0	(25)	7.6	(16)
Reflectance (%)	0.77	(3)	0.80	(1)	0.83	(19)	0.79	(3)	0.87	(15)	0.88	(20)	0.89	(18)	0.87	(13)
Ash fusion, ST (°F)	2,503	(3)	2,400	(1)	2,414	(15)	2,569	(3)	2,350	(13)	2,382	(17)	2,319	(15)	2,342	(12)
P_2O_5 in ash (wt %)	2.2	(3)	3.9	(1)	2.1	(15)	2.5	(3)	3.6	(13)	3.2	(18)	2.9	(16)	1.7	(12)
1.40 SG Float																
Wash recovery (wt %)[1]	64.0	(3)	40.1	(2)	64.0	(20)	70.2	(3)	75.3	(17)	62.5	(22)	68.6	(25)	73.1	(16)
Btu/lb	13,931	(3)	13,544	(2)	13,942	(19)	14,006	(3)	14,174	(16)	14,163	(21)	14,287	(24)	14,266	(16)
Volatile matter (wt %)	37.4	(3)	35.9	(2)	36.1	(20)	37.1	(3)	36.6	(17)	35.9	(22)	36.3	(25)	36.7	(16)
Sulfur (wt %)	0.65	(3)	0.67	(2)	0.59	(20)	0.60	(3)	0.52	(17)	0.55	(22)	0.58	(25)	0.58	(16)
Ash (wt %)	8.5	(3)	10.9	(2)	8.8	(20)	7.8	(3)	7.9	(17)	8.4	(22)	7.4	(25)	7.8	(16)
Rank Index	2.92	(1)	2.93	(1)	3.08	(13)	-	(0)	3.19	(11)	3.23	(18)	3.22	(18)	3.21	(12)
Fluidity (ddpm)	23,515	(1)	9,425	(1)	20,647	(13)	-	(0)	17,237	(11)	19,850	(18)	17,945	(18)	26,136	(12)
CBI	0.76	(1)	0.76	(1)	0.86	(13)	-	(0)	1.02	(11)	1.00	(18)	1.14	(18)	0.92	(12)
FSI	6.3	(3)	5.5	(2)	7.1	(20)	7.5	(3)	7.6	(17)	7.6	(22)	7.3	(25)	7.9	(16)
Reflectance (%)	0.78	(1)	0.78	(1)	0.84	(13)	-	(0)	0.87	(11)	0.88	(18)	0.89	(18)	0.85	(12)
Ash fusion, ST (°F)	2,597	(1)	2,387	(1)	2,339	(10)	-	(0)	2,321	(11)	2,341	(16)	2,302	(15)	2,326	(11)
P_2O_5 in ash (wt %)	2.5	(1)	4.3	(1)	2.7	(10)	-	(0)	4.8	(11)	4.0	(16)	3.3	(16)	1.9	(11)

[1] Wash recovery applies to total seam composite (coal plus in-seam partings). Out-of-seam dilution is not represented by listed recoveries.

(#) Number of seam composites used in average.

Table 1-2. Coal Resource[1,2]

(Effective date May 24, 2012)

	MEASURED[3]		INDICATED[4]		TOTAL M&I RESOURCE		INFERRED[5]	
	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]
GREEN SEAM								
NCE North Lease	2.2	13,650	0.1	13,670	2.3	13,650		
XTO Lease	2.2	13,560	0.3	13,580	2.5	13,560		
NCE South Lease								
DOW Lease	27.6	13,690	26.8	13,740	54.4	13,710	0.1	12,870
Secora Ranch	0.0	13,170	0.3	13,210	0.3	13,210		
	31.9	**13,680**	**27.5**	**13,730**	**59.4**	**13,700**	**0.1**	**12,870**
LOCO SEAM								
NCE North Lease	0.0	13,760	0.2	13,760	0.2	13,760		
XTO Lease	0.9	13,730	1.0	13,740	2.0	13,740		
NCE South Lease			1.1	13,740	1.1	13,740	0.4	13,740
DOW Lease	13.4	13,510	27.6	13,460	41.0	13,480	26.0	13,460
Secora Ranch							0.2	13,740
	14.4	**13,520**	**30.0**	**13,480**	**44.3**	**13,500**	**26.6**	**13,470**
BLUE SEAM								
NCE North Lease	0.4	13,900	0.4	13,890	0.7	13,900		
XTO Lease	9.4	13,810	1.0	13,850	10.4	13,810		
NCE South Lease	3.2	13,950	0.2	13,960	3.4	13,950		
DOW Lease	38.8	13,950	36.5	13,910	75.3	13,930	0.9	13,650
Secora Ranch	0.3	13,950	0.1	13,940	0.4	13,950		
	52.2	**13,920**	**38.1**	**13,910**	**90.3**	**13,920**	**0.9**	**13,650**

Table 1-2. Coal Resource[1,2] *(continued)*

(Effective date May 24, 2012)

	MEASURED[3]		INDICATED[4]		TOTAL M&I RESOURCE		INFERRED[5]	
	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]
BING CANYON UPPER SEAM								
NCE North Lease								
XTO Lease								
NCE South Lease								
DOW Lease	12.8	14,040	36.8	14,000	49.6	14,010	30.0	13,900
Secora Ranch								
	12.8	**14,040**	**36.8**	**14,000**	**49.6**	**14,010**	**30.0**	**13,900**
RED SEAM								
NCE North Lease	1.1	14,200	0.3	14,230	1.3	14,210		
XTO Lease	2.7	14,260	0.3	14,280	3.0	14,260		
NCE South Lease	2.2	14,350	0.1	14,320	2.3	14,350		
DOW Lease	17.4	14,170	9.6	14,150	27.0	14,160		
Secora Ranch								
	23.3	**14,200**	**10.3**	**14,160**	**33.6**	**14,180**		
MAXWELL SEAM								
NCE North Lease	8.5	14,450	0.9	14,340	9.5	14,440		
XTO Lease	21.8	14,430	1.7	14,350	23.5	14,420		
NCE South Lease	2.4	14,030	0.2	14,010	2.6	14,030		
DOW Lease	39.4	14,160	68.8	14,100	108.2	14,120	17.4	13,840
Secora Ranch								
	72.1	**14,270**	**71.7**	**14,110**	**143.8**	**14,190**	**17.4**	**13,840**

Table 1-2. Coal Resource[1,2] *(concluded)*

(Effective date May 24, 2012)

	MEASURED[3]		INDICATED[4]		TOTAL M&I RESOURCE		INFERRED[5]	
	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]
APACHE SEAM								
NCE North Lease								
XTO Lease								
NCE South Lease								
DOW Lease	49.7	14,330	56.4	14,340	106.0	14,340	15.4	14,240
Secora Ranch	0.6	14,170	0.5	14,180	1.1	14,170		
	50.3	**14,330**	**56.8**	**14,340**	**107.1**	**14,340**	**15.4**	**14,240**
ALLEN SEAM								
NCE North Lease								
XTO Lease								
NCE South Lease	0.2	13,960	0.0	14,210	0.3	13,970		
DOW Lease	41.8	14,280	46.6	14,240	88.4	14,260	14.1	13,980
Secora Ranch	0.7	14,530	1.2	14,530	2.0	14,530		
	42.8	**14,280**	**47.9**	**14,250**	**90.7**	**14,270**	**14.1**	**13,980**
TOTAL	**299.8**	**14,110**	**319.1**	**14,050**	**618.9**	**14,080**	**104.5**	**13,840**

1 Quality basis: low-sulfur, high-volatile, B bituminous coal.
2 Clean coal tons only > 3.0 feet thick, excludes in-seam and out-of-seam dilution.
3 Measured Resource located within 1/4-mile radius from a measurement point.
4 Indicated Resource located between 1/4-mile and 3/4-mile radius from a measurement point.
5 Inferred Resource located between 3/4-mile and 1 1/2-mile radius from a measurement point.
6 Washed quality at 1.40 SG float.

The resource estimate is based on a kriged gridded-seam model developed using Carlson Mining 2011 Software™. The model was built on a total of 198 historical rotary-core holes drilled by previous operators of the Property, 256 natural gas wells, and the 45 rotary-core holes drilled by NECC during the 2010-2012 exploration programs.

Resource classifications are based on the Standardized Coal Resource/Reserve Reporting System for Canada (GSC Paper 88-21, 1989) and United States Geological Survey (USGS) Circular 891 (1983). The effective date of this estimate is May 24, 2012.

In-seam rock partings are variable in thickness and location, and average as low as 23% of the ROM material in the Allen seam and as high as 45% of the ROM material in the Loco seam, excluding out-of-seam dilution. Actual plant yield will vary depending upon actual production unit sequencing relative to the overall mine.

No reserves have been determined. Mineral Resources that are not Mineral Reserves lack demonstrated economic viability until such time as demonstrated by a prefeasibility or feasibility study.

1.7 Preliminary Economic Assessment

PEAs were completed in 2010 and 2011 on the basis of a preliminary multi-seam mine plan for assessing the economic viability of the project. The preliminary mine plans indicate that there is adequate resource to support over 20 years of operation at 3 million tons of saleable coal per year. The mine plans assume room-and-pillar mining with pillar extraction (secondary mining) in the Blue, Maxwell, Apache, and Allen coal seams. The 2011 PEA estimated capital and operating costs are summarized in Table 1-3. Production revenue is based on coal sales pricing projected by Wood Mackenzie, Inc. (2011). The 2011 PEA concluded that the project has demonstrated economic viability with a pre-tax Net Present Value (NPV) of US$1.4 billion at a 10% per annum (p.a.) discount rate, a payback period of 1.7 years, and an Internal Rate of Return (IRR) of 98%.

Project risks with potential to impact the project's economics include future coal sales pricing; unpredicted mining conditions; inability to hire an adequate number of qualified employees; excessive delays of regulatory approvals from state or federal agencies; and increased costs or delays in acquiring ownership or rights to third-party properties assumed obtained for the PEA, which could include water rights, surface properties, and gas wells.

No fatal flaws to the project were identified in the PEA.

The QPs consider the general conclusions developed by PEA regarding the project's economic viability to be both relevant and current as of the effective date of this report. The PEA justifies advancement of the project to prefeasibility or feasibility design.

On July 3, 2012 Cline announced that it is revising and optimizing the operations of NECC to include longwall mining. As part of this process, updated production or cost guidance will be developed.

Table 1-3. Preliminary Economic Assessment Cost and Revenue Projections (US$1,000s)

	Year				Avg/yr	Total
	2011	2012	2013	2014	2015–30	2011–30
Production and Revenue						
Total ROM short tons (ROMt)	636	5,000	5,455	5,455	5,455	103,818
Total clean short tons (CCt)	350	2,750	3,000	3,000	3,000	57,100
Price F.O.R.—$ per short ton	193	160	136	121	136	139
TOTAL REVENUE	**67,455**	**440,000**	**409,091**	**362,727**	**407,216**	**7,374,727**
Operating Costs						
Underground mining costs	30,497	105,666	98,173	91,273	95,036	1,846,180
Preparation plant costs	7,585	17,970	18,615	18,615	18,615	360,622
Rail and truck haulage	1,607	12,625	9,545	9,545	9,545	186,050
Offsite and other costs (royalty, tax, administration)	8,674	51,178	48,640	44,004	46,152	890,922
TOTAL OPERATING COST	**48,362**	**187,439**	**174,974**	**163,437**	**169,348**	**3,283,775**
EBITDA	**19,092**	**252,561**	**234,117**	**199,290**	**237,868**	**4,510,953**
Capital Costs						
Continuous miner section equipment	32,943	9,109	1,456	9,947	9,416	204,113
Other underground equipment (includes conveyors)	34,493	20,635	9,438	814	2,808	110,308
Surface and plant equipment (includes gas wells)	27,542	58,283	21,183	12,591	8,091	249,062
TOTAL CAPITAL COST	**94,978**	**88,027**	**32,078**	**23,351**	**20,316**	**563,483**

Note: Costs and tonnages(short tons) in 1,000's

1.8 Other Relevant Data and Information

The New Elk Mine is a brownfield underground mine and portals site that is currently being reactivated. Major revisions to the DRMS permit have been submitted to expand the mine permit boundary. Various MSHA mine plans and approval documents have been submitted and approved. Opposition to the permit revisions is anticipated to be minimal, as the local area is seeking good paying jobs. The routine environmental protests that are common to all mining permitting or other mining activities are expected, but are not likely to succeed in blocking the permit modifications.

The BLM coal leases are presently under application. It is anticipated that the BLM will ultimately decide in favor of leasing, but the outcome cannot be assured. NECC has sufficient property to access and develop the XTO lease and NCE fee coal parcels to the north if the BLM leases are not obtained. If the BLM decides to lease the nominated tracts, it will be a competitive bidding process. No reasonable access is available for these BLM tracts other than via NECC-controlled property.

1.9 Conclusions and Recommendations

There is sufficient data obtained through the various mine operations and exploration programs conducted since 1951 to support the geologic interpretations of seam structure and coal thickness for the Blue, Maxwell, Apache, and Allen seams. The four target coal seams are low sulfur, high-volatile, metallurgical bituminous coals that can also be used in thermal applications.

All mine production will have to be washed to make a saleable product. The coal is near, or at, the lower limit of high-volatile coal ranking. Free swelling index (FSI) variances and ash content may preclude some of the coal from being classified as a premium hard coking coal; however, the coals in this area have been used for many years to make coke. The coal would also make a good blend coal and PCI coal. It would also make a good, compliant, high British thermal unit (Btu) thermal coal.

It is recommended that a CIMDS prefeasibility study be conducted for the New Elk Mine project. A prefeasibility study should include updated current coal market analysis based on the additional coal quality testing results.

The coal resource remains open to the north, northwest, east, south, and southwest of the NECC Property. Favorable geology merits evaluation of additional resources on the current DOW lease and potential acquisition of neighboring properties for expanding the resource base. Priority should be given to ground contiguous to the XTO lease and NCE fee coal parcels.

Costs for the recommended environmental data collection, permit modification, coal exploration, coal and geotechnical testing and analysis program, and prefeasibility study are estimated to range between $3 and $4 million for a life-of-project level effort.

2.0 INTRODUCTION

2.1 Introduction

Cline, through its subsidiary NECC, is reopening the New Elk Mine located approximately 24 miles west of Trinidad, Las Animas County, Colorado, USA. Cline is a Toronto, Ontario, Canada, publicly traded corporation listed on the TSX Venture Exchange, trading under CMK. The New Elk Property comprises platted parcels, coal leases, and fee coal parcels totaling approximately 34,060 acres. Another 1,295 acres have been nominated for coal leasing with the BLM.

Areas of the Property have been mined beginning in 1951 and continuing to 1996. Two underground mines, one each in the Allen seam and one in the Maxwell seam, were mined over several decades until the CF&I blast furnaces at Pueblo, Colorado, shut down and later when the thermal markets softened. Inefficient mining practices along with the soft markets made the mines uncompetitive by 1996.

NECC has in its possession many of the exploration and other files from the previous owners of the Property. Behre Dolbear & Company Ltd. (Behre Dolbear) conducted an NI 43-101 Technical Report in May 2008 that states the resources of NECC's Colorado total land holdings (Behre Dolbear 2008).

2.2 Terms of Reference

AAI was retained by NECC to prepare an independent Technical Report of NECC's New Elk Mine Project coal resources. AAI completed this Technical Report in support of the proposed mine operation for the New Elk Mine Project. This Technical Report was prepared in accordance with NI 43-101 and provides AAI's professional opinion relative to the classification of the New Elk Mine Property's coal resources.

This Technical Report follows four earlier Technical Reports and two PEAs. Behre Dolbear completed the first NI 43-101 Technical Report on the Property titled *Technical Report on the New Elk Coal Company, LLC, Los [sic] Animas County, Colorado, USA,* dated May 8, 2008. AAI issued a preliminary assessment of room-and-pillar mining potential titled *Preliminary Assessment of the New Elk Mine Project,* dated March 13, 2010. AAI prepared a Technical Report to accompany the Preliminary Assessment titled *NI 43-101 Technical Report of the New Elk Mine Project, Las Animas County, Colorado, USA*, also dated March 13, 2010. The March 13 reports were combined into a single Technical Report titled *NI 43-101 Technical Report of the New Elk Mine Project, Las Animas County, Colorado, USA* dated November 1, 2010. An updated Technical Report titled *NI 43-101 Technical Report of the New Elk Mine Project, Las Animas County, Colorado, USA* was issued on May 21, 2011 summarizing the results of the 2010 exploration drilling program and included an updated PEA.

AAI reviewed historical data provided by NECC and the Dolbear (2008) Technical Report. The sources of geologic information used are coal exploration data provided by NECC and coal

quality studies conducted by CF&I and other subsequent owners of the Project area Property. The data were developed by numerous technical people over many years. A complete list is included in Section 27, References. AAI did not use any historical resource or reserve estimates.

2.2.1 Units

Units used in this report are expressed in the English system unless otherwise noted. Currencies are expressed in USA dollars.

2.2.2 Purpose

The purpose of this report is to provide a Qualified Persons (QPs) independent Technical Report of NECC's resource estimate in accordance with NI 43-101 Standards for Disclosure for Mineral Projects. NECC is a wholly owned subsidiary of Cline (TSX:CMK).

2.2.3 Sources of Information

The information contained in this report has been obtained from the following sources:

- A report titled *Preliminary Assessment of the New Elk Mine Project,* dated March 13, 2010, by AAI.
- A Technical Report titled *NI 43-101 Technical Report of the New Elk Mine Project, Las Animas County, Colorado, USA*, dated March 13, 2010, by AAI.
- A Technical Report titled *NI 43-101 Technical Report of the New Elk Mine Project, Las Animas County, Colorado, USA,* dated November 1, 2010, by AAI.
- A Technical Report titled *Technical Report on the New Elk Coal Company, LLC, Los [sic] Animas County, Colorado, USA,* dated May 8, 2008, by Behre Dolbear & Company Ltd.
- Allen Mine (1983). Partial report regarding Allen Mine, pages 47–53.
- Blais, J. (1982). Allen Mine Ventilation Survey. January 11.
- Cline Mining Corporation (2010). Web site <http://www.clinemining.com>.
- Coal Petrographic Associates, Inc (1991). Analysis of Maxwell seam sample from Golden Eagle, November 11.
- Colorado Division of Reclamation, Mining and Safety (2009). "Proposed Decision and Findings of Compliance, The New Elk Mine, Permit No. C-81-012, Permit Renewal No. 5 (RN-05)." Prepared by Kent Gorham, Environmental Protection Specialist III, March 6.
- Commercial Testing and Engineering Company (1973). "Report of Results of Washability Studies, Allen Mine Coals." Prepared for CF&I Steel Corporation, Pueblo, Colorado.

- Core Laboratories, Inc (1986). Average analyses of nine Allen seam samples provided by Wyoming Fuel Company, February 5.
- CT&E (1981). Analysis of coal from Allen Mine silo (Allen seam), May 11.
- Devanney (2010). Email to Art Palm regarding coal quality parameters.
- Geologic Survey of Canada (1989). A Standardized Coal Resource/Reserve Reporting System for Canada. Authored by J. D. Hughes, L. Klatzel-Murty, and D. J. Nikols, Paper 88-21, 17 pages.
- Gorham, K. (2009). Personal interview and mine site tour. January 27.
- Holland and Hart, LLP (2010), legal review conducted by attorney Ms. Jeanine Feriancek, Denver, CO.
- Las Animas County (2009). Coal Mining Lease filed for record in Las Animas County. Instrument 200800696948, Book 1075, Page 1935, March 26.
- New Elk Coal Company, LLC (1992–1995). New Elk Preparation Plant Summaries.
- New Elk Coal Company, LLC (2006). Kansas limited liability company articles of organization. January 17.
- New Elk Coal Company, LLC: various documents provided including mine maps, area maps, drill data, coal quality data, and copies of legal documents.
- North Central Energy, Inc. (1997). Quitclaim Deed. With Picketwire Processing LLC, June 1.
- Right of Way Lease Agreement between American Trails Associate, New Elk Coal Company LLC, and Kern Valley Railroad Company, September 1, 2011.
- Site visits between September 28, 2010, and April 1, 2011 by two QPs.
- Smeins, M. (2009). Combined geologic engineering report (GER) and maximum economic recovery report (MER) for coal lease application applied for by New Elk Coal Company, LLC. Bureau of Land Management.
- State of Colorado Department of Public Health and Environment (2008). "Colorado Discharge Permit CO-000906." October 29.
- State of Colorado Oil and Gas Conservation Commission (2001). *Raton Basin Coal Mine Feature Inventory*, Greg Lewicki and Associates, July.
- State of Colorado, Department of Natural Resources, Division of Wildlife and Wildlife Commission (2008). Coal Mining Lease. With New Elk Coal Company LLC, March 14.

- U. S. Geological Survey Bulletin 1450-b, Coal Resource Classification System of the U. S. Bureau of Mines and U. S. Geological Survey, staff, 2006.

- U. S. Geological Survey Professional Paper 1625-A, A Summary of Tertiary Coal Resources of the Raton Basin, Colorado and New Mexico, R. M. Flores and L. R. Bader, 1999.

- U. S. Geological Survey, Geological Survey Circular 891, Coal Resource Classification System of the U. S. Geological Survey, by Gordon H. Wood, Jr., Thomas M. Kehn, M. Devereaux Carter, and William C. Culbertson, March 2003.

2.3 Field Involvement

The authors of this report are independent and their involvement with fieldwork or other operations that were undertaken with respect to the New Elk Mine Property are limited to the following:

- Site visits and information gathering necessary to evaluate project economics
- Assisting NECC with MSHA mine plan and approval submittals
- Assisting NECC with environmental permit revisions and highway access permit applications
- Advising NECC on mine rehabilitation and developing requests for proposals for rehabilitation contractor bidding, coal preparation plant upgrades, and contract mining bidding
- Providing management of a third-party coal marketing consultant contracted through NECC for a coal price market forecast study
- Providing management of a third-party coal processing consultant contracted through NECC for a coal processing study
- Providing management of a third-party gas well production analyst contracted through NECC for a CBM well production forecast and valuation
- Developing and managing the 2010, 2011, and 2012 exploration drilling, coal quality testing, and geotechnical testing programs
- Developing and overseeing subconsultants designing surface facility infrastructure such as water systems, sanitary sewer systems, slope hoists and supply yard mine tracks, conceptual plans for railroad tracks and unit train load out, and similar facilities
- Preliminary effort to conduct a prefeasibility longwall mining study
- Assisting NECC with long-term mine planning

3.0 RELIANCE ON OTHER EXPERTS

3.1 Mineral Tenure

AAI QPs have not reviewed mineral tenure, nor independently verified the legal status or ownership of surface or mineral title, and underlying property agreements. AAI has fully relied upon NECC and its experts on all matters of mineral tenure through the following documents:

- Holland and Hart, LLP (2010), "Coal and Oil and Gas Development Conflicts Concerning Land in DOW Lease," prepared by attorney Ms. Jeanine Feriancek, Denver, CO, June 28.

- Holland and Hart, LLP (2010), "Legal Review," prepared by attorney Ms. Jeanine Feriancek, Denver, CO, July 20.

- Copy of April 16, 2012, special warranty deed between grantor Colleen Anne Millard and grantee NECC for the Secora Ranch property; filed for record in Las Animas, Colorado on April 19, 2012.

- Copy of DOW Bosque del Oso State Wildlife Area lease amendment (CPW Original Transaction ID 07-098-SE dated March 14, 2008) between lessor State of Colorado acting by and through the Department of Natural Resources and lessee NECC; filed for record in Las Animas, Colorado on May 17, 2012.

  This information is used in Section 4.2 of the report.

3.2 Encumbrances

The QPs have fully relied upon and disclaim information relating to encumbrances on the on the mineral tenure for the project through the following document:

- Holland and Hart, LLP (2010), "Legal Review," prepared by attorney Ms. Jeanine Feriancek, Denver, CO, July 20.

  This information is used in Section 4.4 of the report.

3.3 Market Analysis

The QPs have relied upon coal market analyses and pricing forecasts derived from experts for this information through the following documents:

- Wood Mackenzie, Inc. (2011), "New Elk Marketing Strategy," April.

Wood Mackenzie, Inc. has extensive experience in domestic and international coal markets. This information is used in Sections 13 and 19 of the report.

3.4 Processing

The QPs have relied upon processing plant analysis and capital and operating cost estimates through the following documents:

- Taggart Global (2011), "New Elk Preparation Plant Feasibility Study Report," Canonsburg, PA, January 25.
- Taggart Global (2011), "New Elk Existing Preparation Plant Upgrade Options Feasibility Study Report, Canonsburg, PA," May 5.
- Daniels Company (2012), 800 TPH Preparation Plant Flowsheet, New Elk Coal Company, Current Flow Diagram, Job No. 3628, Code No. FS, Drawing Revision 1, June 17.

Taggart Global is a leader in coal preparation plant design and construction. This information is used in Sections 17, 18, and 21 of the report.

3.5 Gas Wells

The QPs have relied upon analysis of the potential for gas inflows into the mine from producing CBM wells and well valuation through the following documents:

- Raven Ridge Resources, Inc. (2011), "Investigations and Evaluation of Gas Wells Located In and Around New Elk Coal Company's Mining Leases, Grand Junction, CO," March 28.

Raven Ridge Resources, Inc. is a technical expert in methane extraction and has extensive experience in the Raton Basin, as well as elsewhere in the USA and internationally. This information is used in Section 18.6 of the report.

4.0 PROPERTY DESCRIPTION AND LOCATION

4.1 Description

The New Elk Mine Project Property is located in the western part of Las Animas County, State of Colorado, USA. The proposed mine area is approximately 24 miles west of Trinidad, Colorado, and straddles Colorado State Highway 12. The mine's main portal site is located approximately in the west central portion of the new mine development area. The Property consists of the existing New Elk Mine works and surface facilities, and three contiguous leases. Three separate federal tracts managed by the BLM are under lease nomination by NECC. Access to these coal leases will be uneconomic to anyone but NECC. It is anticipated that NECC will acquire the BLM leases.

Figure 4-1 illustrates the New Elk Mine general location and Figure 4-2 shows the extent of property controlled by NECC. NECC holds title to approximately 1,595 acres of platted ground and controls approximately 32,922 acres of coal leases and fee coal parcels. Another 1,295 acres have been nominated for coal leasing through the BLM.

4.2 Ownership

NECC surface ownership and lease holding are as follows:

NECC Surface Ownership—Land Survey Plat, Terry Surveying Inc., May 15, 1997:

- Parcel A—80.73 acres more or less
- Parcel B—168.57 acres excepting the area of the tract being in common with the Trinidad Railroad right-of-way. Said common area being 36.29 acres. The total acreage being herein conveyed being 132.28 acres more or less.
- Secora Ranch, also known as the "Pacesetter Property"—1,346 acres more or less

NECC Coal Ownership:

- Secora Ranch—1,138 acres more or less, excludes 208 acres of severed coal interest leased through DOW

NECC Fee Coal Parcels:

- NCE—1,180 acres more or less

NECC Coal Leases:

- XTO—1,802 acres more or less

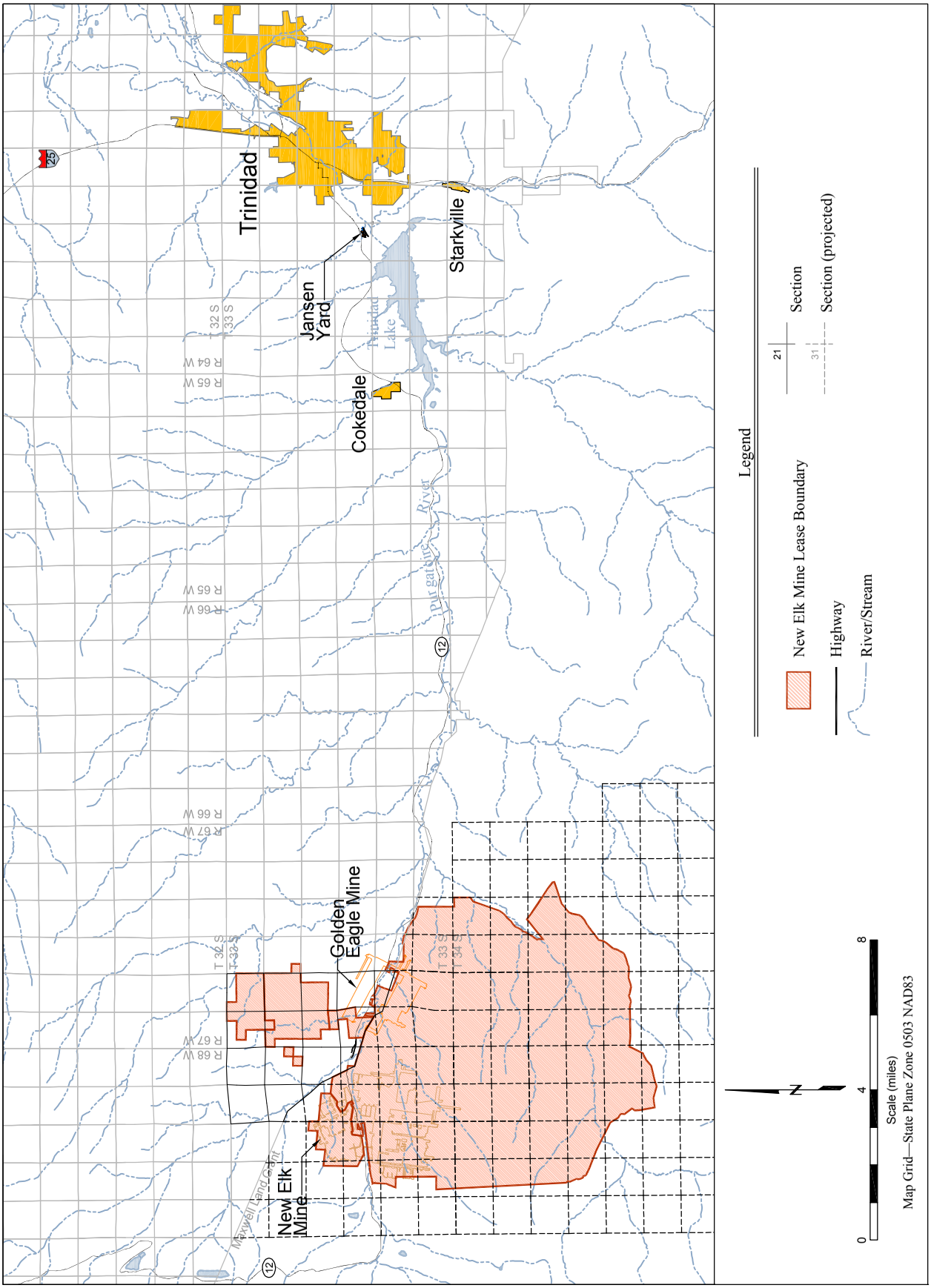
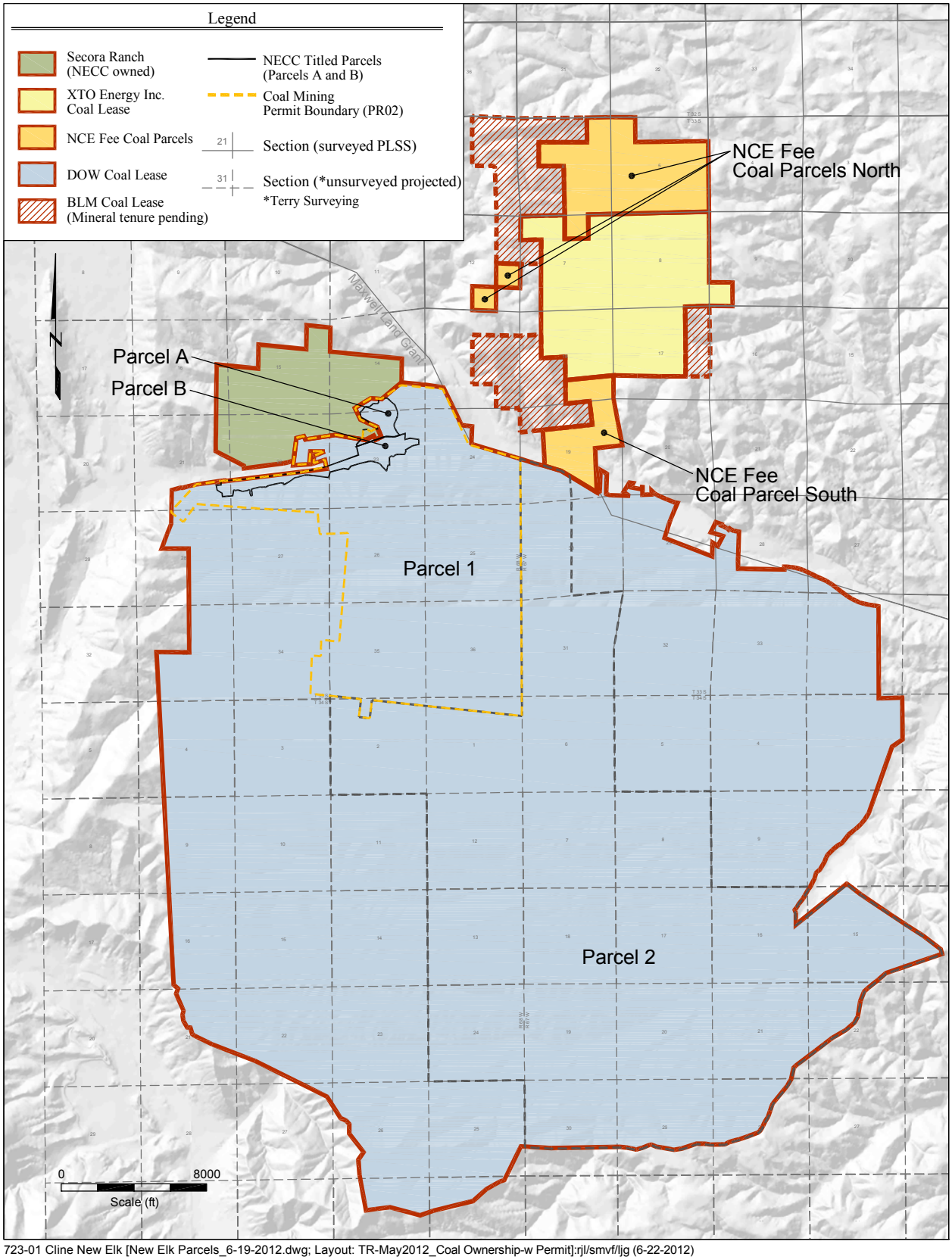


Figure 4-1. Project Location Map



723-01 Cline New Elk [New Elk Parcels_6-19-2012.dwg; Layout: TR-May2012_Coal Ownership-w Permit]:rjl/smvf/ljg (6-22-2012)

Figure 4-2. Coal Tenure and Mine Permit Map

- DOW—29,940 acres more or less; Bosque del Oso State Wildlife Area boundary is approximate

- BLM (nominated for lease)—1,295 acres more or less

NECC purchased the stock and assets of Westmoreland Coal Company's subsidiary NCE. Cline Mining Corporation exercised an option to purchase 100% of the capital stock of NCE from JMC Engineering. In connection with exercise of the option, the stock power that previously had been executed by NECC to JMC Engineering was rescinded. NECC currently owns 100% of the capital stock of NCE, and thus owns the NCE fee coal parcels.

NECC has an agreement with XTO that allows it to extract coal from some of the property that XTO owns. This property is more fully described as being in the following parcels of Township 33, Range 67 West (excerpt from Dolbear 2008):

	Parcel	Acreage
Section 7:	NE ¼ NE ¼	40
	S ½ NE ¼	80
	E ½ NW ¼	80
	NW ¼ NW ¼	40
	E ½ SW ¼	80
	SE 1/4	160
Section 8:	All	640
Section 9:	SW ¼ SW ¼	40
Section 17:	SW ¼ and W ½ NE ¼	240
	N ½ SW ¼ NW ¼ SE ¼	120
Section 18:	NE ¼ E ½ :NW ¼ N ½ SE ¼	320
TOTAL COAL ACRES:		1,840

The original DOW lease, dated March 14, 2008, is more fully described as follows (excerpt from Behre Dolbear 2008):

> *The STATE OF COLORADO acting by and through the DEPARTMENT OF NATURAL RESOURCES, for the use and benefit of the DIVISION OF WILDLIFE and WILDLIFE COMMISSION (DOW), does hereby lease to Lessee (New Elk) the right and privilege of exploring and prospecting by underground methods only for, and mining of and taking of coal from all coal seams mineable only by underground mining methods, subject to the terms and conditions set forth herein, from beneath lands herein described, situated in the County of Las Animas, State of Colorado, to-wit:*
> *Parcel 1:*

All land lying within the boundaries of the permit area for the New Elk Mine as of June 1, 1997, as more specifically…shown as Parcel 1 on the plat…hereto containing 3,997.8 acres, more or less; and

Parcel 2:

The southern portion of the land that is described by metes and bounds ... being that portion that lies in Sections 19,30 and 31 in Township 33 South, Range 67 West, 6th P.M., Sections 6, 7, 8, 15, 16, 17, 18, 19, 20, 21, 22, 28, 29 and 30 in Township 34 South, Range 67 West, 6th P.M., and in Sections 1, 2, 12, 13 and 24, in Township 34 South, Range 68 West, 6th P.M. and is shown as Parcel 2 on the plat…hereto containing 11,555 acres, more or less.

The Public Lands Survey does not extend to the southern portion of the DOW Parcel 2 lease. For lease descriptive purposes, the DOW has projected "true" sections to permit a lease description in its lease with NECC; however, the lease description is in metes and bounds. The nominal acreage of the lease as described in the lease documents is considered approximate.

A July 20, 2010, legal review conducted by attorney Ms. Jeanine Feriancek of Holland and Hart, LLP, Denver office, affirms that NECC holds a 100% vested interest in the XTO and DOW leases, subject to various rental and royalty obligations.

The DOW lease was amended on May 9, 2012 to include the remainder of land in Bosque del Oso State Wildlife Area not previously leased, being 14,387 acres, more or less.

4.3 Location

The proposed mine works will be located in portions of Sections 5, 6, 7, 8, 17, 18, 19, Township 33 South, Range 67 West; Sections 1, 12, Township 33 South, Range 68 West; Maxwell Land Grant Unsurveyed Sections 30, 31, Township 33 South, Range 67 West; Section 6, Township 34 South, Range 67 West; Section 1, Township 34 South, Range 68 West; Sections 25, 26, 35, 36, Township 33 South, Range 68 West, 6th Principal Meridian.

The project's New Elk Mine portals site is located at the following approximate coordinates:

UTM NAD83	N 4,112,137 E 503,247
Latitude	37 degrees, 9 minutes, 20 seconds North
Longitude	104 degrees, 57 minutes, 48 seconds West
Colorado State Plane NAD83 (Zone 0503)	N 1,178,489 E 3,156,377

The project's proposed Bates portals site is located at the following approximated coordinates:

UTM NAD83 (Zone 13)	N 4,112,350 E 503,588
Latitude	37 degrees, 09 minutes, 27.16 seconds North
Longitude	104 degrees, 57 minutes, 34.54 seconds West
Colorado State Plane NAD83 (Zone 0503)	N 1,179,195 E 3,157,491

The Property can be accessed from State Highway 12 and numerous unimproved access roads originating from Highway 12. Many of these roads were constructed in recent years for CBM wells.

Except for the mine facilities and some residential properties, mainly along the Purgatoire River and State Highway 12, the Property is generally undeveloped. Numerous CBM wells have been drilled in recent years and will influence the mine plan. The DOW lease covering the southern portion of the Property limits surface structures to necessary ventilation shafts and power lines and prohibits surface mining, but does not specifically prohibit subsidence.

Besides State Highway 12 and the Purgatoire River, commercial power lines are in the area, a Trinidad water supply pipeline traverses a small portion of the Property, and a railway roadbed exists from the mine site to near Trinidad. There are no unusual natural features of note.

4.4 Property Liabilities

AAI is not aware of any environmental liabilities or any financial liabilities, such as overdue royalty payments or other encumbrances against the Property.

4.5 Permits

Environmental permits and other approvals relevant to coal mining activities are covered under one or more of the following:

- The National Environmental Policy Act, 1970, as amended
- Environmental Quality Improvement Act, 1970, as amended
- 1977 Federal Mine Safety and Health Act, as amended
- The Clean Air Act, 1970, as amended
- The Federal Water Pollution Control Act, 1972, as amended, including the Clean Water Act, 1977, as amended
- The Comprehensive Environmental Response, Compensation, and Liability Act (CLERCLA), 1980, as amended
- The Superfund Amendments and Reauthorization Act of 1986, as amended
- The Surface Mining Control and Reclamation Act of 1977, as amended
- The Endangered Species Act, 1973, as amended
- The Resource Conservation and Recovery Act (RCRA), 1976, as amended

- Colorado Surface Coal Mining Reclamation Act, Colorado Revised Statutes (CRS) 34-33-101
- CRS 25-7, air quality
- CRS 25-8, water

The following list contains the known existing permits and regulatory based mine plans:

- DRMS
  - Permit Colorado Surface Coal Mining and Reclamation Permit #C-81-012
    Permit Renewal No. 5 (RN-05) Renewed: May 21, 2009
    - Technical Revisions TR53 and TR54 are approved for surface facilities construction.
    - Technical Revision TR55 is approved for construction of the Bates portals which allows access to the Blue seam.
    - Permit Revision PR03 is approved for inclusion of the Jansen Yard loadout as a temporary train loading facility until rail is re-established to the mine site.
    - Technical Revision TR56 is approved to allow expansion of mining in the Allen seam north and Apache seam south of the East portals.
    - Technical Revision TR57 is approved to update the surface blasting plan.
    - Permit Revision PR02 approved to expand the permit boundary by 2,567 acres and includes a mine plan for the Apache and Allen seams.
    - Technical Revision TR58 is approved to mine the Blue and the Apache and the Allen seams in the boundary approved under PR02 including pillaring of the seams and multi-seam mining.
    - Technical Revision TR 59 is approved to modify the permit boundary to include the area known as the C&W train shop. The revision also provides for the installation of an extension to the refuse disposal area conveyor.
    - Technical Revision TR60 is approved to expand the development waste disposal area.
    - Technical Revision TR 61 is approved to allow construction of a bathhouse extension and incorporation of a small area exemption at pond 7.
    - Techncial Revision TR62 is approved to allow installation of a cell phone repeater tower and construction of the associated access roads.
    - Technical Revision TR64 is pending under DRMS review to construct a 29-ft-diameter ventilation shaft at the Bates Mine.
    - Technical Revision TR65 is pending under DRMS review to construct a development waste disposal area near the West portal.
    - Technical Revision TR66 is pending under DRMS review to construct a haul road up to the refuse disposal area (RDA).
    - Permit Revision PR04 is pending under DRMS review to expand the permit boundary by 1,618 acres from the PR02 boundary.

        - Foundation geotechnical data collection is underway to facilitate the design of an additional RDA capable of storing 35 million cubic yards (MCY).

- Colorado Department of Public Health and the Environment, Air Pollution Control Division
  - Emission Permits
    - 84-LA 074F(1)—Coal preparation and washing facility (a permit update is under review as a result of plant upgrades)
    - 84-LA 074F(2)—Refuse handling
    - 09LA0590—Ventilation exhaust fans (update pending for additional fan installation at the Bates shaft)
    - 10LA1643—Jansen Yard coal handling

- Colorado Department of Public Health and the Environment, Water Quality Control Division
  - Colorado Discharge Permit (National Pollutant Discharge Elimination System [NPDES])
    - COG-310069
    - CO-0000906 (NPDES)
    - COR-040192 (NPDES Stormwater)

- Las Animas County, Land Use Planning
  - Special Use Permit
    - Variance—Mine site historic boundary has been grandfathered
    - Application pending for expansion of historic boundary

- Colorado Department of Transportation (CDOT)
  - Highway 12 access permits required to permit coal haulage
    - Mine portals site turn lane constructed
    - Jansen rail loadout site deceleration lane constructed

- MSHA Mine ID Numbers
  - MSHA ID Number 05-00296 (underground mine) New Elk Mine
  - MSHA ID Number 05-04461 (prep plant)
  - MSHA ID Number 05-04975 (underground mine) Bates Mine

- MSHA-Approved Plans
  - Ventilation Plan
  - Roof Control Plan
  - Mine Rescue Capabilities Plan
  - Seal Plan (Allen slopes)
  - Mine Emergency Response Plan
  - Mine Emergency Evacuation Plan Shaft Sealing Plan (East portals shaft)

- MSHA Plans Pending
  - Pillaring plan

- Ventilation plan required prior to bringing Apache Canyon #1 and #2 airshafts online
- Ventilation plan required prior to bringing Bates shaft online.

Underground coal mining is currently permitted for the 4,198-acre area defined by the DRMS permit boundary shown in Figure 4-2. The most recent DRMS approved permit expansion (PR02) was to the previously permitted 1989 boundary. Expansion beyond that boundary by an additional 1,618 acres is pending under PR04. Expansion of the permit boundaries requires new baseline data collection for any areas impacted by planned surface disturbance. At least one year of water monitoring data is typically required for all areas of the mine plan. Impacts to the baseline have to be identified and mitigations planned. The extensive CBM development has impacted the hydrologic regime. Separating impacts related exclusively to mining and not CBM development is a complex process. DRMS permitting and plan submittals to MSHA are ongoing and a normal part of the mine development process.

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

These items are documented in Behre Dolbear's *Technical Report on the New Elk Coal Company, LLC, Los* [sic] *Animas County, Colorado, USA*, dated May 8, 2010.

5.1 Access

The New Elk Mine Property is accessed from Colorado State Highway 12, a paved all-weather road that connects the Property to the city of Trinidad, located approximately 24 miles to the east.

5.2 Climate

The climate has average annual maximum temperatures of 67 degrees Fahrenheit (°F), an average annual minimum temperature of 37°F, average annual total precipitation of 15.1 inches, and annual average snowfall of 43 inches.

5.3 Local Resources

Trinidad is a city of between 9,000 and 10,000 people. It has a community college that historically conducted miner training classes. The city is historically a railroad and coal mining center. The local coking coal market collapsed when the Pueblo blast furnaces closed in the early 1980s, but the international coking and PCI markets have increased demand considerably in recent years, making metallurgical coal prices attractive again.

Most services needed by a modern underground coal mine are located in the area or are within a one-and-a-half day's commute (suppliers, vendor warehouse, and repair facilities).

Skilled mine supervisors, mechanics, and electricians are limited in availability, both locally and nationally. The USA mining workforce is aging, and approximately one-third to one-half of the highly skilled miners are expected to retire in the next 5 to 10 years. Hiring qualified personnel will become increasingly competitive. A local resource to aid in mitigating this issue is the community college located in Trinidad.

5.4 Physiography

The main portals site elevation is approximately 7,600 feet above mean sea level. Its winters are relatively mild and its summers are generally hot, with few days above 90°F.

6.0 HISTORY

This item is documented in Behre Dolbear's *Technical Report on the New Elk Coal Company, LLC, Los* [sic] *Animas County, Colorado, USA*, dated May 8, 2010.

The area has been a coal mining area for approximately 150 years. The coals of the southern Raton Basis have made good coking coals. The closure of the blast furnaces at CF&I's plant in Pueblo in the early 1980s saw the end of coking coal production from the Trinidad area. Mining continued on the property for the thermal coal markets, via the Golden Eagle Mine in the Maxwell seam or the Lorencito surface mine, located approximately12 miles east, until the early 2000s.

A rail line running from the BNSF main line in Trinidad served the CF&I mines and later owners until it was removed around 2003. The roadbed remains intact, but its ownership has been fragmented with three current owners, including NECC. It is technically feasible to reinstall the track from its current terminus approximately 2 miles west of Trinidad to the property.

Since the sale of the Property by CF&I, the New Elk Mine Property has had the following owners:

- Wyoming Fuel Company
- Basin Resources Inc.
- Picketwire Processing LLC
- NECC

The Allen Mine's name was changed to the New Elk Mine, and the Maxwell Mine's name was changed to the Golden Eagle Mine.

After the sale by CF&I to Wyoming Fuel Company, Wyoming Fuel Company had a 550-ton/hour coal preparation plant constructed (1984). This plant processed coal from the Golden Eagle Mine (Maxwell Mine). The plant was named the Picketwire Preparation Plant and, after underground mining ceased in the mid-1990s, a considerable portion of the original CF&I coal properties were sold or conveyed to the State of Colorado and other entities. Later the plant facility was acquired by Picketwire Processing LLC and used for loading coal from the Lorencito surface mine onto unit trains in 2001–02.

After closure of the Lorencito surface mine and idling of the Picketwire Preparation Plant, the mine portals, preparation plant, and a segment of the rail right-of-way was conveyed to NECC. NECC is in the process of modifying certain mine permits, obtaining and maintaining regulatory mine approvals, rehabilitating the East portals access slopes and shaft, and conducting initial construction/production mining from the New Elk Mine. Most of the old works of the New Elk Mine will be sealed, with limited use of the existing mine infrastructure to access undeveloped resources lying to the east, northeast, and southeast of the old works. Some mining is anticipated to occur over the New Elk and Golden Eagle Mine historical works.

7.0 GEOLOGIC SETTING AND MINERALIZATION

7.1 Regional Geology

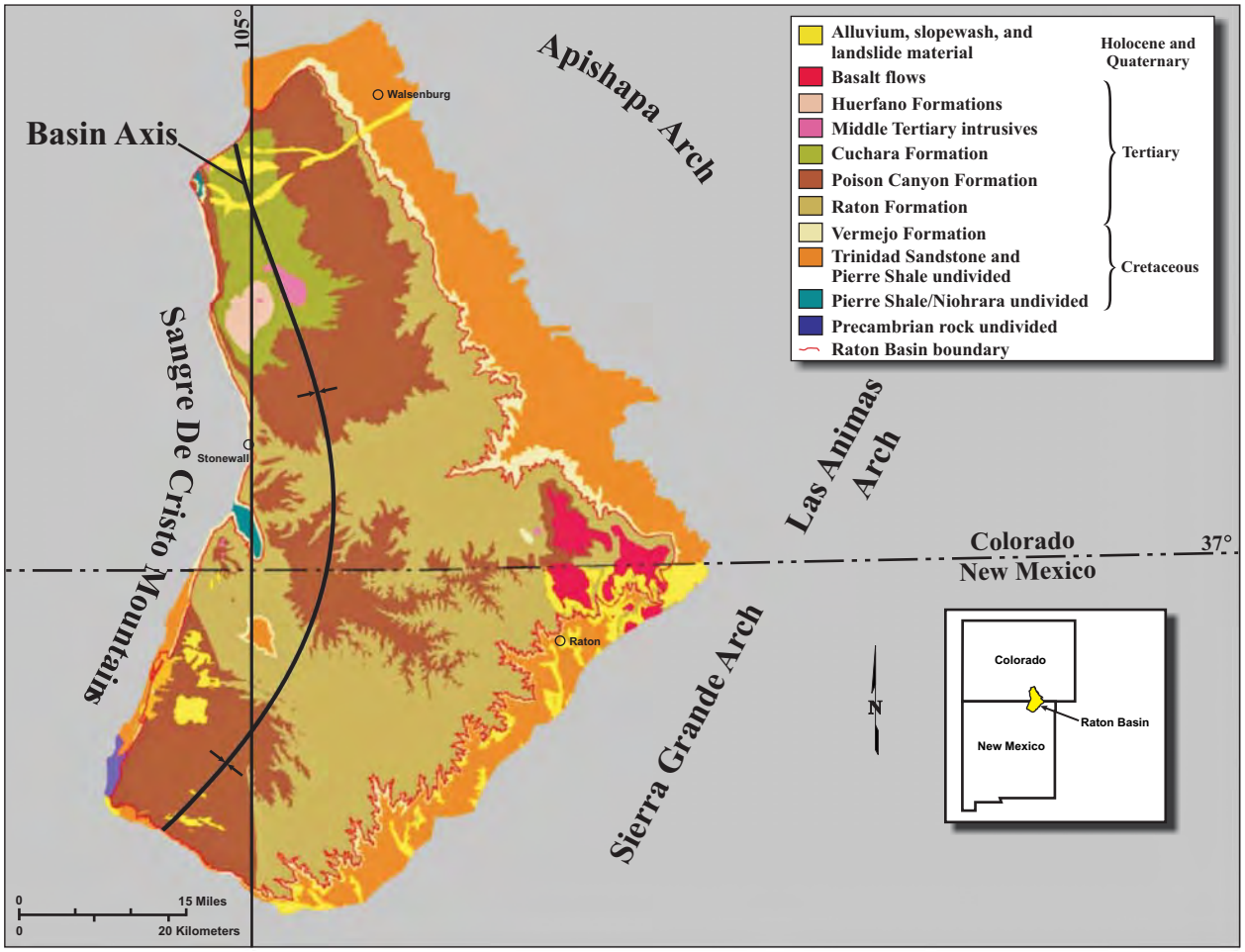
The New Elk Mine is located in the Raton Basin, a crescent-shaped structural trough and depocenter that extends from Huerfano Park, Colorado, to Cimarron, New Mexico (Figure 7-1). The basin is bound on the west by the Sangre de Cristo Mountains, on the northeast by the Apishapa Arch, and on the southeast by the Sierra Grande and Las Animas Arches. The basin is approximately 80 miles in length and 50 miles wide, encompassing approximately 4,000 square miles and is asymmetric in shape with the axis running along the western margin. The basin is filled with approximately 20,000 to 25,000 feet of sedimentary rock in its deepest part. The Raton Basin contains a large coal resource contained in Late Cretaceous and Paleocene formations. The coal is well known for its high-quality coking characteristics and CBM. The region is noted for its historical significance in coal mining and coke used in the past by nearby steel mills.

7.2 Stratigraphy

The coal-bearing strata are underlain by Late Cretaceous sedimentary rocks of the Pierre Shale and Trinidad Sandstone which are substantially below the coal seams planned for mining. A general stratigraphic column is shown in Figure 7-2. The Upper Cretaceous Vermejo Formation conformably overlies the Trinidad Sandstone. The Vermejo Formation consists of interbedded gray to black carbonaceous, coaly and silty mudstone and shale, slightly arkosic sandstone, carbonaceous siltstone, and numerous coal beds. The formation ranges from 150 feet thick in the southern part of the basin to 410 feet thick in the northern part of the basin. Within the proposed permit area and vicinity, the CBM industry exploits gas from coals contained within the Vermejo Formation.

Overlying the Vermejo Formation is the Upper Cretaceous and Paleocene Raton Formation which contains the coal seams of mining interest and of which New Elk Mine plans to extract by underground mining methods. The Raton Formation contains a basal conglomerate that rests conformably on the Vermejo Formation. Above this basal conglomerate lies interbedded sandstone, siltstone, mudstone, and numerous coal beds. The basal conglomerate is extremely variable in composition and varies in thickness from a thin edge near Trinidad to 250 feet near the town of Stonewall. Above the conglomerate is an alternating sequence of greywacke, arkosic and quartzose sandstone with interbedded siltstone, mudstone, and coal, which has been subdivided into a lower coal zone, a barren zone, and an upper coal zone.

The lower coal zone ranges from 100 to 250 feet thick and contains the famous Cretaceous/Tertiary (K/T) boundary near the base as evident by a layer rich in iridium. The barren zone ranges from 180 to 600 feet thick and the upper coal zone is about 1,100 feet thick in the center of the basin. Coal seams of mineable interest to the New Elk Mine, including the Blue, Maxwell, Apache, and Allen seams are contained in the lower coal zone of the Raton Formation. The Raton Formation coals are also targets for the gas industry and numerous CBM wells are active within the proposed permit area.



723-01T3 Cline_New Elk [Geology_Raton Basin.cdr]:deh(3-2-10)

Figure 7-1. General Geologic Structure—Raton Basin Coalfield (from Behre Dolbear 2008)

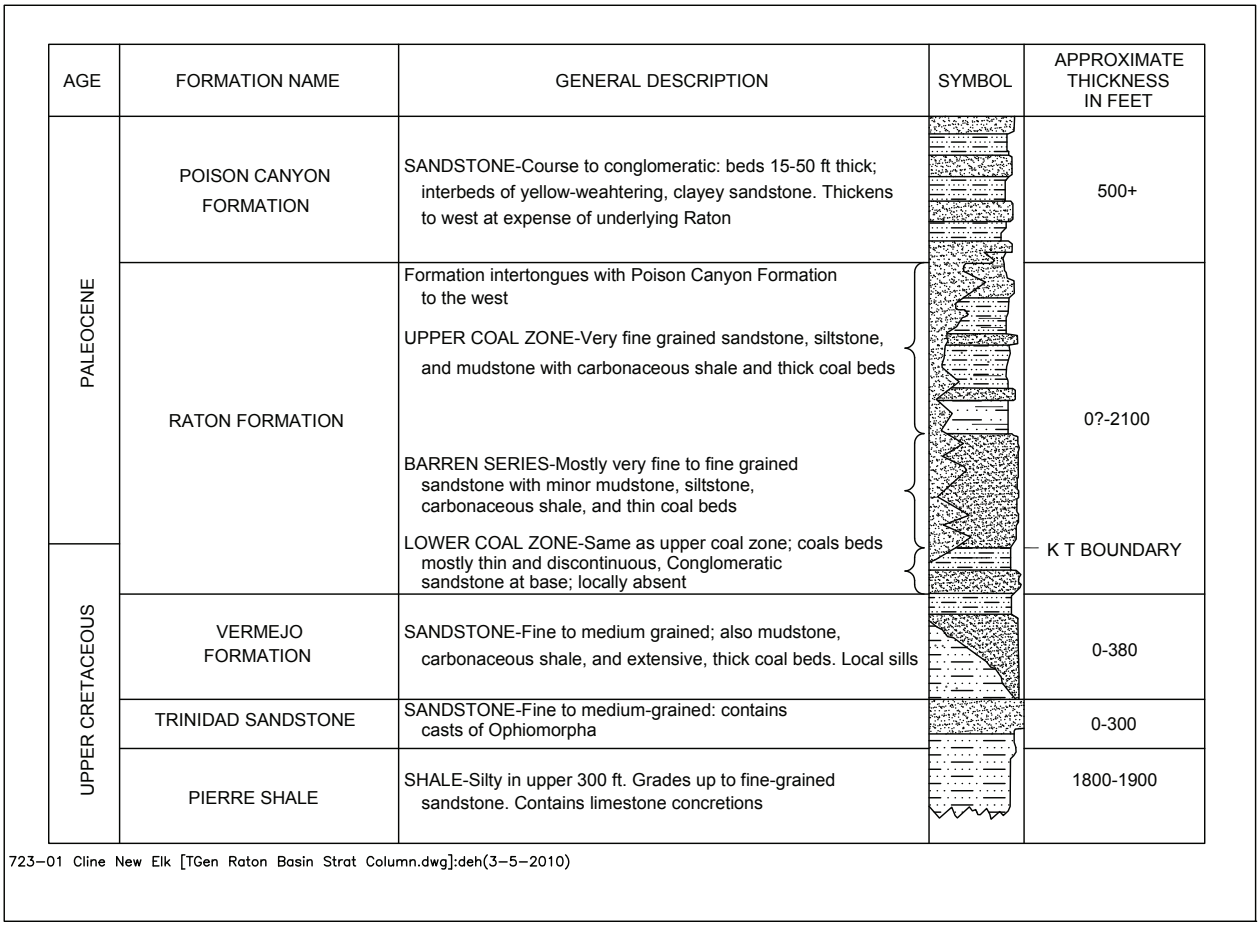


Figure 7-2. General Stratigraphic Column—Raton Basin (from Behre Dolbear 2008)

Overlying the Raton Formation are medium to coarse-grained to conglomeratic arkosic sandstone beds intercalated and interbedded with greenish gray to maroon mudstone and siltstones of the Poison Canyon Formation. The contact with the underlying Raton Formation is indefinite and gradational. The Poison Canyon Formation caps the hills in the vicinity of the New Elk Mine and can achieve thicknesses of several hundred feet.

Quaternary sediments consisting of alluvium, outwash and landslide material are found in the bottom of the valley along the Purgatoire River and some tributaries. Quaternary alluvium consists of an array of sediment-size fractions ranging from clay to cobbles. The cobbles consist of various rock types, including granite and were transported from western highlands and deposited by the Purgatoire River and its tributaries.

The surface material consists of Quaternary Age alluvium along the Purgatoire River and tributaries, Tertiary Age strata of the Poison Canyon Formation on the upper sides of the Purgatoire River Valley and Cretaceous to Tertiary Age sandstone, mudstone, siltstone, and coal beds of the Raton Formation on the lower slopes of the valleys. The Vermejo is in the subsurface and does not outcrop on the property.

7.3 Structural Geology

The Raton Basin is an asymmetric synclinal basin formed during the Laramide Orogeny. The western flank of the basin dips steeply to the east and is displaced by transcurrent and thrust faults. Strata dip becomes milder in the central and eastern areas of the basin and within the permit area the dip ranges from 0 to 7 degrees and averages about 2.2 degrees east-northeast. The axis of the northwest-southeast oriented La Veta Syncline occurs just east of the property. The strata dip mildly westward into the basin on the basin's eastern flank.

The Raton Basin was intruded by magma during the Miocene and Pliocene, originating from the Spanish Peaks igneous complex accompanied by extensive fracturing and emplacement of igneous dikes, sills, plugs, laccoliths, and stocks. The igneous dikes and sills are intermediate to ultramafic in composition and, northeast of the permit area, these dikes trend east-west to northeast-southwest. Dikes were rare in the underground workings but appear to become more prolific north and east of the permit area. A thin igneous dike was traversed in the extreme southeast part of the New Elk Mine workings. The dikes of the Raton Basin vary in thickness from a few inches to more than 100 feet thick and are presumed to be intruded along fracture systems. Sills also become more common to the east and north of the permit boundary. Magma preferentially favors intrusion of weaker coal seams, and in some areas of the Raton Basin, the coal reserves are totally obliterated by the sills.

7.4 Coal Seams

The coal seams of interest are hosted by the Upper Cretaceous-Tertiary Raton Formation, a heterogeneous sequence of lenticular, argillaceous sandstone, siltstone, mudstone, and coal. Lithology types are highly variable, both laterally and vertically, with correlations being best established through the occurrence of coal seams. Surface and near-surface bedrock in the mine area is limited to the Tertiary Poison Canyon Formation and the Raton Formation. The Poison Canyon Formation intermittently tops the hills in the mine vicinity.

The coal seams on the Property are numerous, but only a few achieve thicknesses that are amenable to mining. Some seams are laterally continuous and have been designated during the correlation process; these are in descending stratigraphic order: Weston, Green, Loco, Blue, Yellow, Bing Canyon Upper, Bing Canyon Lower, Red, Maxwell, Apache, and Allen. A representative stratigraphic column is shown in Figure 7-3. Of these seams, the Green, Loco, Blue, Bing Canyon Upper, Red, Maxwell, Allen, and Apache achieve thicknesses that are attractive for mining.

The seams commonly have rock partings consisting of carbonaceous mudstone. The Red seam contains a tonstein (volcanic ash parting). The tonstein is not evident at every location, probably due to movement of the clay in the swamp or not designated by previous geologists. A tonstein may also be evident in the Allen seam based on past records in the southern part of the property.

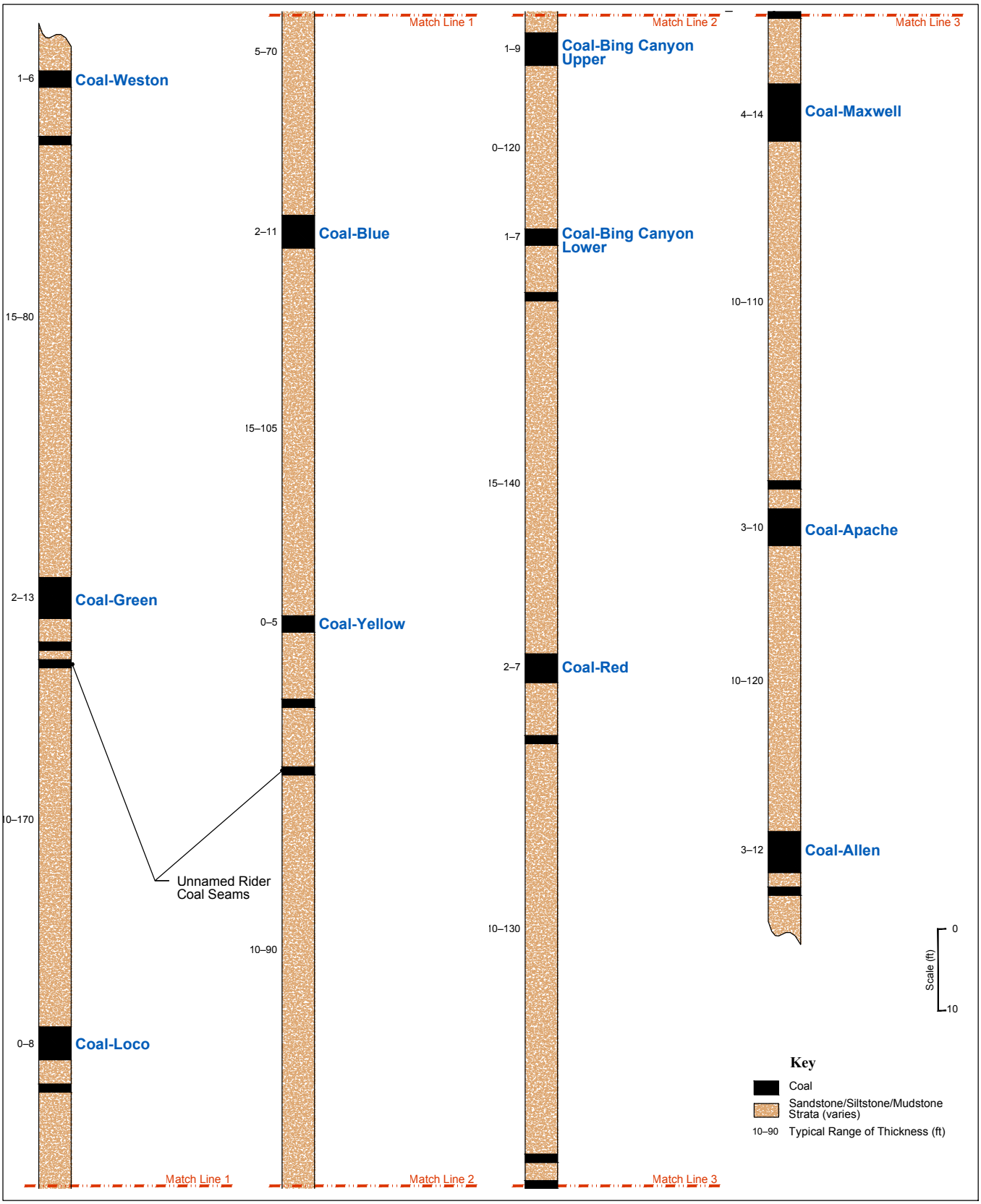
Many of the seams, including the Apache and Allen seams, locally have an immediate roof consisting of carbonaceous mudstone that often contains slickensided fractures and coal laminations. This type of material is relatively weak and is likely to contribute to out-of-seam dilution in the ROM product, eventually becoming waste after processing. Some thicker rider coals occur locally.

The seams strike north 33 degrees west (N33°W) (azimuth 327 degrees) on average and dip 2 to 4 degrees to the northeast. Fractures and cleats vary in orientation and are oriented east-west to northeast-southwest in the vicinity of the property. Easterly trending normal faults were encountered during previous mining and were successfully traversed without significant adverse effects. Within the Allen Mine, the most significant fault encountered showed a vertical displacement up to 30 feet (down-thrown on the south). The fault decreases in magnitude eastward and forms a graben with a vertical throw of only 3 feet. Other minor faults were encountered but rarely achieved full seam displacement and most were attributed to a depositional mode of placement (i.e., paleoslumps).

A complex of dikes and sills occurs approximately 3 miles northeast of the current New Elk Mine and near the town of Weston, east of the New Elk Mine. A thin dike was encountered in the old works of the Allen Mine, but was crossed with minimal impact to the mining operations. Intrusive sills have also been identified in some holes to the extreme south on the property; however, none appear to have significantly affected the coal seams of interest.

Paleochannels, scours, slumps, and faults were encountered on occasion in both the New Elk and Golden Eagle Mines. These, and the intrusive dikes to the north, are expected to pose the most significant geologic hazards to mining.

Seam correlations were developed using Carlson Mining 2011 Software™ (Carlson 2011), an industry-recognized commercial-grade geologic and mine modeling software system that runs within AutoDesk Inc.'s AutoCAD©. Seams were correlated on the basis of elevation, thickness, stratigraphic position, in-seam and out-of-seam marker beds, roof and floor lithology, signatures from electric logs, and, in some holes, coal quality data. Historical correlations developed by previous mine operators during the 1970s through 1990s were used as a starting point for the model. Survey data from the historical New Elk and Golden Eagle Mines provided



723-01 NECC [General Strat_Tech Rep 6-2012.dwg; Layout: Layout2]:rjl/smvf (6-22-2012)

Figure 7-3. Stratigraphic Column—New Elk Mine

known elevations for the Allen and Maxwell seams, respectively. Correlations were carried through the property for the primary and ancillary seams, including, in descending stratigraphic order, the Weston, Green, Loco, Blue, Yellow, Bing Canyon Upper, Bing Canyon Lower, Red, Maxwell, Allen, and Apache seams.

The geologic model was used to generate structural cross sections and isopachs of seam top and bottom elevations, depth to top of seam, interburden thickness between seams, clean coal thickness, in-seam parting thickness, and total seam thickness (comprising the sum of clean coal and parting thickness). Clean coal isopachs for the seams of interest are shown in Figures 7-4 through 7-11.

Seam bottom elevation contours for the Green (shallowest) and Allen (deepest) seams are shown in Figures 7-12 and 7-13. Depth (overburden) contours for the Green and Allen seams are shown in Figures 7-14 and 7-15.

The thickness of the Allen seam varies from 1 to 7 feet, with significant areas having mineable thicknesses. The Allen seam averages about 5.5 feet thick in the central part of the property. This seam was extracted in the old New Elk Mine, and extensive workings prove its continuity and mineability. Some local channeling and slumping were encountered during mining.

The Apache seam is stratigraphically located 20 to 50 feet above the Allen seam and has a thickness ranging from 1 to 6 feet. The Apache seam averages about 3.5 feet within the central part of the Property. The Apache seam has not been previously mined, except for several hundred feet in the old New Elk Mine where mains were ramped up into the Apache seam to avoid a thinned slump area in the Allen seam.

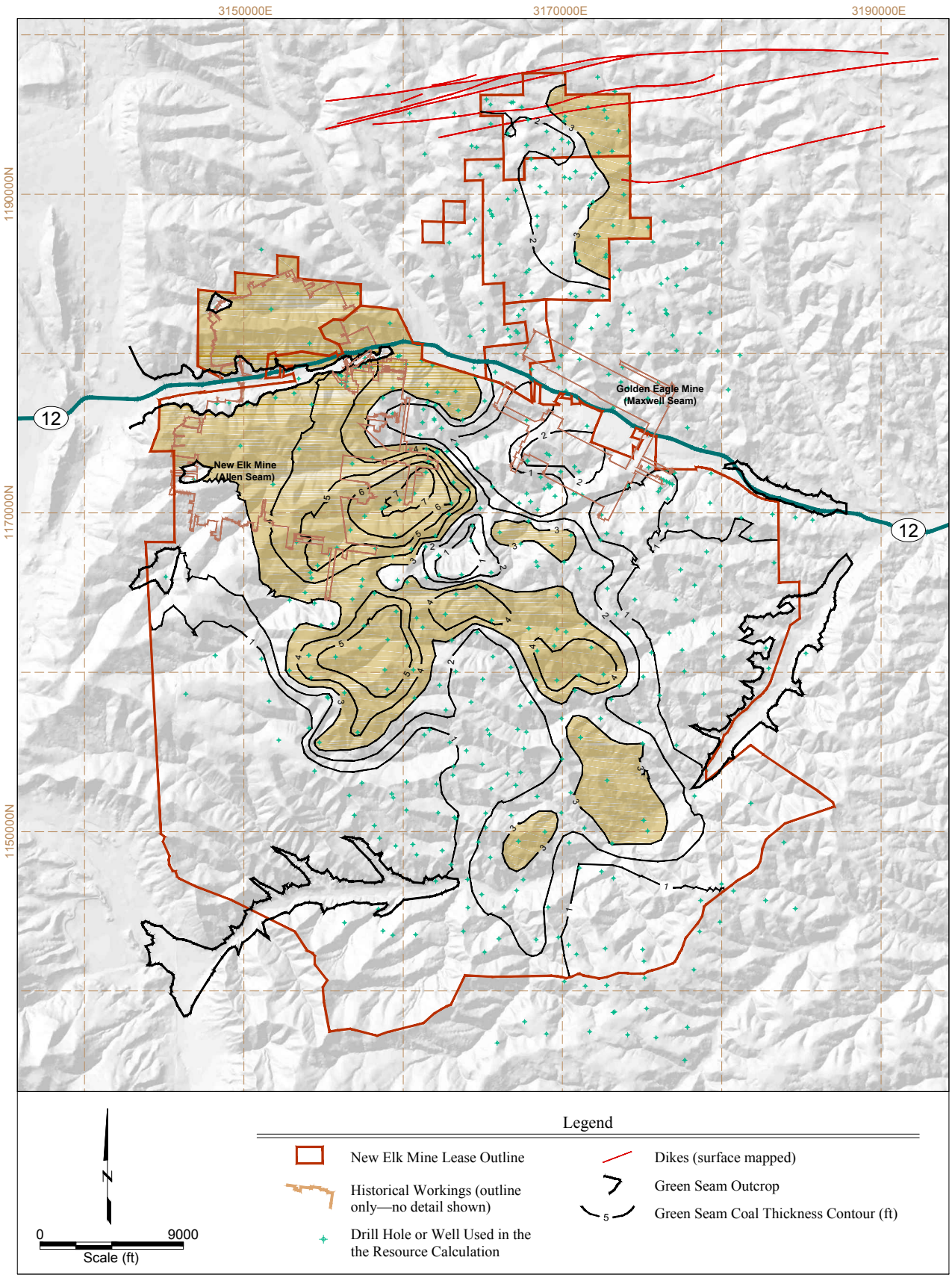
The Maxwell seam is located 25 to 50 feet above the Apache seam and has a thickness ranging from 1 to 9 feet thick. The Maxwell is the most laterally extensive of the four commercial seams. The Maxwell seam was extracted in the Golden Eagle Mine which was a longwall operation. The seam averages about 7 feet thick in the northern part of the Property and 5.5 feet in the southern part of the Property.

The Red seam is persistent throughout the Property and ranges on the order of 3 to 4 ft thick in the central part of the Property, and thickens locally to 5 ft.

Mineable coal occurs locally in the Bing Canyon Upper, Blue, Loco, and Green seams throughout most of the Property. The Blue seam averages about 4 feet thick, and thickens to as much as 6 feet in the central and extreme southern parts of the Property. The Green, Loco, and Bing Canyon Upper seams are variable and swell and thin abruptly over the Property. Thicker pods are generally associated with increased carbonaceous mudstone partings that can comprise up to 30% of the total seam thickness.

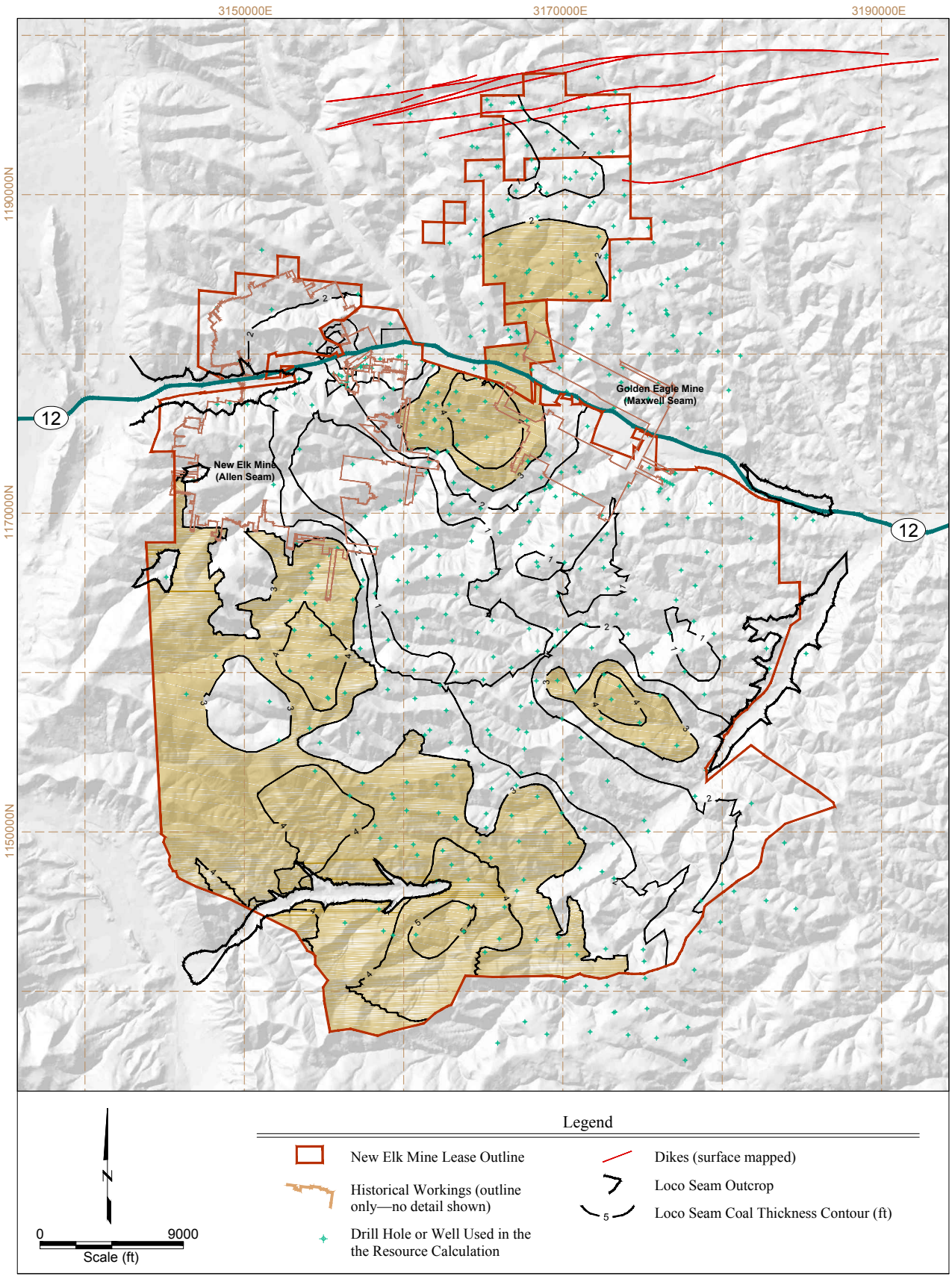
The rocks immediately above and below the seams consist of interbedded sandstone, siltstone, and mudstone. Lens-shaped, sandstone-filled, paleochannels occupy areas between the seams and contribute to local zones of interburden thickening. Some of these paleochannels locally overly coal seams, sometimes producing a sandstone top. The lithology below the Allen

seam, the lowest coal seam planned for mining, consists of alternating layers of mudstone, siltstone, sandstone and very thin coal seams.



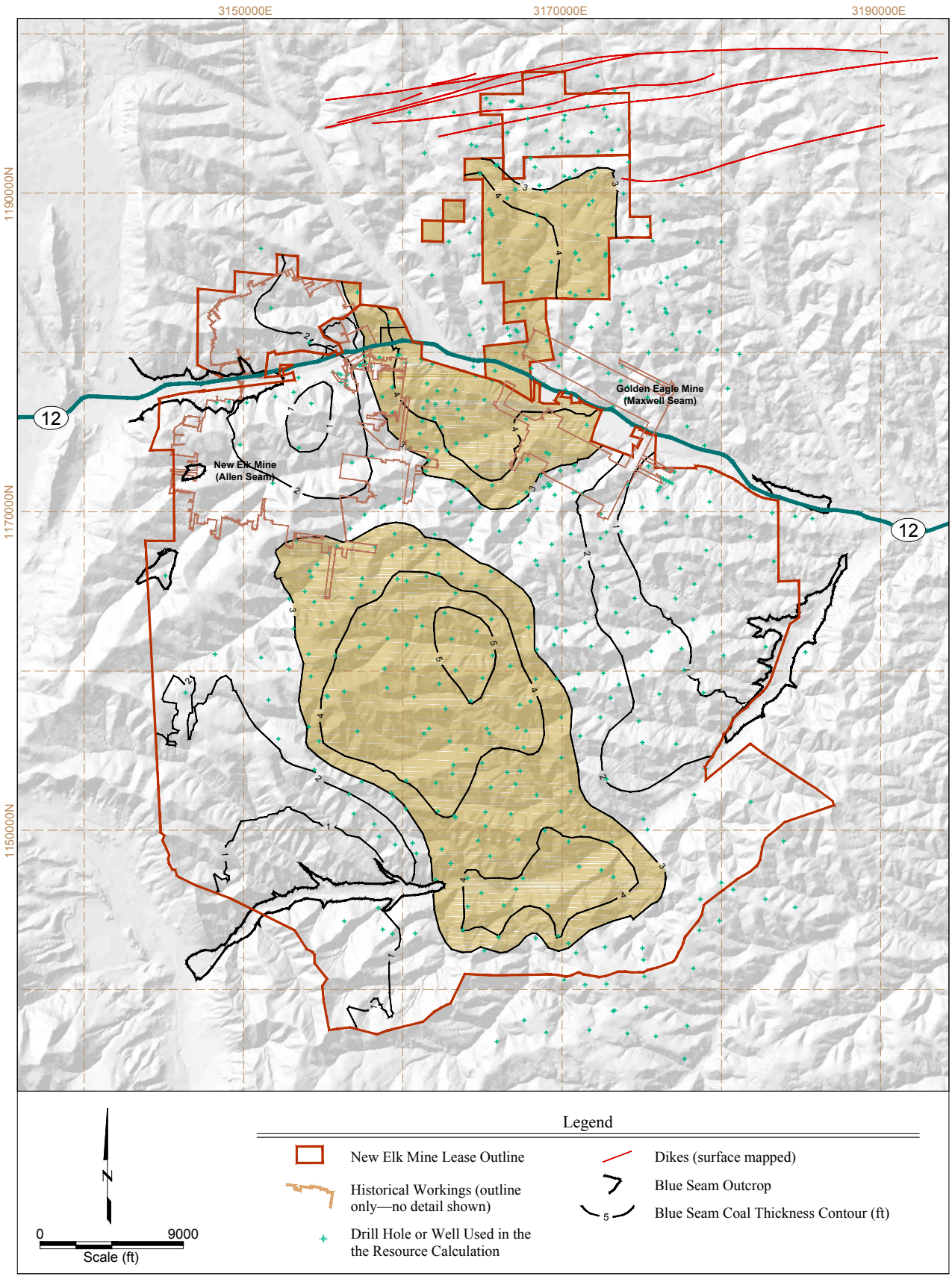
723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal_PR-04.dwg; Layout: Coal Thk and Total Thk0_Green]:smvf (6-20-2012)

Figure 7-4. Clean Coal Thickness—Green Seam



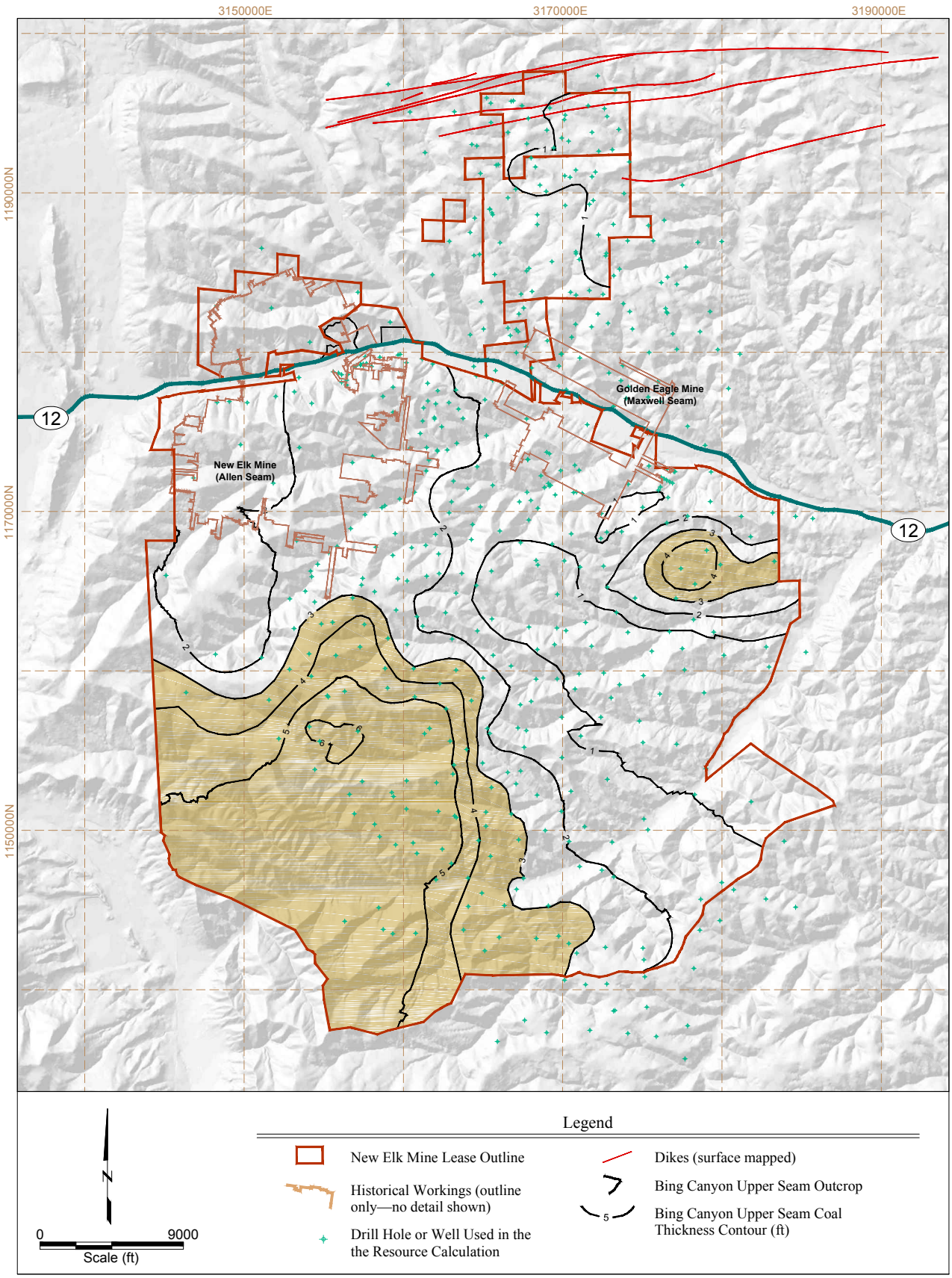
723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal_PR-04.dwg; Layout: Coal Thk and Total Thk0_Loco]:smvf (6-20-2012)

Figure 7-5. Clean Coal Thickness—Loco Seam



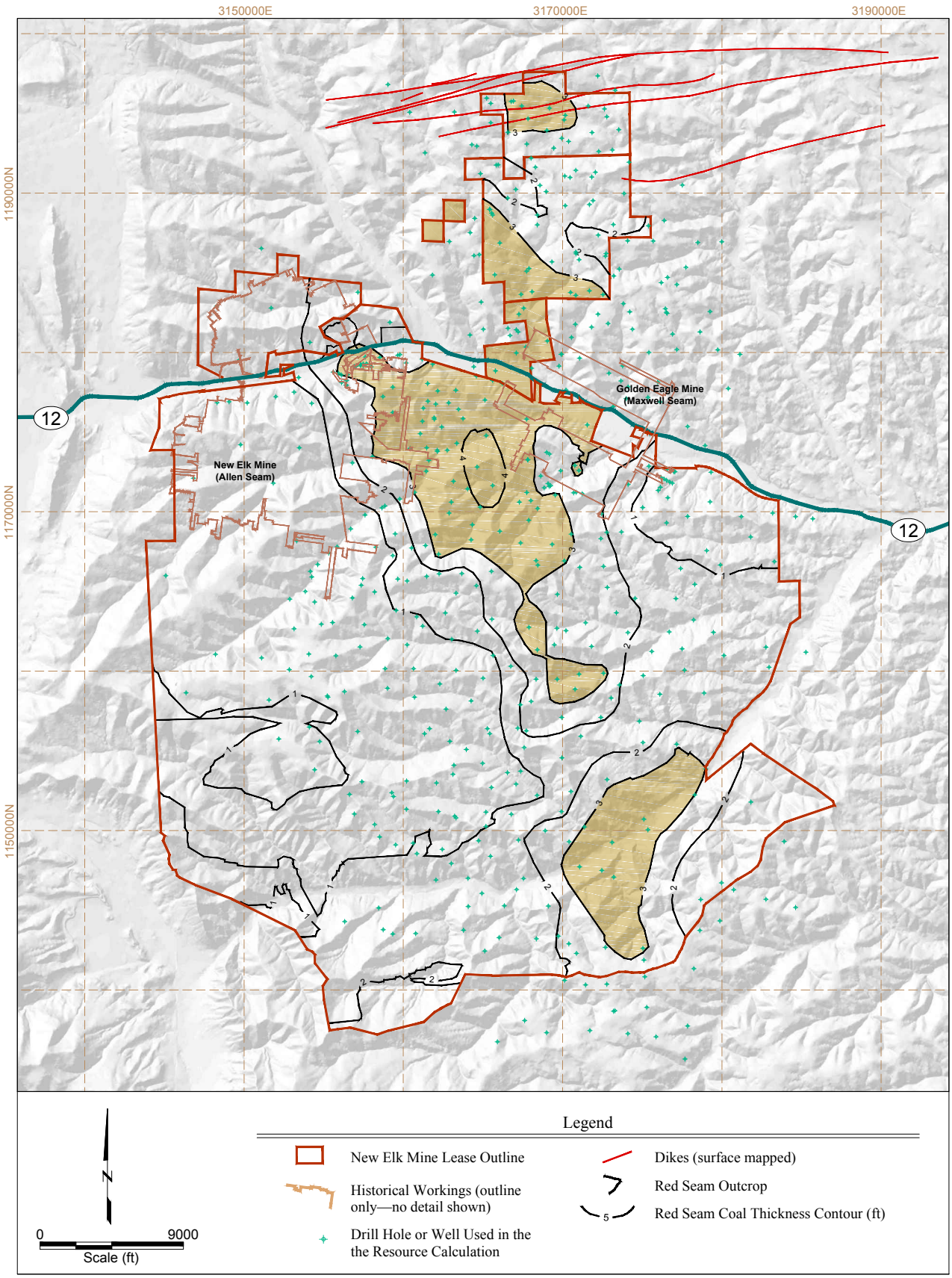
723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal_PR-04.dwg; Layout: Coal Thk and Total Thk2_Blue]:smvf (6-20-2012)

Figure 7-6. Clean Coal Thickness—Blue Seam



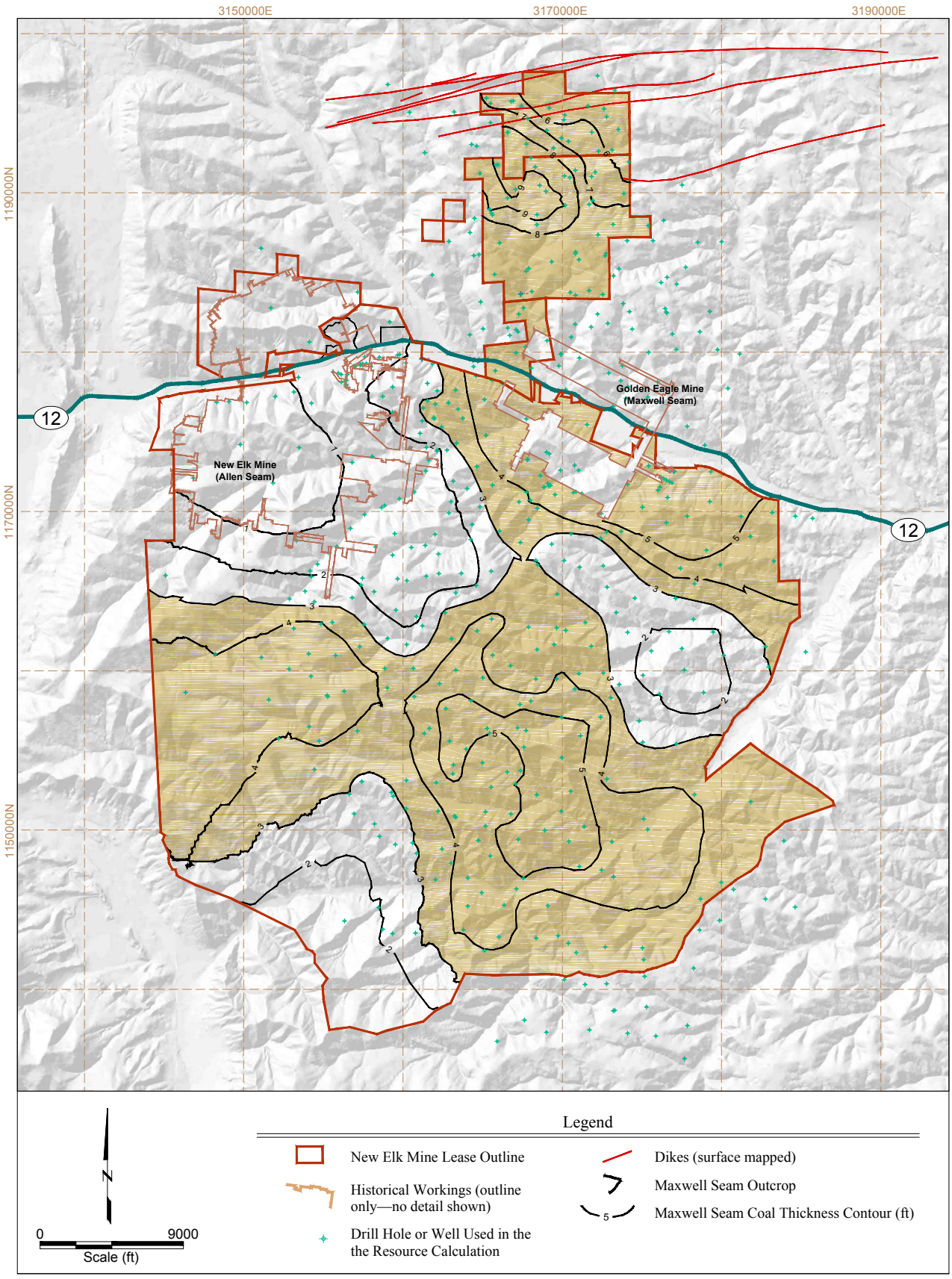
723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal_PR-04.dwg; Layout: Coal Thk and Total Thk2.5_BCU]:smvf (6-20-2012)

Figure 7-7. Clean Coal Thickness—Bing Canyon Upper Seam



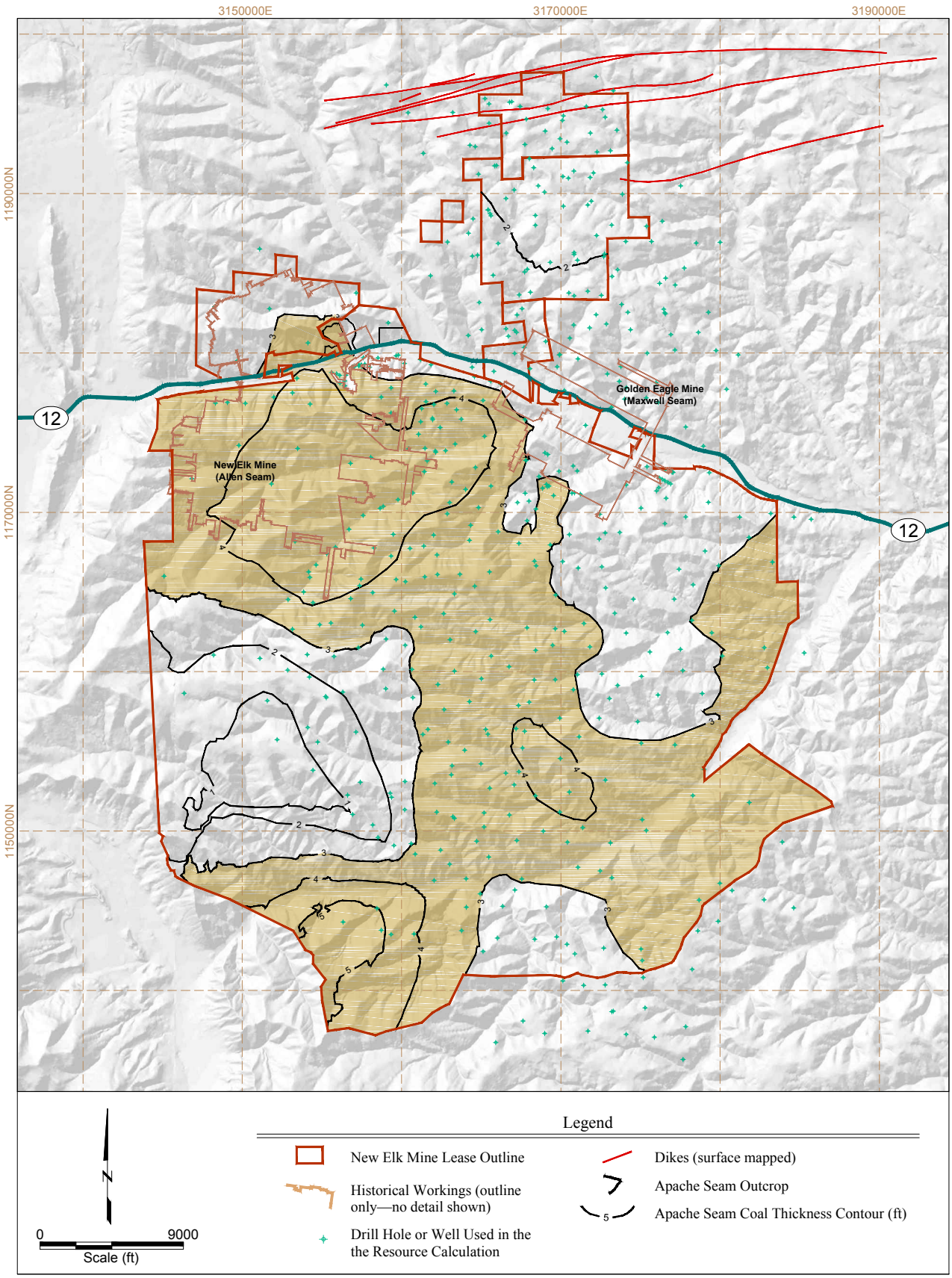
723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal_PR-04.dwg; Layout: Coal Thk and Total Thk3_Red]:smvf (6-20-2012)

Figure 7-8. Clean Coal Thickness—Red Seam



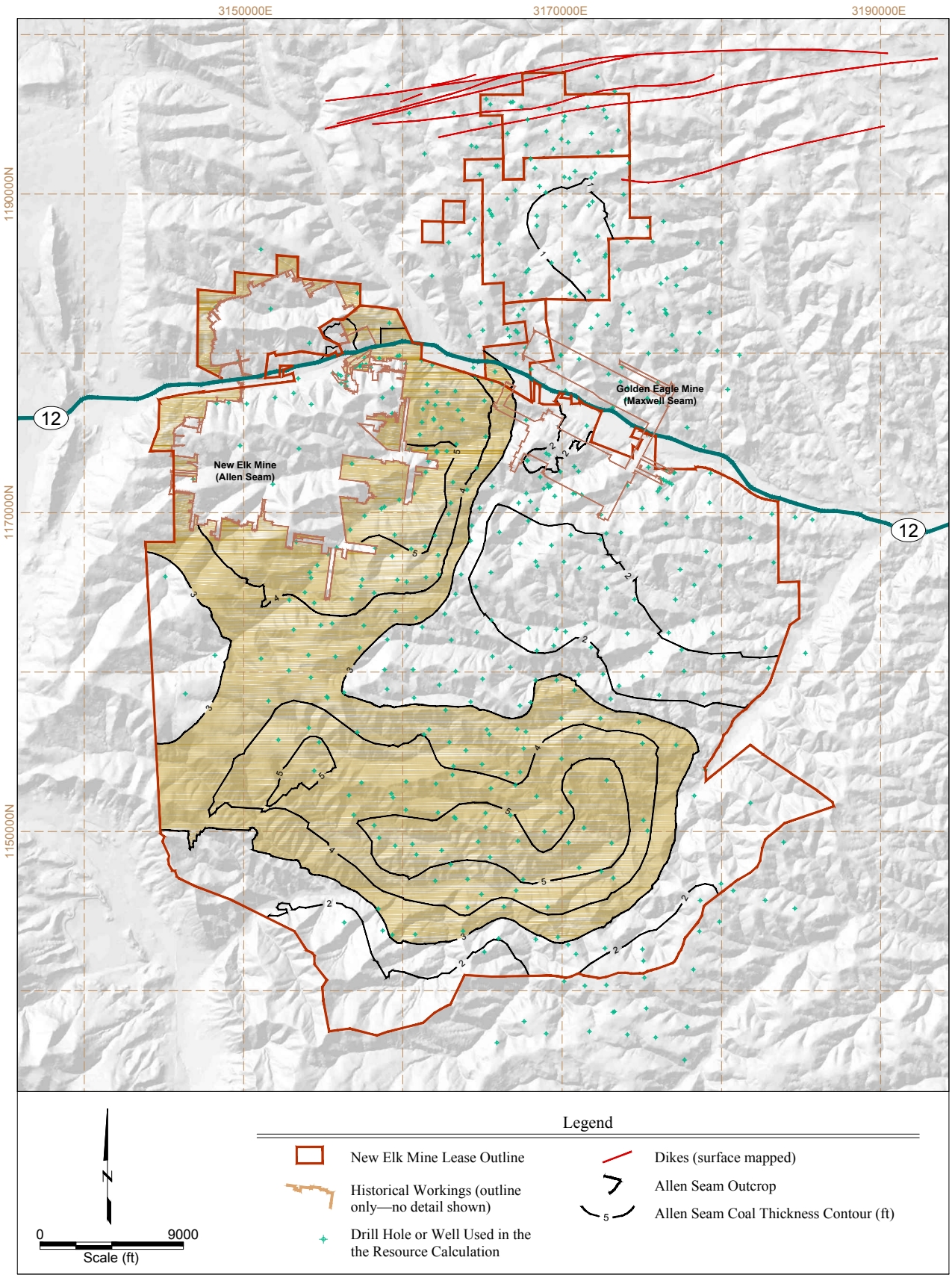
723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal.dwg; Layout: Coal Thk and Total Thk4_Maxwell]:smvf (6-20-2012)

Figure 7-9. Clean Coal Thickness—Maxwell Seam



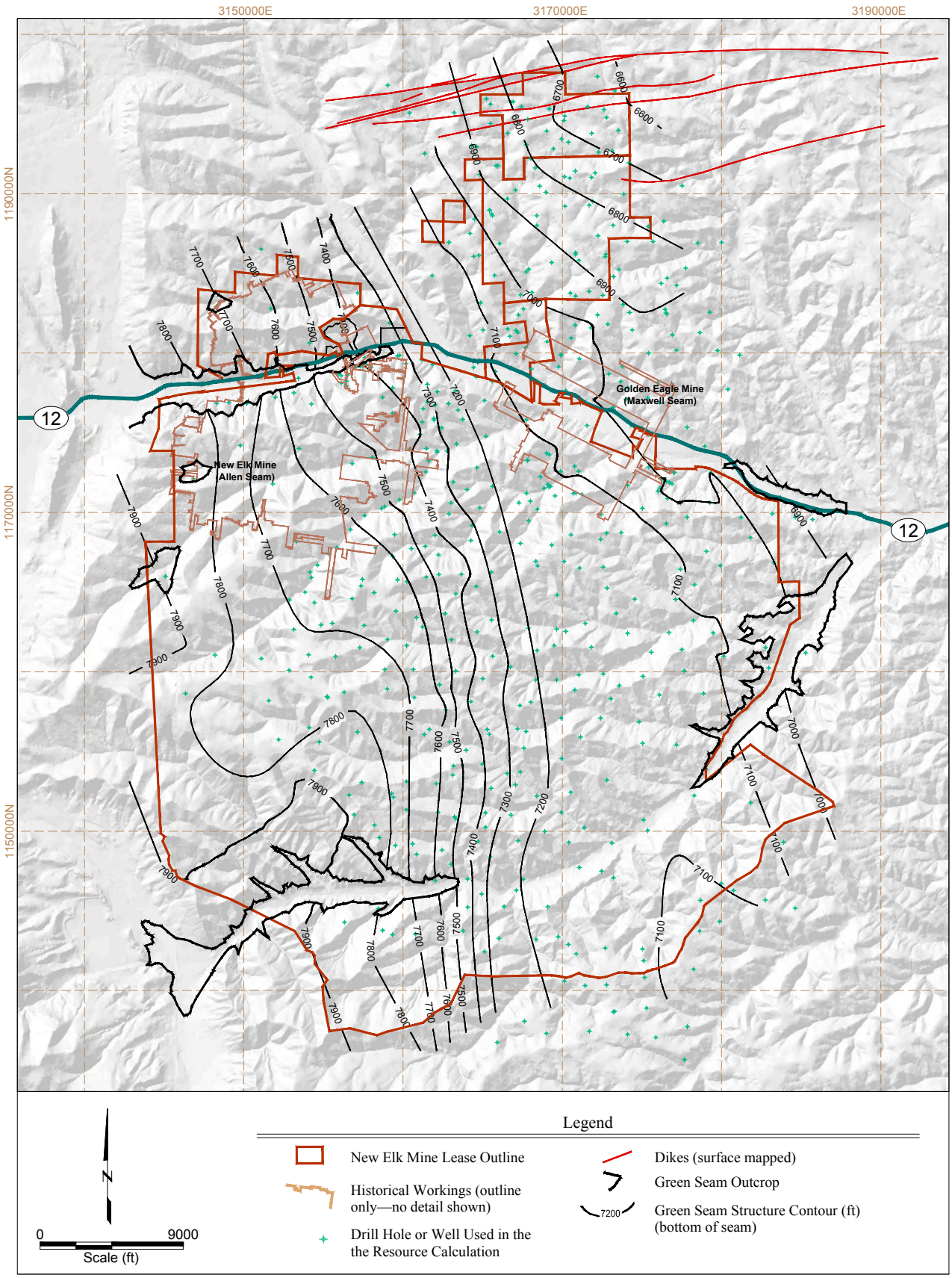
723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal_PR-04.dwg; Layout: Coal Thk and Total Thk5_Apache]:smvf (6-20-2012)

Figure 7-10. Clean Coal Thickness—Apache Seam



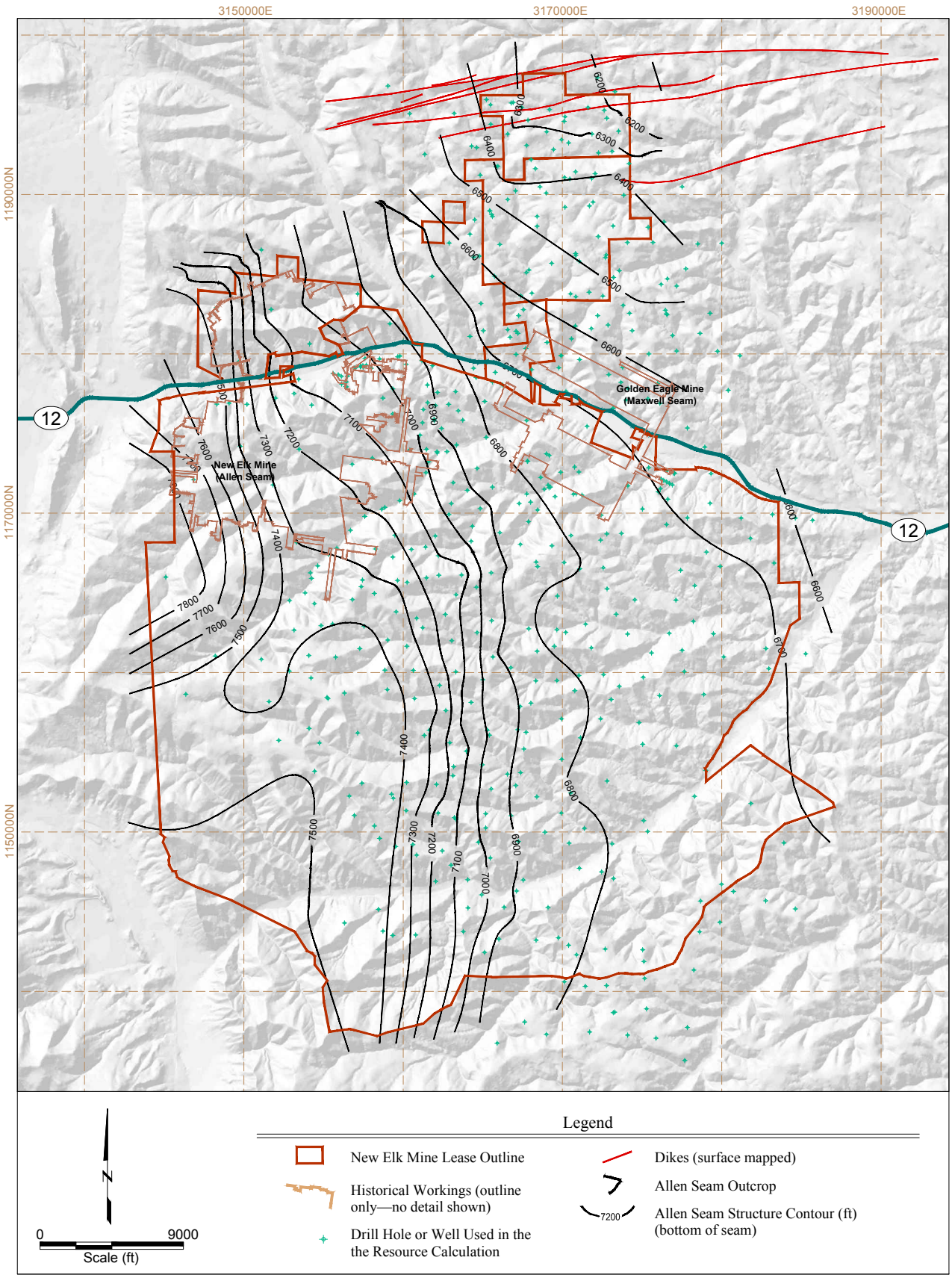
723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal_PR-04.dwg; Layout: Coal Thk and Total Thk6_Allen]:smvf (6-20-2012)

Figure 7-11. Clean Coal Thickness—Allen Seam



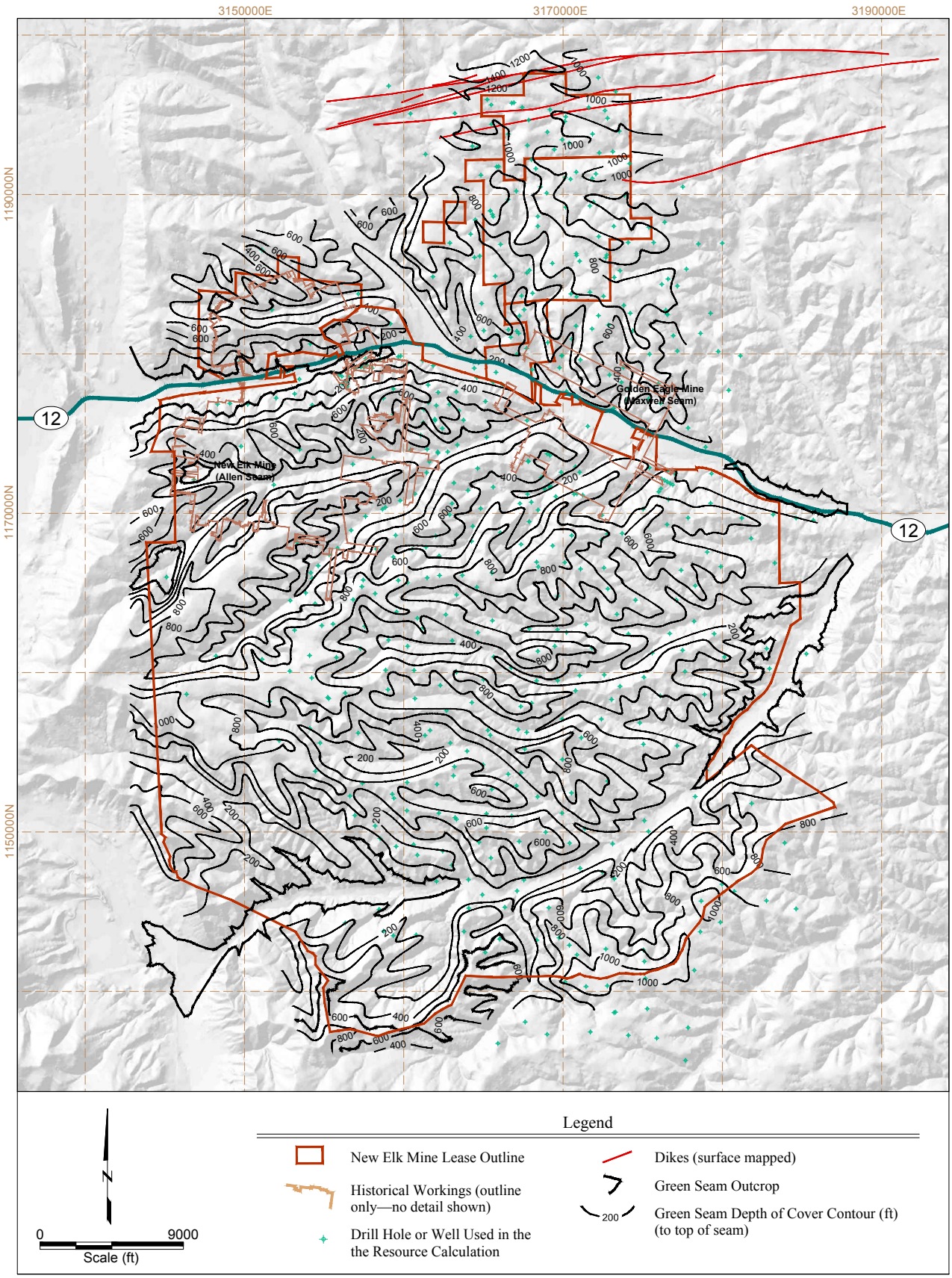
723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal.dwg; Layout: Structure0_Green]:smvf (6-20-2012)

Figure 7-12. Floor Structure—Green Seam



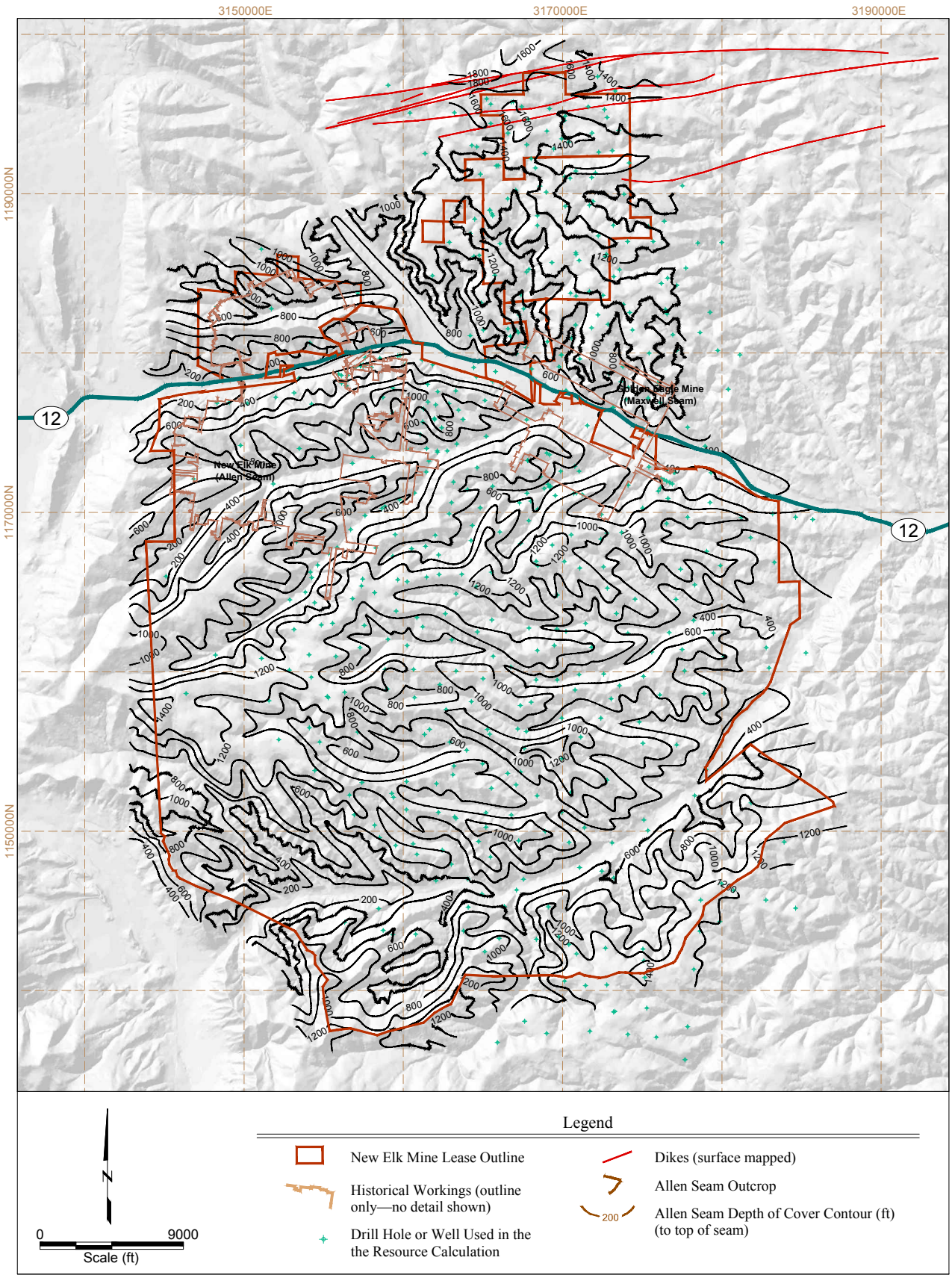
723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal.dwg; Layout: Structure6_Allen]:smvf (6-20-2012)

Figure 7-13. Floor Structure—Allen Seam



723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal.dwg; Layout: Depth0_Green]:smvf (6-20-2012)

Figure 7-14. Overburden—Green Seam



723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal.dwg; Layout: Depth6_Allen]:smvf (6-20-2012)

Figure 7-15. Overburden—Allen Seam

8.0 DEPOSIT TYPE

8.1 Geology Type

Under GSC Paper 88-21 (1989), a coal deposit definition is different for coal properties than for other types of geologic deposits. Both "deposit type" and "geology type" criteria are applied in classifying coal deposits as reserves or resources. CIMDS, adopted on November 27, 2010 (CIM 2010) allows the use of Paper 88-21 as a guideline for determination of coal estimates, but requires that GSC Paper 88-21 categories be converted to CIMDS categories for public reporting.

"Geologic type" is a category defined by the amount of geologic complexity, which is usually controlled by structure. The geology type controls the limits that are applied to key estimation parameters. The geology type defines the confidence interval that can be placed with data values during the extrapolation away from a data point. Types of geologic complexity are:

- Low
- Moderate
- Complex
- Severe

8.2 Deposit Type

"Deposit type" has four categories:

- Surface
- Underground
- Non-conventional
- Sterilized

The New Elk Mine Property can be characterized as "low" geologic complexity. Historically, minor faulting, seam rolls, and igneous intrusions (dikes and sills) have occurred in localized areas, but do not appear significant or severe enough to classify the geologic complexity as "moderate." Because of overburden thickness and other constraints, none of the property is surface mineable.

9.0 EXPLORATION

No significant exploration has been conducted other than surface-based or underground drilling. Exploration drilling is discussed in Section 10.

The thickness of the Green seam was measured at four locations along its outcrop west of the East portals in 2010. The thickness of the Blue seam was also measured where intercepted in the East portals slopes.

10.0 DRILLING

The coal resource model is based on three types of drilling on and in the vicinity of the Property: (1) historical coal exploration rotary-core drilling conducted by previous mining operators, (2) CBM well drilling, and (3) contemporary coal exploration rotary-core drilling conducted by NECC in 2010, 2011, and 2012. NECC completed 45 useable exploration holes between 2010 and May 2012. Drill hole coverage is illustrated on the map in Figure 10-1.

10.1 Historical Exploration Drilling

Previous coal mine operators in the New Elk Mine area conducted various exploration drilling projects, dating back at least to 1951. Typically, exploration holes were rotary drilled to the target seams and then spot cored. The primary coring horizons were the Allen and Maxwell seams, although other seams were selectively cored as well. The historical records typically include lithologic logs based on cuttings or core, coal seam parting descriptions, seam names, and proximate analyses, washability tests, and/or other coal quality test data. The exploration data were generated by recognizable operators and considered by the QPs of this report to be authentic, accurate, and reliable.

Seam naming conventions changed multiple times since the 1950s. Historical correlations were modified on occasion based on contemporary information.

Downhole directional surveys were not available. However, due to the relatively flat-lying structure, drill hole thickness can be treated as true seam thickness without introducing unacceptable error.

A total of 208 historical rotary-core exploration holes were included in the resource model. Data usage was limited to seam elevation, coal thickness, and parting thickness.

10.2 Coal Bed Methane Wells

Electric logs (elogs) were analyzed from a total of 256 CBM wells in the vicinity of the Property for estimating the elevation and thickness of coal seams and other marker beds. The available elogs range in vintage from the 1960s through present time. The extensive coverage of wells provides valuable infill information for seam correlations and structural definition. Seam thicknesses were estimated to within ±0.5 ft from the natural gamma logs. Data usage was limited to seam elevation and total seam thickness.

10.3 2010 Exploration Drilling Program

NECC completed an exploration drilling project during the summer and fall of 2010 comprising 16 drill sites and 21 vertical rotary-core holes drilled from surface in the north and central parts of the Property. Some sites required re-drilling because of limited core recovery or multiple water well completions. Two holes were cored continuously from surface to depths of 560 feet and 1,551 feet. The remaining holes were rotary drilled and spot cored through the

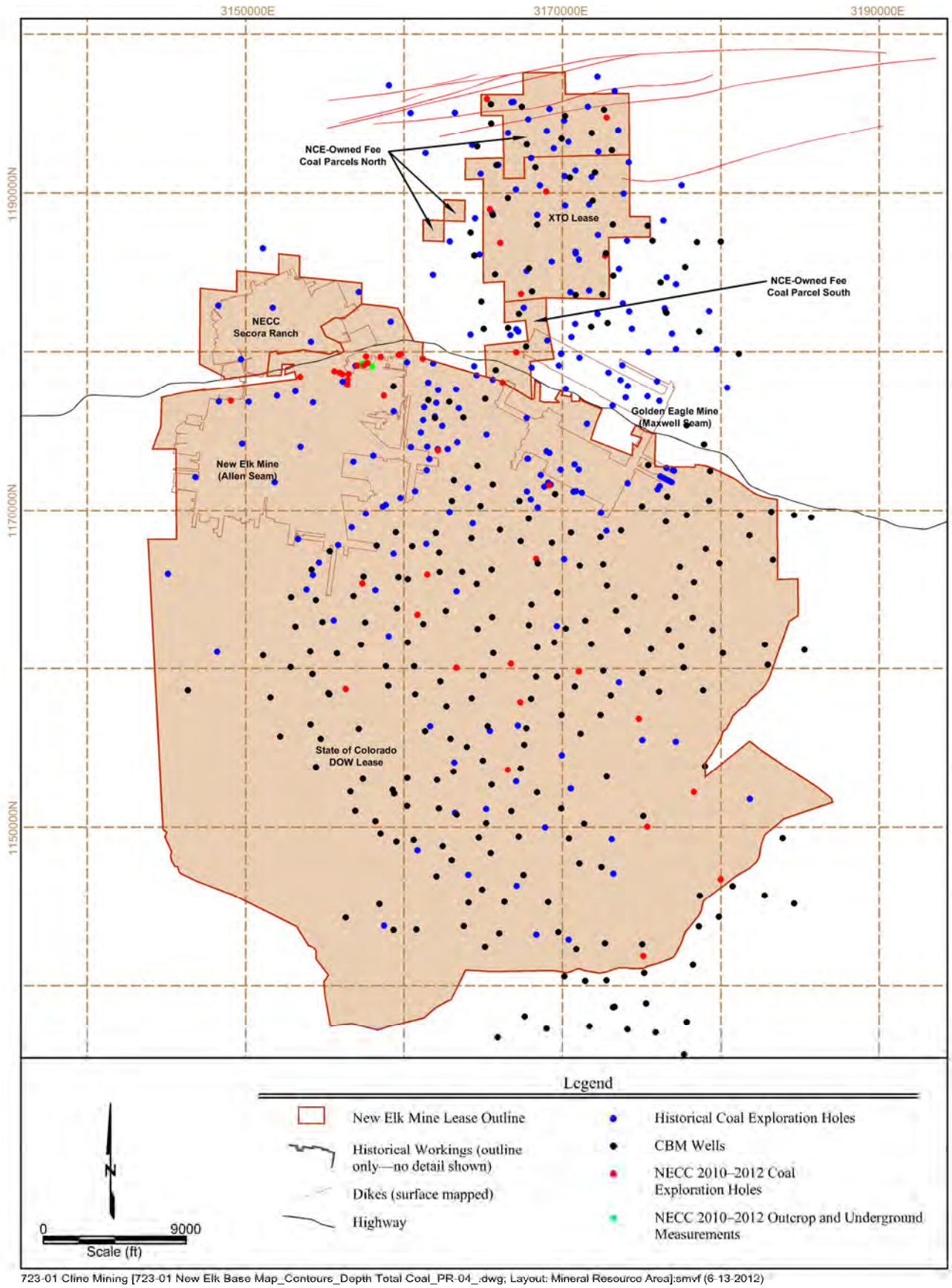


Figure 10-1. Drill Hole Coverage

seams of interest. A total of 11,203 feet of rotary and 5,354 feet of core drilling were completed from surface. An additional 373 feet of core was drilled at four underground locations in the East portals slopes. The drilling program included detailed lithologic and structural logging, high resolution geophysical logging, extensive hydrologic packer testing, gas desorption testing, geomechanical testing, coal quality analysis, and the installation of three water monitoring wells.

The 2010 exploration program was developed and managed by Gary L. Skaggs, P.E., P.Eng., AAI. Mr. Skaggs meets the qualifications of a QP. The field work was managed by Alex Papp, a Certified Professional Geologist (American Institute of Professional Geologists), and Richard Baars (engineer-in-training), under the direct supervision by Mr. Skaggs. Mr. Papp meets the qualifications of a QP. Field geologists were present at the drill rigs during all drilling operations.

Except for NE-13-10 and NE-16-10 through N-18-10, which targeted the Blue seam, all target seam intervals down to the Allen seam were cored. Approximately 50 feet of roof and 25 feet of floor were collected per target seam. Continuous core was typically taken from just above the Red seam to about 25 feet below the Allen seam. The scope was modified during the course of the program to target upper coal seams including the Green and Blue seams.

Stewart Brothers Drilling Company from Milan, New Mexico, drilled sites NE-1 through NE-13 whereas Scott Drilling Company out of Delta, Colorado, drilled NE-16 through NE-18. Stewart Brothers Drilling Company utilized air with foam injection as a drilling medium, whereas Scott Drilling Company utilized water and polymer. During the rotary portion of each hole, cuttings were collected at 5-foot sample intervals and described by the site geologist. Core samples were cleaned of mud, and measured for core loss and gain. Core was photographed at 1-foot intervals.

A complete geotechnical log was prepared that included a thorough description of natural and drill-induced breaks, hardness, and Rock Quality Designation (RQD). A full description of the lithology was also completed, and all core was retained and is currently housed at storage facilities in Trinidad, Colorado.

Century Wireline Services logged the holes and Whetstone Associates of Gunnison, Colorado, supervised the packer testing and well installations. Terra Tek, a division of Schlumberger, collected coal core for gas desorption testing of all seams at four sites. All drill hole locations were surveyed. No lost time accidents and no violations occurred during the program that consisted at one point of up to three drill rigs, of which two worked continuously for 24 hours. All drilling sites were reclaimed and seeded during 2010.

Table 10-1 summarizes the drilling and field testing performed during the 2010 drilling program.

10.4 2011 Exploration Drilling Program

NECC completed an exploration drilling program during the spring, summer, and fall of 2011 comprising 19 drill sites and 28 vertical rotary-core holes drilled from surface in the

Table 10-1. 2010 New Elk Mine Exploration Program Drilling Summary

Drill Hole	Rotary Footage (ft)	Core Footage (ft)	Total Depth (ft)	Field Tests
Surface Holes				
NE-1-10	40	402	442	Packer, well
NE-2-10	365	178	543	
NE-3-10	1,060	190	1,250	
NE-4-10	1,120	144	1,264	Gas
NE-5-10	63	497	560	Packer
NE-5-10A	34	9	43	Abandoned
NE-5-10R	415	113	528	Re-drill
NE-6-10A	500	300	800	Packer, well
NE-6-10B	449	0	449	Well
NE-7-10	1,020	256	1,276	Packer, gas
NE-7-10R	1,193	46	1,239	Re-drill
NE-8-10	1,032	268	1,300	Packer
NE-8-10R	1,185	49	1,234	Re-drill
NE-9-10	1,290	255	1,545	Packer
NE-10-10	20	1,531	1,551	Packer, gas
NE-11-10	991	427	1,418	Packer, gas
NE-12-10	246	209	455	
NE-13-10	180	185	365	
NE-16-10	0	99	99	
NE-17-10	0	105	105	
NE-18-10	0	91	91	
Subtotal	11,203	5,354	16,557	
Underground Holes (East Portals Slopes)				
NE-XC1-1	0	231	231	
NE-XC2-1	0	28	28	
NE-XC3-1	0	24	24	
NE-XC3-2	0	66	66	
Subtotal	0	373	373	
Total	11,203	5,727	16,930	

southern and central part of the Property. Table 10-2 summarizes the drilling and field testing completed during the 2011 program.

Himes Drilling Company of Grand Junction, Colorado, drilled sites NE-01-11 through NE-16-11 along with Slurry Holes 1-3 and LA-218. Boart-Longyear Drilling Company based out of Peoria, Arizona, drilled sites NE-14-10 and NE-15-10. Himes Drilling Company utilized air with foam injection as a drilling medium, while Boart-Longyear Drilling Company utilized water and polymer.

Certain sites required re-drilling because of limited core recovery or multiple water well completions. Four holes were cored continuously from surface to depths ranging from of 112 feet to 735 feet. The remaining holes were rotary drilled and spot cored through the seams of interest. Typically, a pilot rotary hole was drilled to depth and elogged to determine core intervals. Footages totaled 3,744 feet of pilot hole drilling, 9,801 feet of rotary drilling, and 3,930 feet of core drilling.

Table 10-2. 2011 New Elk Mine Exploration Program Drilling Summary

Drill Hole	Rotary Footage (ft)	Core Footage (ft)	Total Depth (ft)	Field Tests
Surface Holes				
NE-01-11	550	290	840	Packer test, gas desorption
NE-01-11R	450	20	470	Re-drill for Blue seam
NE-02-11	1,094	87	1,180	
NE-03-11	926	109	1,035	
NE-04-11	490	350	840	Packer test
NE-05-11	499	171	670	Monitor well for Allen seam, Packer test
NE-07-11	20	717	737	Full core hole, gas desorption
NE-08-11 Allen	240	200	440	Water monitor well cluster, Packer tests
NE-08-11 Apache	290	95	385	
NE-08-11 Maxwell	332	0	332	
NE-08-11 Blue	95	0	95	
NE-09-11	329	232	560	
NE-11-11	1,137	98	1,234	Gas Desorption
NE-12-11	844	556	1,399	
NE-13-11	380	0	380	
NE-14-11	462	0	462	
NE-15-11	20	93	112	Full core hole
NE-16-11	250	142	393	Packer tests
Slurry Hole 1	500	0	500	Failed slurry hole
Slurry Hole 2	162	0	162	Successful slurry hole
Slurry Hole 3	157	0	157	Successful slurry hole
LA-218 Re-drill	512	0	512	Ream and hole completion
NE-14-10	32	369	401	Full core hole
NE-15-10	31	404	435	Full core hole
Total	9,801	3,930	13,730	

Seams thicker than 2 feet from the Green seam to the Allen seam were cored in all holes except for Slurry Holes 1–3 and the LA-218 re-drill hole. In rotary-core holes, approximately 50 feet of roof and 25 feet of floor were cored per target seam for characterization and properties testing of the host strata. Slurry Holes 1–3 were drilled to allow for discharge of the wash plant tailings into the abandoned workings of the Allen Mine. LA-218 was an historical exploration hole that was re-drilled for modern confirmation.

Rotary cuttings were collected at 5-foot sample intervals and logged by the site geologist. Core samples were cleaned of mud, measured for core loss or gain, and photographed at 1-foot intervals. Core logs included a complete description of lithology, natural and drill-induced breaks, hardness, and Rock Quality Designation (RQD). All core was retained and stored at NECC facilities in Trinidad, Colorado.

Century Wireline Services elogged the holes and Whetstone Associates of Gunnison, Colorado, supervised the packer testing and well installations. Terra Tek, a division of Schlumberger, collected coal core for gas desorption testing of all seams at four sites. All drill collars were surveyed. No lost time accidents or violations were incurred during the program.

All drilling sites were reclaimed and seeded by Purgatoire Valley Construction Inc. during 2011 drilling season to regulatory standards.

10.5 2012 Exploration Drilling Program

The NECC 2012 exploration drilling program included 6 drill sites and 12 vertical rotary-core holes drilled from surface in the central and southern parts of the Property completed between January and March 2012, as summarized in Table 10-3.

Table 10-3. 2012 New Elk Mine Exploration Program Drilling Summary

Drill Hole	Rotary Footage (ft)	Core Footage (ft)	Total Depth (ft)	Field Tests
Surface Holes				
NE-04-12	1,002	115	1,118	
NE-07-12	401	149	550	
NE-14-12	1,020	148	1,168	
NE-17-12	910	85	995	
NE-6-11	709	179	888	SIGRA *in situ* stress test
NE-10-11	1,073	103	1,176	SIGRA *in situ* stress test
Total	5,114	779	5,894	

Drilling services were provided by Himes Drilling Company. Elogging was completed by Century Wireline Services. Drilling, logging, core handling, and site reclamation followed the same procedures as the 2011 drilling program. Footages totaled 7,441 feet of pilot hole drilling, 5,114 feet of rotary drilling, and 779 feet of core drilling. No lost time accidents or violations were incurred during the program.

In support of geotechnical mine design, *in situ* horizontal stress field measurements were conducted in holes NE-06-11 and NE-10-11 by AAI utilizing the Sigra downhole technique developed by Sigra Pty, Ltd. of Australia. Measurements were taken near the anticipated mining horizons.

11.0 SAMPLE PREPARATION, ANALYSIS, AND SECURITY

Historically, all sampling and analyses were completed by previous property owners. Sampling methods varied by company and intended use. Reports exist that describe sampling methods and purposes. Most of the samples collected were for testing for metallurgical properties. CF&I testing included Btu analysis. Samples were also collected for washability and size consistency.

The 2010–2012 New Elk Mine exploration programs sampling methods followed standard industry practices. Sampling method protocols were established since several different field geologists assisted in the program.

All core was cleaned with water, measured, fully described, photographed, placed in plastic core sleeves, stapled shut, labeled, then stored in labeled core boxes that were secured. Precaution was taken to assure clean samples for analysis. All core measured 3 inches in diameter except for core from holes NE-10-16, NE-10-17, and NE-10-18 which measured 2.5 inches in diameter.

The selected coal seams were boxed separately from adjacent non-coal strata. In some instances, coaly roof and floor that would likely be included in the ROM product was also included in the coal boxes for testing. Partings within the seam that exceeded 0.5 feet thick were packaged separately from the coal. Non-coal roof and floor samples were also sampled for purposes of defining dilution quality.

All coal cores were stored in a manner to prevent overheating from sun exposure and freezing. The coal boxes were inventoried and either shipped via commercial courier services, or directly transported by project personnel to the analytical laboratories for testing immediately after the hole was completed. Electronic analytical instruction sheets were prepared and provided to the laboratories for each core hole.

11.1 Sample Preparation and Analysis

Prior to the 2010 New Elk Mine exploration program, no sample collection and coal quality testing had been conducted for approximately 15 years. It is a known and widely documented fact that coal was produced from the Property for utilization in the coking and thermal markets. The steel companies that operated the mines had in-house sampling and analysis procedures that met industry standards at that time. Independent laboratories were also used and followed American Society for Testing and Materials (ASTM) standards.

As part of the 2010–2012 exploration programs, coal samples were tested for metallurgical and thermal properties, and washability, in the Green, Loco, Blue, Bing Canyon Upper, Red, Maxwell, Apache, and Allen seams. The testing programs were administered by AAI, including sample selection and handling. Analyses were performed by SGS North America, Inc. at three of its USA laboratories and GWIL Industries' Birtley Coal & Minerals

Testing Laboratory in Calgary, Alberta, both reputable and recognized laboratories within the mining industry:

- **Raw and Thermal Analyses**
  SGS North America, Inc.
  4665 Paris Street
  Denver, Colorado 80239-3117 USA
  (303) 373-4772

  and

  GWIL Industries—Birtley Coal & Minerals Testing Laboratory
  505 50th Avenue SE
  Calgary, AB T2G 2B4, Canada
  (403) 253-8273

- **Washability Analyses**
  SGS North America, Inc.
  618 Bob Posey Street
  Henderson, KY 42420-2802 USA
  (270) 827-1187

  and

  GWIL Industries—Birtley Coal & Minerals Testing Laboratory

- **Metallurgical Analyses**
  SGS North America, Inc.
  151 Eastern Drive
  Sophia, WV 25921 USA
  (304) 255-0422

  and

  GWIL Industries—Birtley Coal & Minerals Testing Laboratory

  All laboratories utilized in the program adhered to ASTM testing standards.

It was established early in the program that both thermal and coking properties would be acquired from clean coal composite samples, but with emphasis placed on metallurgical properties. It was also determined early on that raw coal analyses would also be beneficial in the selection of mining intervals and for preparation plant designs and planning. A sample preparation plan and analysis program was designed to get as much information as possible from the limited amount of core material.

Coal cores were jaw crushed to pass through a ¾-inch screen. A quarter-split head sample was taken for raw coal analysis. The raw coal analysis included a long proximate analysis consisting of total moisture, ash, sulfur, volatile, fixed carbon, and Btu content. The remaining three-quarter split was sent out for washability and floated at densities of 1.30, 1.40, 1.50, 1.60 and sink. A proximate and FSI analysis was performed on each float fraction. After

washability testing, various float fractions were selected for detailed metallurgical and thermal coal property testing. Typically the 1.40 and 1.50 density floats were selected. The clean coal composite samples were tested for Gieseler Plastometer, Arnu Dilatometer, and petrographic analysis. Samples of 60-mesh clean coal composite material were tested for a battery of thermal analyses that included ultimate, mineral analysis of ash, fusion temperature of ash, sulfur forms, water soluble alkalis, Hardgrove grindability index (HGI), and trace elements.

Select samples were initially tested for methane desorption on site and continued testing at Schlumberger's Terra Tek laboratory in Salt Lake City, Utah, and geomechanical properties at AAI's Grand Junction, Colorado, rock mechanics laboratory.

11.2 Security

Core from the 2010–2012 drilling programs remained protected at the site under 24 hours per day security. Samples taken off site were secured in vehicles or stored under lock at the various core storage facilities. Samples were sent via FedEx or the United States Postal Service (USPS) requiring a signature upon receipt. Most often, samples were taken directly to the laboratory with a copy of the core inventory sheet for the laboratory. The laboratories emailed analytical results to the QPs and SGS mailed signed, hardcopy analysis certificates via USPS directly to the QPs. These certificates remain in the possession of AAI as of the effective date of this report. No instances of concern originated during the 2010–2012 programs.

It is the authors' opinion that the sampling procedures, sample preparation, sample analysis, and sample security procedures were sufficient to ensure representative sampling results.

12.0 DATA VERIFICATION

12.1 Sources of Data

AAI reviewed the original Technical Report prepared by Behre Dolbear (2008) and data provided by NECC, including hardcopy drill hole files, historical mining maps and reports on coal quality and preparation plant performance. AAI interviewed retired employees regarding mining conditions at the New Elk and Golden Eagle Mines. Based on a review of the available information including geologists' logs and independent laboratory coal quality reports, and AAI's knowledge of the area and past mining activities, AAI concludes that the historical data are both valid and representative of the New Elk Mine area.

The authors of this report have firsthand knowledge of the methods used and professional personnel involved in the collection of the contemporary data used in this Technical Report. AAI geologists and engineers planned and managed the 2010–2012 exploration drilling programs conducted by NECC, and directly supervised the drilling and logging of all exploration holes. AAI was responsible for drilling four short exploration core holes underground from the East portals slopes. AAI planned and administered all aspects of the coal quality testing program. Geotechnical testing was completed at AAI's Grand Junction, Colorado, laboratory. The authors of this report attest to the veracity of the contemporary data to NI 43-101 standards.

12.2 Site Visit

Timothy A. Ross, P.E., a QP and author of this report, visited the site multiple times between October 9, 2009, and June 13, 2012. Leo J. Gilbride, P.E., a QP and author of this report, visited the site on September 28, 2010.

The authors are of the opinion their knowledge of the Property, the data contained in the files of NECC and public information, the historical drill hole data provided by NECC, and the geologic and coal quality testing data from the 2010–2012 exploration drilling programs are sufficient to support the conclusions presented in this Technical Report.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

The equivalent title for coal properties is "Coal Processing and Coal Quality."

13.1 Coal Processing

To market the New Elk Mine's production, all ROM coal produced will have to be washed (beneficiated) in a coal preparation plant. An existing plant located at the main portal site, originally designed for about 550-tons/hour plant feed, was recently rehabilitated and upgraded to a 800-tons/hour rated capacity (Daniels 2012). The plant was tested and commissioned in March of 2011.

When CF&I operated the New Elk and Golden Eagle Mines, the ROM coal was first processed via a rotary breaker to scalp off oversized rock, trash and wood, and in some cases, metal items such as roof support materials. The ROM coal was then stored in approximately 10,000-ton capacity silos and then railed to the Pueblo steel plant where the coal was washed before being coked.

After CF&I sold the mines, Wyoming Fuel Company constructed the coal preparation plant at the New Elk Mine site and washed coal for the thermal markets. Once the New Elk and Golden Eagle Mines were closed, the plant (now named the Picketwire Preparation Plant) processed surface-mined coal that was railed or trucked raw, processed, and shipped by rail to thermal customers. This surface-mined coal was not processed through the rotary breaker before being fed to the plant. The rotary breaker was sold and has been replaced as part of the preparation plant rehabilitation with a scalping screen and crusher.

Information reviewed for the last few years, the plant processed Golden Eagle Mine coal (1992–1995), shows that the plant performed at relatively low availability, and the product ash was in the 10% to 11% range (Table 13-1). NECC has a goal of producing a product ash of 8% to 9%.

Table 13-1. Historical Plant Performance Statistics

Year	Yield (%)	Ash (%)	Availability (%)
1995	48.0	10.1	82.0
1994	58.2	10.9	67.6
1993	63.5	11.2	n/a
1992	61.6	10.2	n/a

n/a = not available

13.2 Coal Quality

Coal quality is based on results of the 2010–2012 exploration drilling and laboratory testing programs. The New Elk Mine seams are of sufficient quality to be classified as low

sulfur, high-volatile, B bituminous coal, which can be marketed as a metallurgical grade coal, a PCI coal, or a thermal coal, described as follows:

- Metallurgical Coal: Typically and currently, metallurgical coal is the highest priced coal product. NECC coal seams have metallurgical properties, as evidenced by the fact that they were used for many years by CF&I to make coke at their Pueblo, Colorado, steel mill. The domestic standard for premium metallurgical coal is a 6% dry ash. Higher ash metallurgical coals are shipped, predominantly overseas, at somewhat lower prices. Metallurgical coals are designated as A, B, or C grade coals depending upon the combination of values of the various quality parameters.

- PCI Coal: PCI coal is part of the steel making process. PCI coals typically contain higher ash levels than comparable metallurgical coals. A dry ash of 8% is a high-grade PCI coal. The upper limit for use in PCI applications is approximately 11% dry ash.

- Thermal Coal: Power generators prefer high-Btu, low-sulfur, and low-ash coals. The NECC product meets those requirements. Additional parameters such as ash fusion temperature also determine thermal coal marketability.

NECC has stated its intent to market their product as a metallurgical coal. Table 13-2 describes the ranges of key quality parameters for high-volatile metallurgical coals.

Table 13-2. General Quality Ratings for High-Volatile Coals
(after Devanney 2010, Wood Mackenzie 2010a and 2010b)

Property	Poor/ Marginal	Fair/ Good	Very Good/ Excellent
Volatile matter, dry-ash free (wt %)	>36	33–36	31–33
Ash (wt %)	>10.0	7.0–10.0	<7.0
Sulfur (wt %)	>1.3	0.8–1.3	<0.8
Oxidation test	<87	87–94	>94
Rank index	2.2–3.0	3.0–3.4	3.4–4.3
Free swelling index (FSI)	<6.5	6.5–8.0	>8.0
Fluidity (ddpm)	<5,000	5,000–20,000	>20,000
Composition balance index (CBI)	>1.40	0.80–1.40	0.40–0.80
Plastic range (°C)	<75	75–95	>95
Dilatation (%)	<100	100–180	>180
Sole oven	>-12	-12 to -20	<-20
Hargrove Grindability Index (HGI)	<42	42–55	55 to 80
Ash fusion (softening temperature [ST])	<2,250°F	2,250–2,575°F	>2,575°F
Ash acid/base A/B ratio	<3.5	3.5–5.9	>6.0
P_2O_5 in ash (wt %)	>1.2	0.5–1.2	<0.5
Mean Maximum Vitrinite Reflectance (R_o %)	<0.90	0.90–0.99	>0.99
Inert content (wt %)	>35 & <15	15–20, 30–35	>20 & <30
Coke strength after reaction (CSR) potential	<45	45–56	>56

Average raw coal quality analyses (raw, full seam, as-received basis [arb]) of the Green, Loco, Blue, Red, Maxwell, Apache, and Allen seams are summarized in Table 13-3. The analyses represent composites over the full seam height including in-seam partings. Average as-received moisture content in the raw samples ranged from 2.5% to 4.1% and thermal content ranges from 9,100 to 12,140 Btu per pound (lb). Average ash content ranges from 16.5% to 38.6%, and is highest in the Green and Loco seams due to an abundance of mudstone partings.

Table 13-3. Average Quality of the Raw Coal Seams Including Partings
(raw, as-received basis)

Seam	Volatile Matter (wt %)	Fixed Carbon (wt %)	Ash (wt %)	Sulfur (wt %)	(Btu/lb)	
Green	31.6	38.9	38.6	0.67	10,186	(11)
Loco	28.5	34.4	34.6	0.51	9,101	(2)
Blue	31.8	44.2	20.5	0.49	11,346	(20)
Bing Canyon Upper	33.6	47.2	16.5	0.52	12,141	(4)
Red	32.1	47.5	17.6	0.44	12,008	(17)
Maxwell	29.1	42.3	25.4	0.42	10,658	(23)
Apache	27.3	38.8	29.8	0.41	9,791	(22)
Allen	32.4	47.5	17.2	0.50	12,113	(16)

(#) Number of seam composites used in average.

The New Elk Mine coal seams are low in sulfur when compared to other USA coal-producing basins. Average total sulfur values range from 0.41 to 0.67 percent by weight (wt %) on an as-received basis, as shown in Table 13-3. Visible pyrite, which is common in coal-bearing strata in most basins, was uncommon in the cores collected during the 2010–2012 drilling programs.

Sulfur forms determined on various float fractions of the seams of interest are summarized in Table 13-4 and show that the most abundant sulfur form is organic and the pyritic sulfur is extremely low. This corroborates historical sulfur form analyses performed on the Allen seam by Commercial Testing and Engineering in 1981 which reported a total sulfur content of 0.49% comprised of 0.06% pyritic sulfur and 0.43% organic sulfur. The low sulfur values are considered typical of deltaic freshwater swamp environments that produced the New Elk Mine seams, while higher sulfur values are often attributed to lower-deltaic swamp environments inundated by brackish and marine waters.

All ROM coal produced will require washing for market. NECC anticipates washing the coal between a 1.40 and 1.50 SG float, depending upon market requirements and the tradeoff between pricing and plant yield. Average washed qualities by seam, derived from laboratory testing, are summarized in Table 13-5 for a 1.40 and 1.50 SG float.

Table 13-4. Average Sulfur Form—1.4 SG Float

Seam	Pyritic (wt %)	Sulfate (wt %)	Organic (wt %)	
Green	0.04	<0.01	0.53	(1)
Loco	0.04	<0.01	0.55	(1)
Blue	0.03	<0.01	0.54	(11)
Bing Canyon Upper	-	-	-	(0)
Red	0.02	<0.01	0.45	(11)
Maxwell	0.03	<0.01	0.48	(16)
Apache	0.03	<0.01	0.54	(16)
Allen	0.03	<0.01	0.53	(11)

(#) Number of seam composites used in average.

Figures 13-1 and 13-2 summarize average seam qualities relative to global ranges for domestic and international hard coking coals. Washed qualities for a 1.50 SG float are shown in Figure 13-1. Washed qualities for a 1.40 SG float are shown in Figure 13-2.

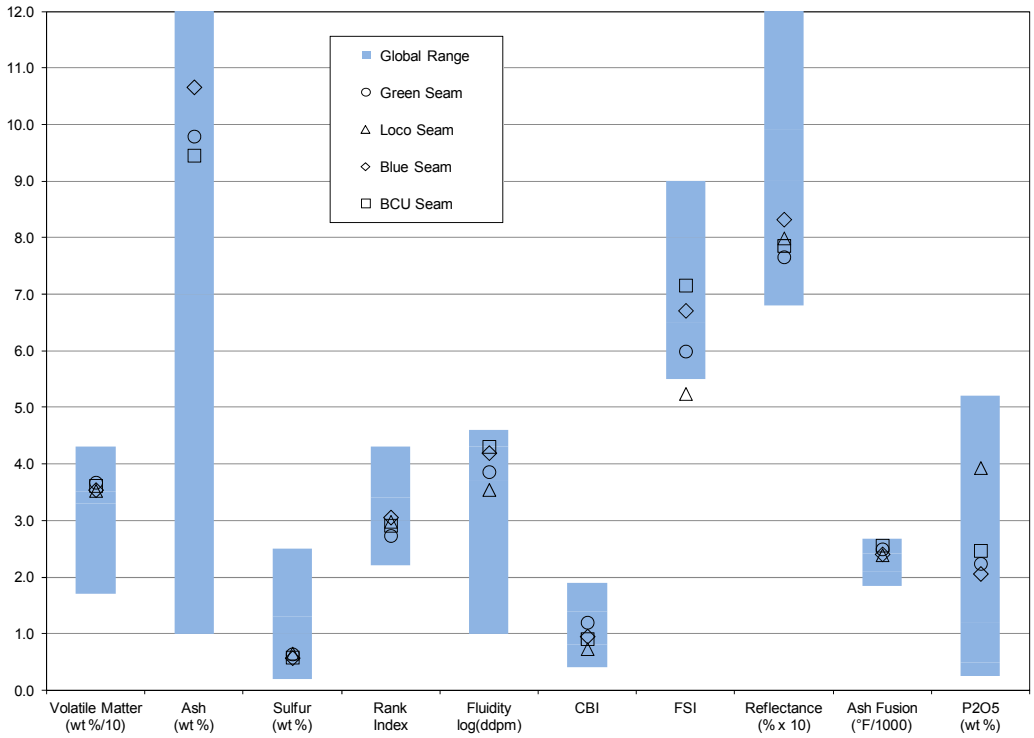
Average metallurgical properties of the New Elk Mine seams washed in the laboratory at a 1.4 SG float are summarized in Table 13-6.

The New Elk Mine coal is suitable for blending in the coking or PCI markets.

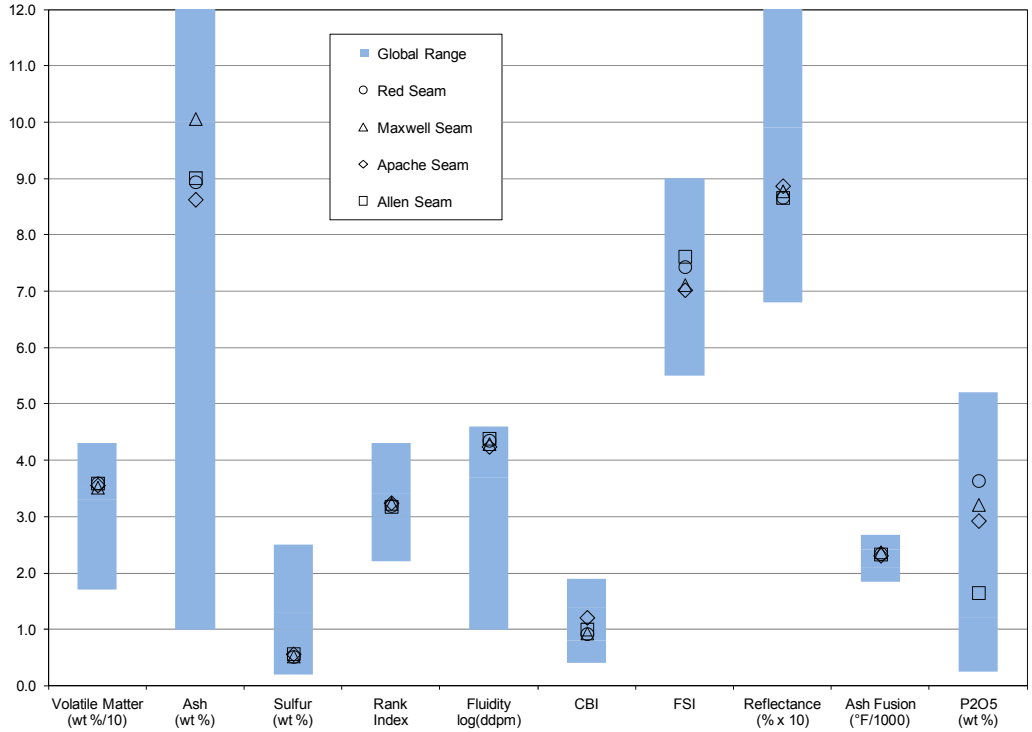
Table 13-5. Average Washed Coal Seam Composite Quality (dry basis)

	Green Seam		Loco Seam		Blue Seam		BCU Seam		Red Seam		Maxwell Seam		Apache Seam		Allen Seam	
1.50 SG Float																
Wash recovery (wt %)[1]	75.8	(3)	49.4	(2)	74.8	(20)	81.8	(3)	81.8	(17)	71.3	(22)	77.0	(25)	81.6	(16)
Btu/lb	13,675	(3)	13,222	(2)	13,599	(19)	13,712	(3)	13,993	(16)	13,869	(21)	14,047	(24)	14,037	(16)
Volatile matter (wt %)	36.8	(3)	35.4	(2)	35.5	(20)	36.3	(3)	36.0	(17)	35.3	(22)	35.7	(25)	36.0	(16)
Sulfur (wt %)	0.65	(3)	0.66	(2)	0.58	(20)	0.59	(3)	0.52	(17)	0.53	(22)	0.57	(25)	0.58	(16)
Ash (wt %)	9.8	(3)	12.7	(2)	10.7	(20)	9.5	(3)	8.9	(17)	10.1	(22)	8.6	(25)	9.0	(16)
Rank Index	2.74	(3)	2.99	(1)	3.06	(19)	2.92	(3)	3.20	(15)	3.24	(20)	3.25	(18)	3.19	(13)
Fluidity (ddpm)	7,394	(3)	3,582	(1)	15,985	(19)	20,628	(3)	22,930	(15)	20,000	(20)	17,800	(18)	24,869	(13)
CBI	1.21	(3)	0.74	(1)	0.96	(19)	0.92	(3)	0.93	(15)	0.94	(20)	1.22	(18)	1.01	(13)
FSI	6.0	(3)	5.3	(2)	6.7	(20)	7.2	(3)	7.4	(17)	7.1	(22)	7.0	(25)	7.6	(16)
Reflectance (%)	0.77	(3)	0.80	(1)	0.83	(19)	0.79	(3)	0.87	(15)	0.88	(20)	0.89	(18)	0.87	(13)
Ash fusion, ST (°F)	2,503	(3)	2,400	(1)	2,414	(15)	2,569	(3)	2,350	(13)	2,382	(17)	2,319	(15)	2,342	(12)
P_2O_5 in ash (wt %)	2.2	(3)	3.9	(1)	2.1	(15)	2.5	(3)	3.6	(13)	3.2	(18)	2.9	(16)	1.7	(12)
1.40 SG Float																
Wash recovery (wt %)[1]	64.0	(3)	40.1	(2)	64.0	(20)	70.2	(3)	75.3	(17)	62.5	(22)	68.6	(25)	73.1	(16)
Btu/lb	13,931	(3)	13,544	(2)	13,942	(19)	14,006	(3)	14,174	(16)	14,163	(21)	14,287	(24)	14,266	(16)
Volatile matter (wt %)	37.4	(3)	35.9	(2)	36.1	(20)	37.1	(3)	36.6	(17)	35.9	(22)	36.3	(25)	36.7	(16)
Sulfur (wt %)	0.65	(3)	0.67	(2)	0.59	(20)	0.60	(3)	0.52	(17)	0.55	(22)	0.58	(25)	0.58	(16)
Ash (wt %)	8.5	(3)	10.9	(2)	8.8	(20)	7.8	(3)	7.9	(17)	8.4	(22)	7.4	(25)	7.8	(16)
Rank Index	2.92	(1)	2.93	(1)	3.08	(13)	-	(0)	3.19	(11)	3.23	(18)	3.22	(18)	3.21	(12)
Fluidity (ddpm)	23,515	(1)	9,425	(1)	20,647	(13)	-	(0)	17,237	(11)	19,850	(18)	17,945	(18)	26,136	(12)
CBI	0.76	(1)	0.76	(1)	0.86	(13)	-	(0)	1.02	(11)	1.00	(18)	1.14	(18)	0.92	(12)
FSI	6.3	(3)	5.5	(2)	7.1	(20)	7.5	(3)	7.6	(17)	7.6	(22)	7.3	(25)	7.9	(16)
Reflectance (%)	0.78	(1)	0.78	(1)	0.84	(13)	-	(0)	0.87	(11)	0.88	(18)	0.89	(18)	0.85	(12)
Ash fusion, ST (°F)	2,597	(1)	2,387	(1)	2,339	(10)	-	(0)	2,321	(11)	2,341	(16)	2,302	(15)	2,326	(11)
P_2O_5 in ash (wt %)	2.5	(1)	4.3	(1)	2.7	(10)	-	(0)	4.8	(11)	4.0	(16)	3.3	(16)	1.9	(11)

[1] Wash recovery applies to total seam composite (coal plus in-seam partings). Out-of-seam dilution is not represented by listed recoveries.
(#) Number of seam composites used in average.

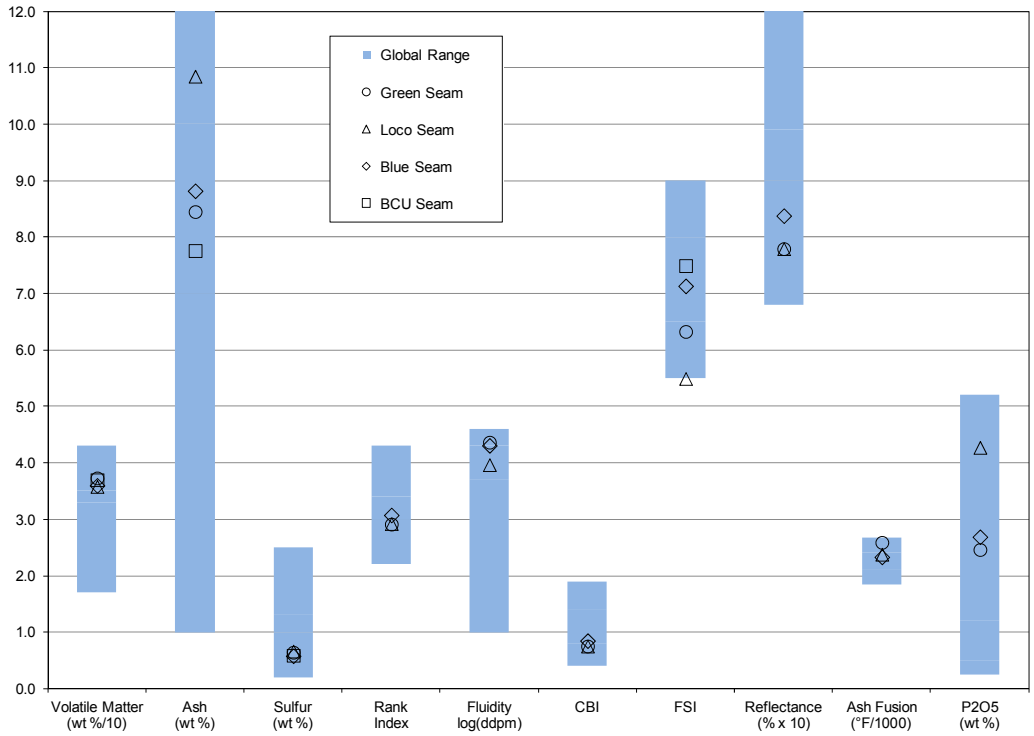


(a) Green, Loco, Blue, and Bing Canyon Upper Seams

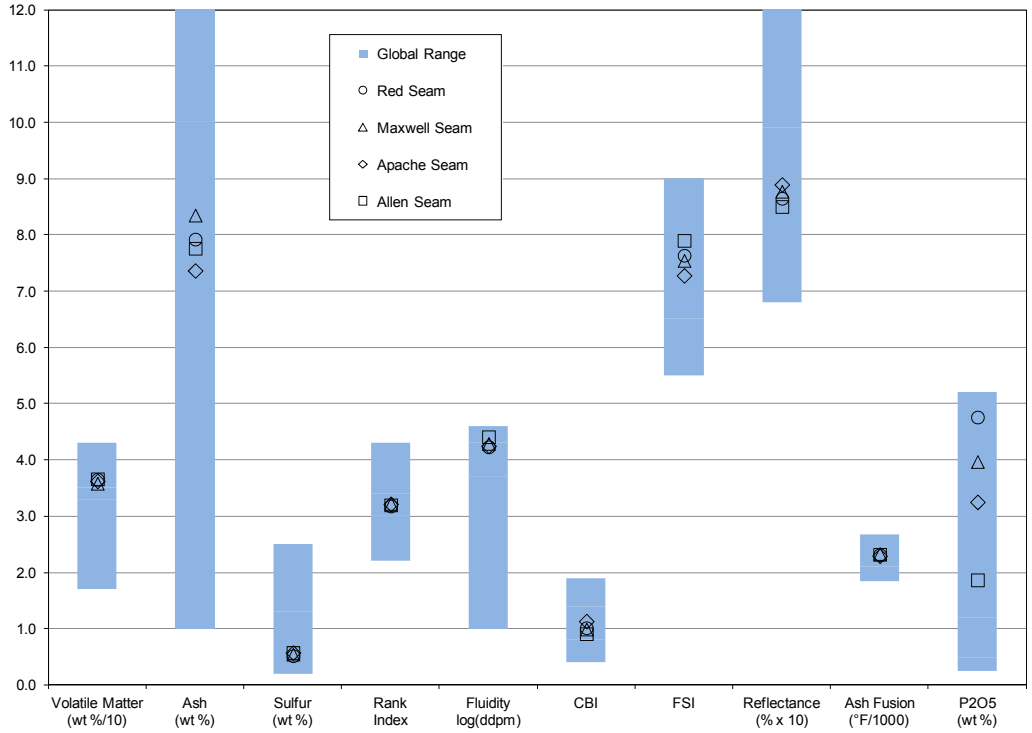


(b) Red, Maxwell, Apache, and Allen Seams

Figure 13-1. Washed Coal Average Quality Comparison—1.50 SG Float



(a) Green, Loco, Blue, and Bing Canyon Upper Seams



(b) Red, Maxwell, Apache, and Allen Seams

Figure 13-2. Washed Coal Average Quality Comparison—1.40 SG Float

Table 13-6. Washed Coal Average Metallurgical Properties—1.40 SG Float

	Green Seam	Loco Seam	Blue Seam	BCU Seam	Red Seam	Maxwell Seam	Apache Seam	Allen Seam
Ash Composition, Ignited Basis (% in ash)								
Silicon Dioxide, SiO_2	44.93	34.07	39.66	-	32.76	35.19	36.21	38.80
Aluminum Oxide, Al_2O_3	30.94	27.73	27.11	-	27.28	26.19	26.04	25.24
Titanium Dioxide, TiO	1.52	1.23	1.51	-	1.39	1.47	1.44	1.66
Calcium Oxide, CaO	5.77	12.26	9.60	-	11.11	11.63	10.36	10.35
Iron Oxide, Fe_2O_3	6.83	7.68	7.57	-	9.01	8.48	9.77	9.68
Magnesium Oxide, MgO	2.22	2.60	2.56	-	3.38	2.89	3.01	2.85
Sodium Oxide, Na_2O	0.65	0.89	1.07	-	1.30	1.18	1.11	1.02
Potassium Oxide,K_2O	0.37	0.34	0.34	-	0.32	0.27	0.29	0.24
Sulfur Trioxide, SO_3	3.17	7.24	6.67	-	6.66	7.15	7.14	7.39
Strontium Oxide, SrO	0.38	0.64	0.44	-	0.72	0.61	0.51	0.34
Barium Oxide, BaO	0.73	1.01	0.80	-	1.30	0.98	0.88	0.64
Manganese Oxide, MnO	0.02	0.03	0.00	-	0.01	0.00	0.00	-
Phosphorus Pentoxide (P_2O_5)	2.47	4.28	2.70	-	4.77	3.98	3.26	1.87
Gieseler Plastometer								
Maximum Fluidity	23,515	9,425	20,647	-	17,237	19,850	17,945	26,136
Initial Softening Temperature	369.00	374.00	379.00	-	374.91	376.17	378.61	373.58
Maximum Fluid Temperature	423.00	434.00	432.54	-	429.00	432.50	432.78	429.42
Solidification Temperature	461.00	467.00	470.85	-	468.36	473.39	473.56	473.00
Plastic Range	92.00	93.00	91.85	-	93.45	97.22	94.94	99.42
Dilatometer								
Maximum Contraction	(21.00)	(26.00)	(25.31)	-	(25.82)	(26.50)	(26.78)	(27.17)
Maximum Dilatation	89.00	85.00	155.38	-	163.91	215.28	171.67	248.50
Softening Temperature	326.00	336.00	335.62	-	335.09	337.94	338.33	335.58
Temperature of Maximum Contraction	386.00	387.00	391.77	-	391.45	388.28	393.67	385.50
Temperature of Maximum Dilatation	430.00	426.00	449.54	-	448.45	450.22	449.50	450.67
Hargrove Index	67.00	67.00	67.00	67.00	67.00	67.00	67.00	63.00
Free Swelling Index	6.33	5.50	7.14	7.50	7.64	7.55	7.28	7.91
Heat Value (DB Btu/lb)	13,622	13,739	13,992	-	14,219	14,245	14,386	14,357
Ash Fusion Temperature (Reducing)								
Initial Deformation F	2,537	2,373	2,324	-	2,308	2,321	2,271	2,284
Softening Temperature F	2,597	2,387	2,339	-	2,321	2,341	2,302	2,326
Hemispherical Temperature F	2,648	2,426	2,376	-	2,352	2,379	2,358	2,383
Fluid Temperature F	2,700	2,467	2,439	-	2,406	2,434	2,417	2,446
Ultimate Analysis (% dry)								
Carbon	74.80	76.14	77.71	-	79.62	79.73	80.18	79.66
Hydrogen	4.96	4.92	5.25	-	5.37	5.24	5.22	5.28
Nitrogen	1.54	1.60	1.72	-	1.73	1.73	1.64	1.71
Oxygen	7.66	7.11	6.07	-	5.54	5.08	5.53	5.82
Sulfur	0.58	0.60	0.59	-	0.49	0.53	0.58	0.58
Ash	10.46	9.63	8.73	-	7.27	7.74	6.89	7.00
Petrographic Analysis								
Reactives								
Vitrinite Type V6	7.00	6.00	5.00	-	4.00	6.67	4.07	4.40
Vitrinite Type V7	42.10	46.80	22.41	-	12.25	12.08	14.80	23.70
Vitrinite Type V8	20.70	14.40	29.00	-	33.25	28.89	22.52	29.93
Vitrinite Type V9	4.40	5.00	12.52	-	16.46	21.85	22.37	13.38
Vitrinite Type V10	-	-	5.44	-	4.40	5.22	7.49	6.33

Table 13-6. Washed Coal Average Metallurgical Properties—1.40 SG Float *(concluded)*

	Green Seam	Loco Seam	Blue Seam	BCU Seam	Red Seam	Maxwell Seam	Apache Seam	Allen Seam
Vitrinite Type V11	-	-	-	-	5.20	4.80	4.50	3.50
Vitrinite Type V12	-	-	-	-	-	-	4.00	-
Vitrinite	73.80	72.00	69.12	-	65.28	66.73	62.25	69.72
Exinite	2.70	3.70	3.77	-	2.93	2.79	2.61	2.51
Resinite	0.20	0.40	0.30	-	0.39	0.23	0.08	0.13
Semifusinite (Reactive)	2.70	3.20	3.55	-	4.17	4.23	5.01	3.78
Total Reactives	79.40	79.30	76.74	-	72.95	73.73	70.47	76.22
Inerts								
Semifusinite (Inert)	5.20	6.40	7.12	-	8.34	8.46	9.82	7.38
Micrinite	11.60	10.10	10.33	-	13.94	13.29	15.10	11.74
Fusinite	0.50	0.50	1.08	-	1.21	1.01	1.04	0.72
Mineral Matter	3.30	3.70	4.74	-	4.06	4.41	3.96	4.19
Total Inerts	20.60	20.70	23.26	-	27.05	26.27	29.58	23.78
Composition Balance Index	0.76	0.76	0.86	-	1.02	1.00	1.14	0.92
Rank Index	2.92	2.93	3.08	-	3.19	3.23	3.22	3.21
Mean Maximum Vitrinite Reflectance	0.78	0.78	0.84	-	0.87	0.88	0.89	0.85
Calculated Stability Factor	31.00	31.00	35.15	-	37.82	38.06	37.67	36.33

14.0 MINERAL RESOURCE ESTIMATES

The DRMS, Colorado Geological Survey reports that the Raton Mesa Coal Region of Colorado has been mined since 1878, and over 261 million short tons of coal from 385 mines have been recovered from the coal-bearing intervals of the Upper Cretaceous and Paleocene Vermejo and Raton Formations. This represents about 22 percent of Colorado's historic coal production. Raton Mesa coal was economically important for its bituminous and coking coal qualities mostly between 1890 and 1953. Most of the estimated in-place resource of nearly 12.8 billion short tons of original coal from coal beds greater than 14 inches to a depth of 2,000 feet remains (excerpt from Behre Dolbear 2008).

The mineral resource for the NECC property comprises the Green, Loco, Blue, Bing Canyon Upper, Red, Maxwell, Apache, and Allen coal seams and covers a plan area of 34,060 acres. The mineral resource estimate is based on:

- 208 historical exploration holes (more than 186,000 feet of historic reverse circulation and core drilling dating from the 1970s through mid-1990s),
- 256 CBM wells,
- 45 NECC exploration holes drilled in 2010–2012,
- 4 Green seam outcrop measurements near the East portals, and
- 1 Blue seam measurement in the East portals slope.

The coal seams outcrop to the west of the Property along Picketwire Valley. The seams persist beyond the Property boundary in all directions except to the west where they outcrop along Picketwire Valley. The resource remains open to the north, northwest, east, south, and southwest.

This mineral resource estimate was calculated by Leo J. Gilbride, P.E. and Senior Consultant with AAI, a member of the Society for Mining, Metallurgy, and Exploration, Inc. and QP for the resource. The mineral resource has an effective date of May 24, 2012.

14.1 Methodology

Drill hole and outcrop data were compiled in a computer-based Microsoft Excel™ spreadsheet for resource modeling. For historical holes, collar coordinates were converted from historical mine grid coordinates to State Plane Zone 0503 NAD 83 coordinates. A ground survey of a significant proportion of the historical holes was performed in 2010 by licensed professional surveyors using a global positioning satellite (GPS) system which validated the coordinate conversion. All 2010–2012 NECC exploration holes and outcrop measurements were surveyed in the same manner.

Seam correlations were made using Carlson Mining 2011 Software™ (Carlson 2011), an industry-recognized commercial-grade geologic and mine modeling software system that runs

within AutoDesk Inc.'s AutoCAD©. Target seams were resolved into three components for volume estimation: clean coal thickness, in-seam parting thickness, and total seam thickness (comprising the sum of coal and parting thickness).

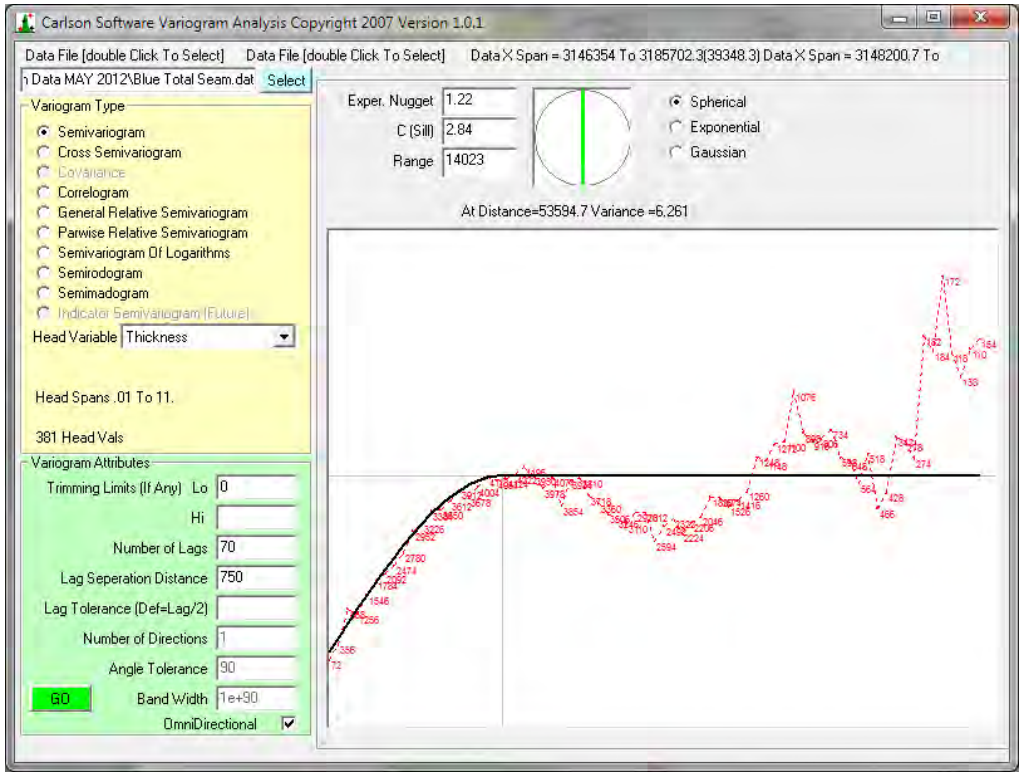
Grids consisting of 200-foot-square blocks were generated for the total seam and parting thicknesses of each seam. Grid thickness values were estimated from neighboring drill holes (point data) using a kriging algorithm. The kriging method was selected because it provides the most reliable, statistically unbiased estimator where abundant spatial data are available.

Omni-directional spherical-model semivariograms of seam total thickness in feet were developed for each seam and are summarized in Table 14-1. Figure 14-1 shows examples of the spherical semivariogram seam thickness models developed for the Blue and Maxwell seams. The range of influence used in the gridding algorithm was limited to 2 miles. The maximum number of data points used for estimation was limited to the closest 20 points. Parting thickness was modeled using semivariogram parameters as the respective total seam thickness model. The clean coal thickness grids were created as the difference between the total seam and in-seam parting thickness grids.

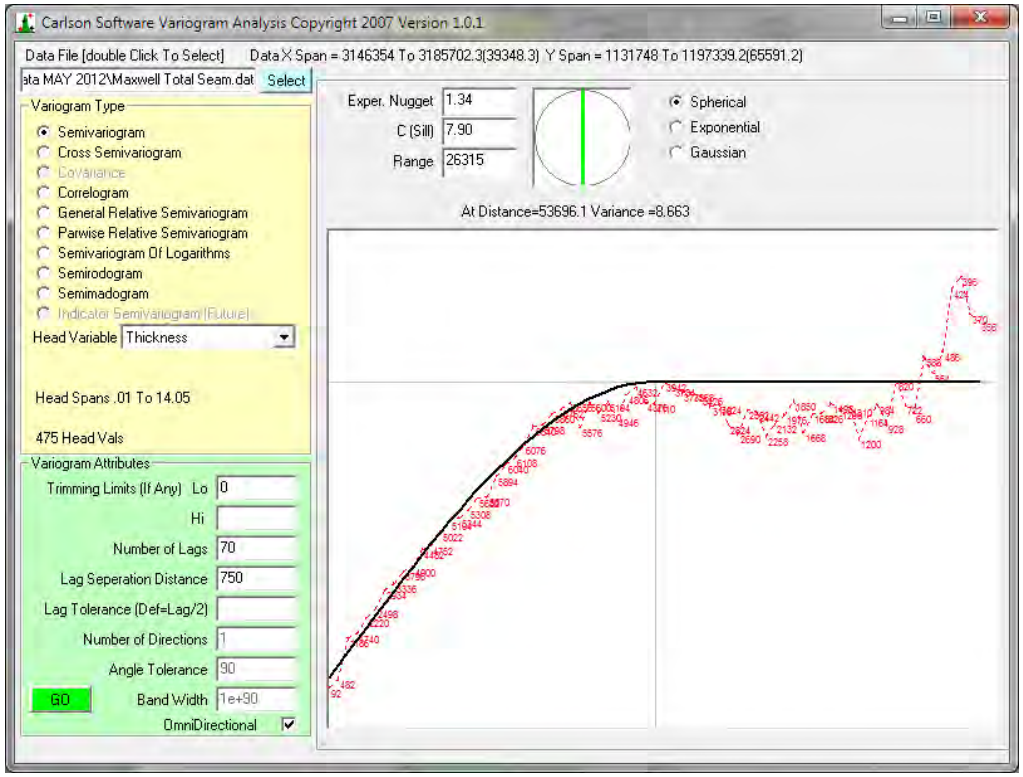
Table 14-1. Resource Model Kriging Parameters

Seam	Exploration Holes Used	Semivariogram Model Type	Nugget	Scale	Range	Orientation
Seam Total Thickness (feet)						
Green	310	Spherical	0.70	6.78	12,000	Omnidirectional
Loco	206	Spherical	0.38	2.20	6,324	Omnidirectional
Blue	382	Spherical	1.22	2.8	14,023	Omnidirectional
Bing Canyon Upper	363	Spherical	0.36	2.66	22,644	Omnidirectional
Red	408	Spherical	0.40	2.05	17,133	Omnidirectional
Maxwell	474	Spherical	1.34	7.88	26,315	Omnidirectional
Apache	449	Spherical	1.08	1.15	13,978	Omnidirectional
Allen	385	Spherical	0.84	2.96	18,775	Omnidirectional

Grids were also created for top and bottom elevations of each seam based on drill hole coal intercept elevations. A polynomial algorithm, based on fifth-order polynomial smoothing of a linearly interpolation estimator, was used for grid estimation. Seam conformance was invoked in the algorithm which forced the prescribed stratigraphic order of seams at all grid locations, thus improving structural accuracy in areas with weaker drill hole control. Seam overburden (depth) and interburden thickness grids were created by subtracting the respective grids. The ground surface elevation grid used for the depth calculations was generated from a commercially available USGS 7.5-minute digital elevation model.



(a) Total Seam Thickness (ft)—Blue Seam



(b) Total Seam Thickness (ft)—Maxwell Seam

Figure 14-1. Omni-Directional Spherical Semivariograms

Carlson Mining 2011 Software™ was used to compute the coal and parting volumes from the thickness grids within the property boundaries. The old works of the New Elk Mine (Allen seam) and Golden Eagle Mine (Maxwell seam) and recent mining in the Apache seam (from the East slope portals) and Blue seam (from the Bates Mine portals) were excluded from the volume calculations.

A 100-foot-wide exclusion zone was also applied on each side of the surface traces of thin, near-vertical dikes in the north part of the Property. Occasional holes in the north area have shown evidence of coal coking in some seams in the immediate proximity of dikes. Although the lateral influence of dikes in the north area remains a topic for more detailed study, the body of evidence to date suggests that coking is highly localized and that a lateral exclusion zone of 100 feet on each side of the dike trace is likely conservative. Drill holes confirm the existence of potentially mineable coal between closely spaced parallel dikes in numerous north area locations.

Coal tonnages are based on an in-situ coal bulk density of 85 pounds per cubic foot (pcf), corresponding to the bulk density suggested by the GSC (1989) for a high-volatile bituminous coal with approximately 10% dry basis ash.

Coal quality parameters were gridded based on quality testing conducted on core from the 2010–2012 exploration drilling programs. An inverse distance squared (ID^2) algorithm was used for this purpose because insufficient data points were available to support kriging. Parameters modeled include wash recovery, ash, sulfur, Btu per pound, volatile matter, FSI, P_2O_5 in ash, mean maximum vitrinite reflectance, and maximum fluidity.

14.2 Definitions and Applicable Standards

For this report, AAI, in accordance with NI 43-101, has used the definition of "resource" and "reserve" as published in the CIMDS that were adopted November 27, 2010 (CIM 2010). In this standard, a **Mineral Resource** is defined as

> *... a concentration of natural, solid, inorganic or fossilized organic material in or on the Earth's crust in such form and quantity and of such a grade of quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge.*

Mineral Resources are subdivided into classes of measured, indicated, and inferred, with the level of confidence reducing with each class, respectively. Coal resources are always reported as *in situ* tonnage and are not adjusted for mining losses or mining recovery.

A **Mineral Reserve** is defined as "… the economically mineable part of a Measured or Indicated Mineral Resource demonstrated by at least a Preliminary Feasibility Study…" No Preliminary Feasibility or Feasibility Study has been conducted for the New Elk Mine project; therefore, no reserves exist for the project.

The CIMDS provides for a direct relationship between Indicated Mineral Resources and Probable Mineral Reserves, and between Measured Mineral Resources and Proven Mineral Reserves. Inferred Mineral Resources cannot be combined or reported with other categories.

CIMDS states that for the reporting of coal resources and reserves, issuers are to use the above definitions. CIMDS further states it is acceptable to use GSC Paper 88-21 (1989) as a framework for the development and categorization of coal estimates, but that GSC Paper 88-21 categories should be converted to the equivalent CIMDS for public reporting.

14.3 Coal Resources

AAI applied the GSC Paper 88-21 (1989) parameters of deposit type, geology type, coal thickness, rock parting thickness, and overburden depth to evaluate and classify the seams of interest. For distances from a data point, AAI used USGS Circular 891 (1983) distances for measured, indicated, and inferred resources.[2]

The New Elk Mine coal resources are classified as follows:

• Geology Type	Low complexity
• Deposit Type	Underground mining
• Seam Dip	Less than 3 degrees
• Measured Resources	Minimum clean coal thickness: 3.0 feet[3] Minimum mining thickness: 5.0 feet Maximum depth: 2,000 feet Coal/rock thickness ratio: 2.0 or greater Data point distance: 0 to 1,320 foot radius
Indicated Resources	Data point distance: 1,320 to 3,690 foot radius All other parameters remain the same.
Inferred Resources	Data point distance: 3,690 to 7,920 foot radius All other parameters remain the same.

A "data point" as applied to the resource is defined to be either an historical or contemporary cored intercept of a specific seam, or a definitive thickness measurement such as along outcrop or underground.

Table 14-2 summarizes the coal resource for the New Elk Mine property. Figures 14-2 through 14-9 illustrate the resource classification areas of the respective coal seams.

[2] C891 uses a 0.75- to 3-mile radius from a data point for inferred tons. Behre Dolbear (2008) and AAI use a 0.75- to 1.5-mile radius to more closely match the appropriate category in GSC Paper 88-21.

[3] GSC Paper 88-21 uses a minimum coal bed thickness of 2.0 feet. This was increased to 3.0 feet to satisfy anticipated operating requirements. Clean coal thickness refers to in-place coal excluding in-seam partings, before processing (washing).

Table 14-2. Coal Resource[1,2]

(Effective date May 24, 2012)

	MEASURED[3]		INDICATED[4]		TOTAL M&I RESOURCE		INFERRED[5]	
	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]
GREEN SEAM								
NCE North Lease	2.2	13,650	0.1	13,670	2.3	13,650		
XTO Lease	2.2	13,560	0.3	13,580	2.5	13,560		
NCE South Lease								
DOW Lease	27.6	13,690	26.8	13,740	54.4	13,710	0.1	12,870
Secora Ranch	0.0	13,170	0.3	13,210	0.3	13,210		
	31.9	**13,680**	**27.5**	**13,730**	**59.4**	**13,700**	**0.1**	**12,870**
LOCO SEAM								
NCE North Lease	0.0	13,760	0.2	13,760	0.2	13,760		
XTO Lease	0.9	13,730	1.0	13,740	2.0	13,740		
NCE South Lease			1.1	13,740	1.1	13,740	0.4	13,740
DOW Lease	13.4	13,510	27.6	13,460	41.0	13,480	26.0	13,460
Secora Ranch							0.2	13,740
	14.4	**13,520**	**30.0**	**13,480**	**44.3**	**13,500**	**26.6**	**13,470**
BLUE SEAM								
NCE North Lease	0.4	13,900	0.4	13,890	0.7	13,900		
XTO Lease	9.4	13,810	1.0	13,850	10.4	13,810		
NCE South Lease	3.2	13,950	0.2	13,960	3.4	13,950		
DOW Lease	38.8	13,950	36.5	13,910	75.3	13,930	0.9	13,650
Secora Ranch	0.3	13,950	0.1	13,940	0.4	13,950		
	52.2	**13,920**	**38.1**	**13,910**	**90.3**	**13,920**	**0.9**	**13,650**

Table 14-2. Coal Resource[1,2] *(continued)*

(Effective date May 24, 2012)

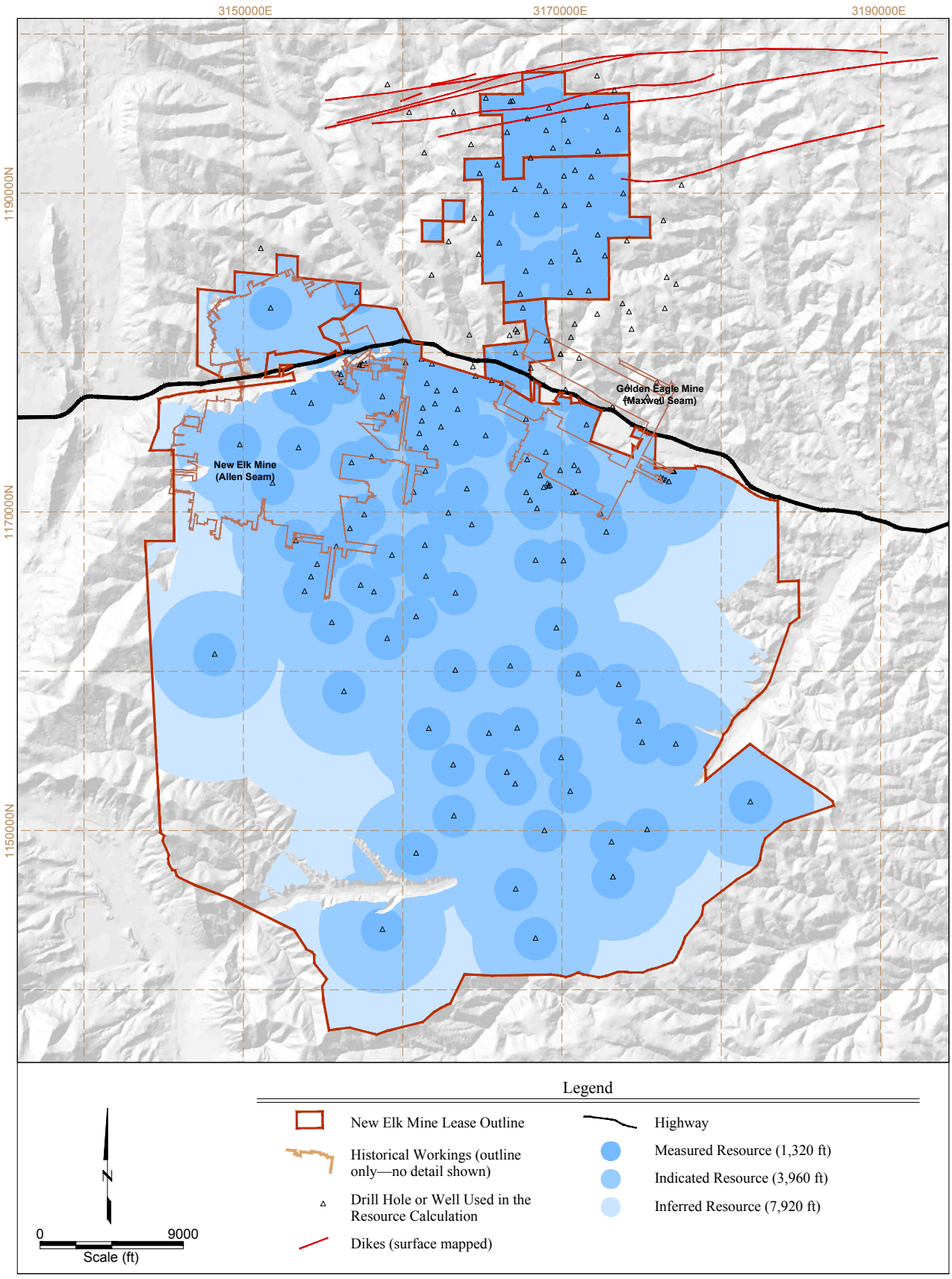
	MEASURED[3]		INDICATED[4]		TOTAL M&I RESOURCE		INFERRED[5]	
	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]
BING CANYON UPPER SEAM								
NCE North Lease								
XTO Lease								
NCE South Lease								
DOW Lease	12.8	14,040	36.8	14,000	49.6	14,010	30.0	13,900
Secora Ranch								
	12.8	**14,040**	**36.8**	**14,000**	**49.6**	**14,010**	**30.0**	**13,900**
RED SEAM								
NCE North Lease	1.1	14,200	0.3	14,230	1.3	14,210		
XTO Lease	2.7	14,260	0.3	14,280	3.0	14,260		
NCE South Lease	2.2	14,350	0.1	14,320	2.3	14,350		
DOW Lease	17.4	14,170	9.6	14,150	27.0	14,160		
Secora Ranch								
	23.3	**14,200**	**10.3**	**14,160**	**33.6**	**14,180**		
MAXWELL SEAM								
NCE North Lease	8.5	14,450	0.9	14,340	9.5	14,440		
XTO Lease	21.8	14,430	1.7	14,350	23.5	14,420		
NCE South Lease	2.4	14,030	0.2	14,010	2.6	14,030		
DOW Lease	39.4	14,160	68.8	14,100	108.2	14,120	17.4	13,840
Secora Ranch								
	72.1	**14,270**	**71.7**	**14,110**	**143.8**	**14,190**	**17.4**	**13,840**

Table 14-2. Coal Resource[1,2] *(concluded)*

(Effective date May 24, 2012)

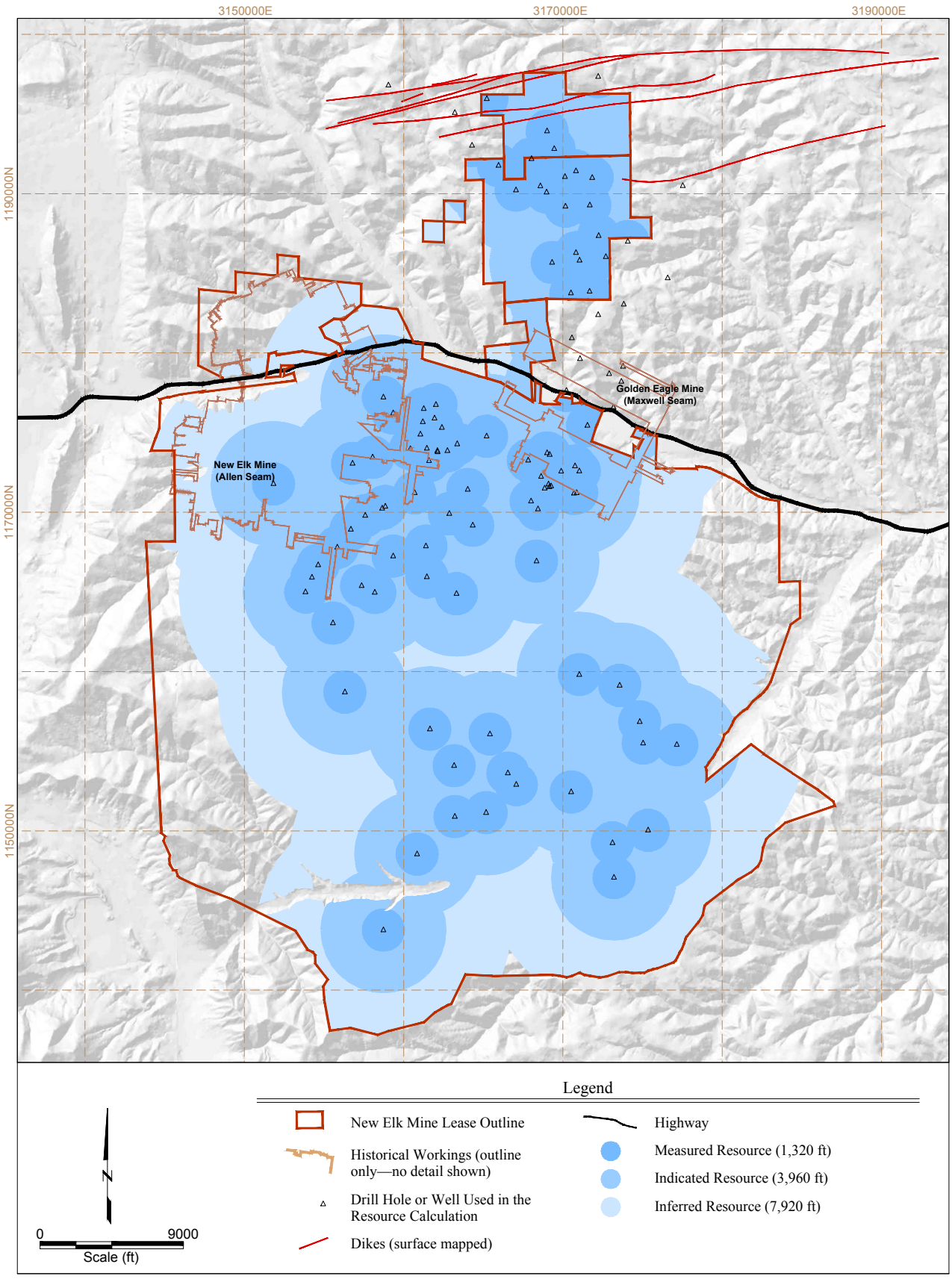
	MEASURED[3]		INDICATED[4]		TOTAL M&I RESOURCE		INFERRED[5]	
	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]	Million Short Tons	Btu/lb[6]
APACHE SEAM								
NCE North Lease								
XTO Lease								
NCE South Lease								
DOW Lease	49.7	14,330	56.4	14,340	106.0	14,340	15.4	14,240
Secora Ranch	0.6	14,170	0.5	14,180	1.1	14,170		
	50.3	**14,330**	**56.8**	**14,340**	**107.1**	**14,340**	**15.4**	**14,240**
ALLEN SEAM								
NCE North Lease								
XTO Lease								
NCE South Lease	0.2	13,960	0.0	14,210	0.3	13,970		
DOW Lease	41.8	14,280	46.6	14,240	88.4	14,260	14.1	13,980
Secora Ranch	0.7	14,530	1.2	14,530	2.0	14,530		
	42.8	**14,280**	**47.9**	**14,250**	**90.7**	**14,270**	**14.1**	**13,980**
TOTAL	**299.8**	**14,110**	**319.1**	**14,050**	**618.9**	**14,080**	**104.5**	**13,840**

1 Quality basis: low-sulfur, high-volatile, B bituminous coal.
2 Clean coal tons only > 3.0 feet thick, excludes in-seam and out-of-seam dilution.
3 Measured Resource located within 1/4-mile radius from a measurement point.
4 Indicated Resource located between 1/4-mile and 3/4-mile radius from a measurement point.
5 Inferred Resource located between 3/4-mile and 1 1/2-mile radius from a measurement point.
6 Washed quality at 1.40 SG float.



723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal.dwg; Layout: Resource Class_Green]:smvf (6-20-2012)

Figure 14-2. Resource Classification—Green Seam



723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal.dwg; Layout: Resource Class_Loco]:smvf (6-20-2012)

Figure 14-3. Resource Classification—Loco Seam

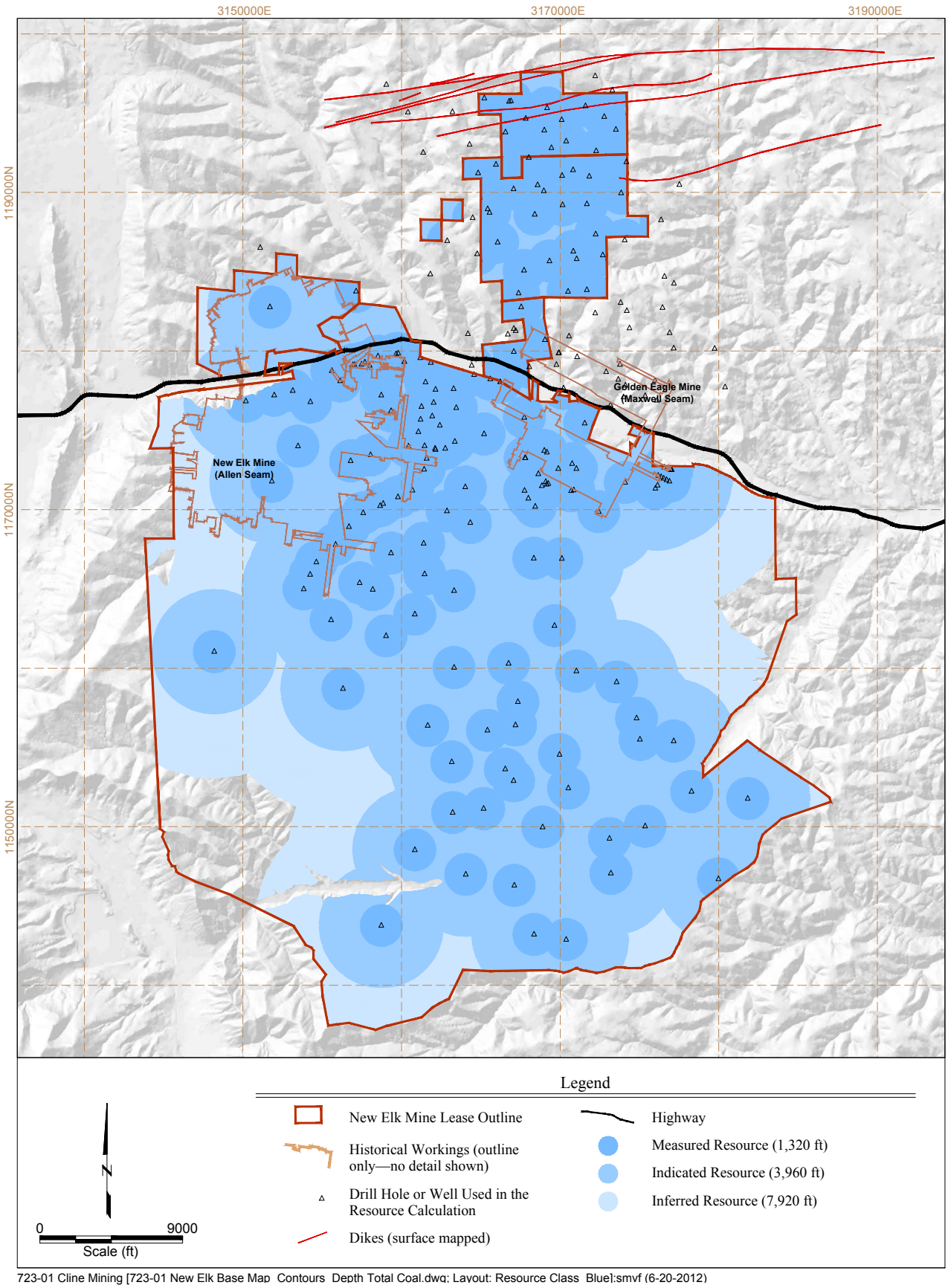


Figure 14-4. Resource Classification—Blue Seam

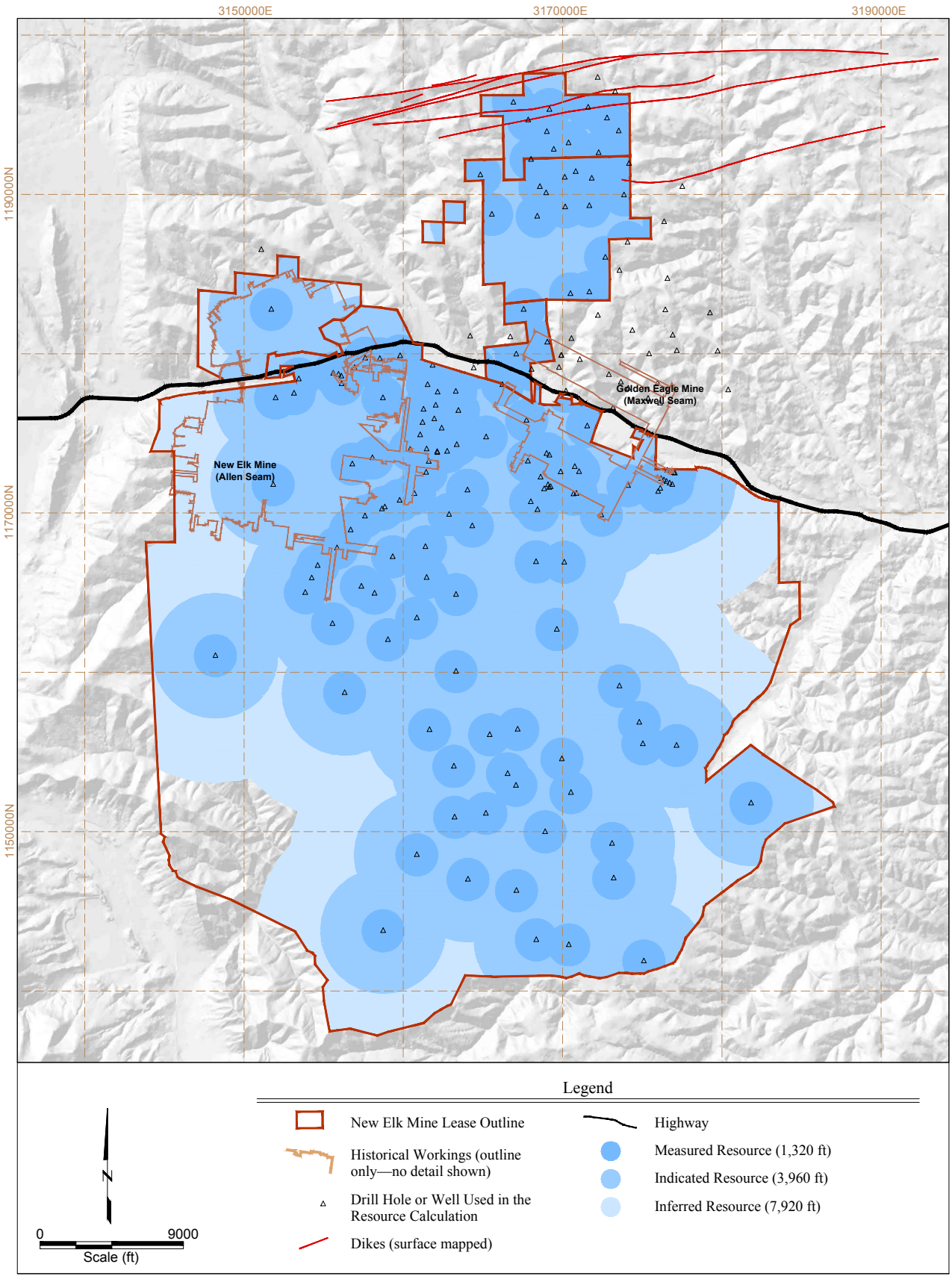
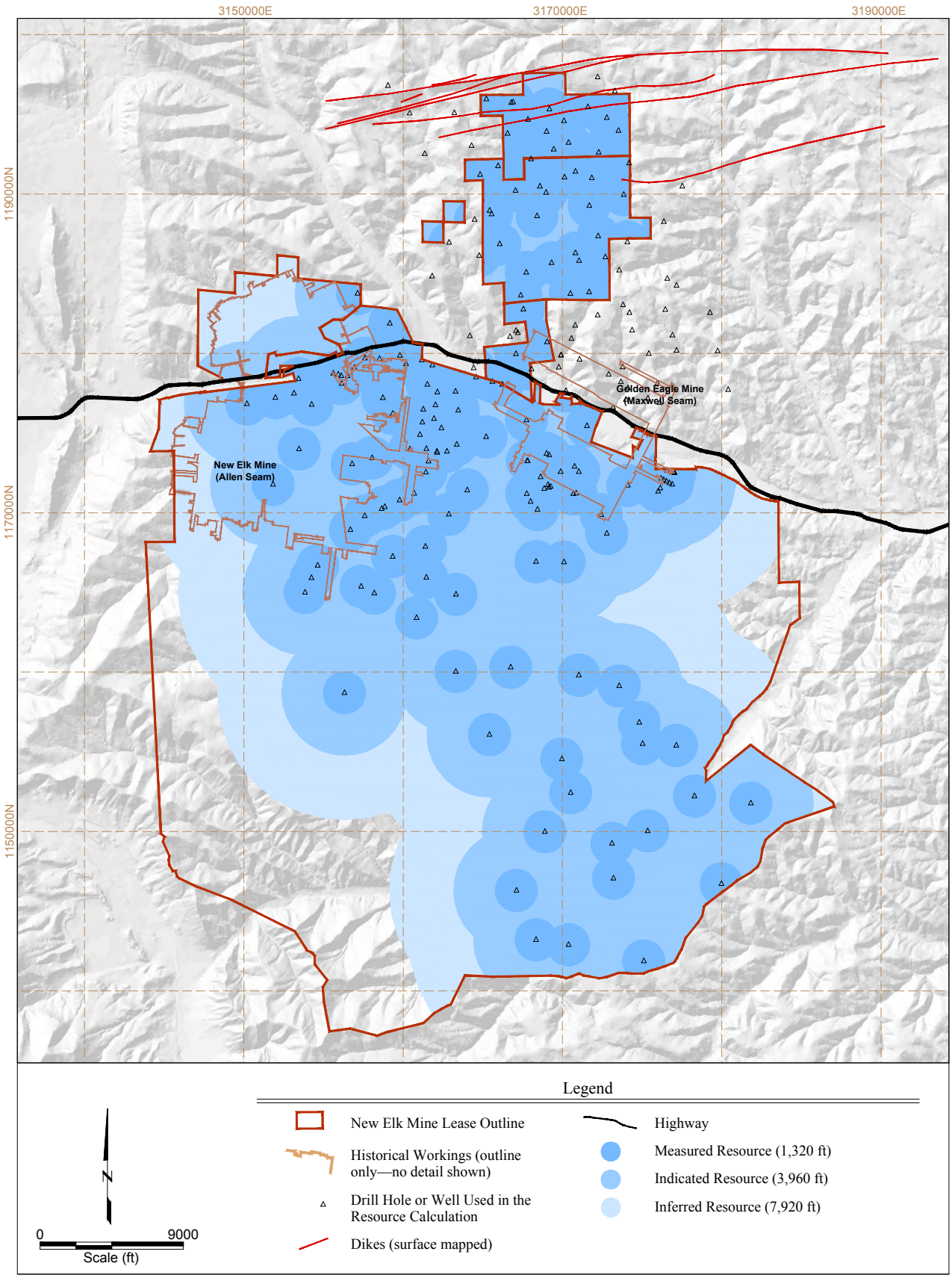
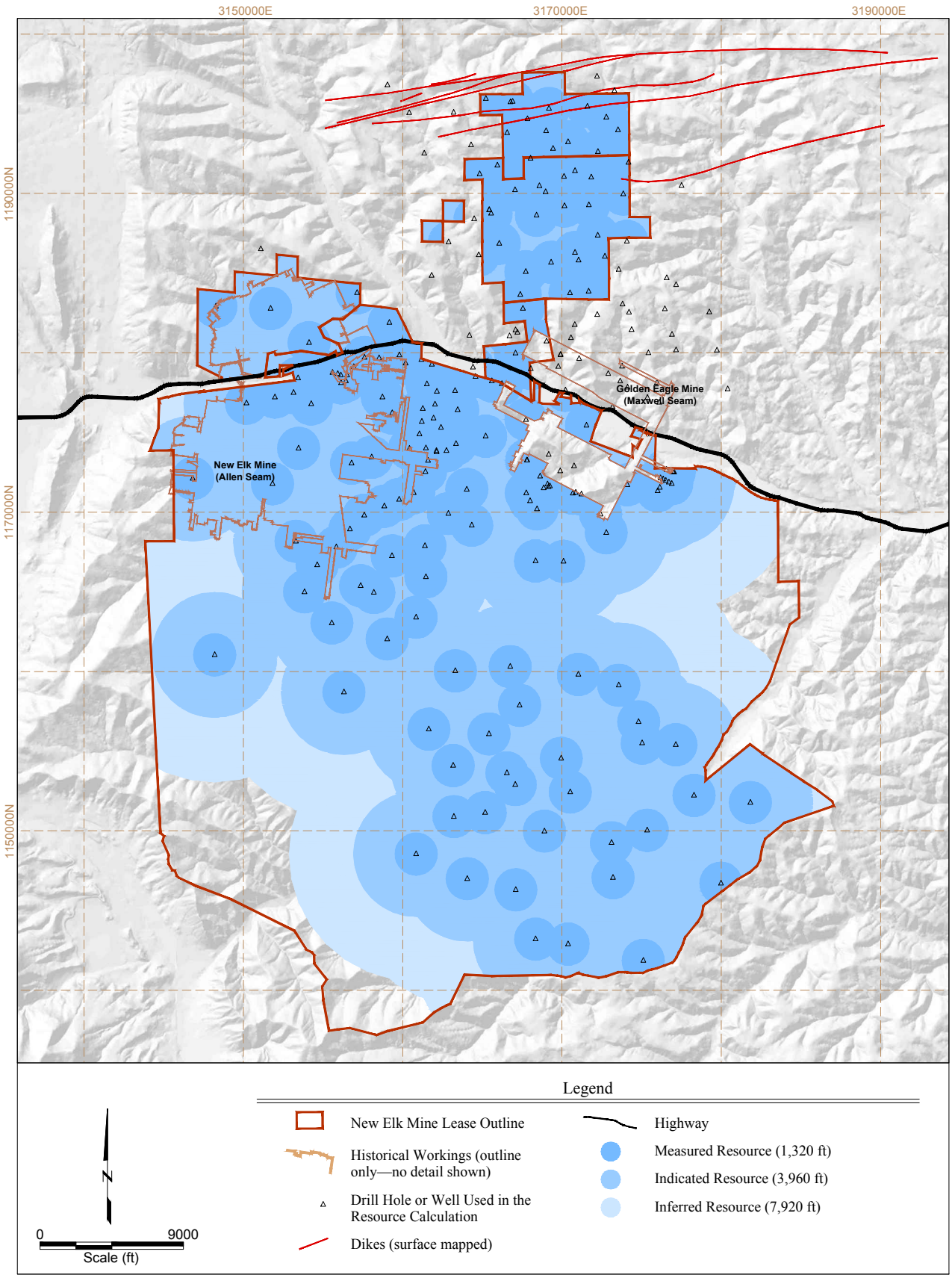


Figure 14-5. Resource Classification—Bing Canyon Upper Seam



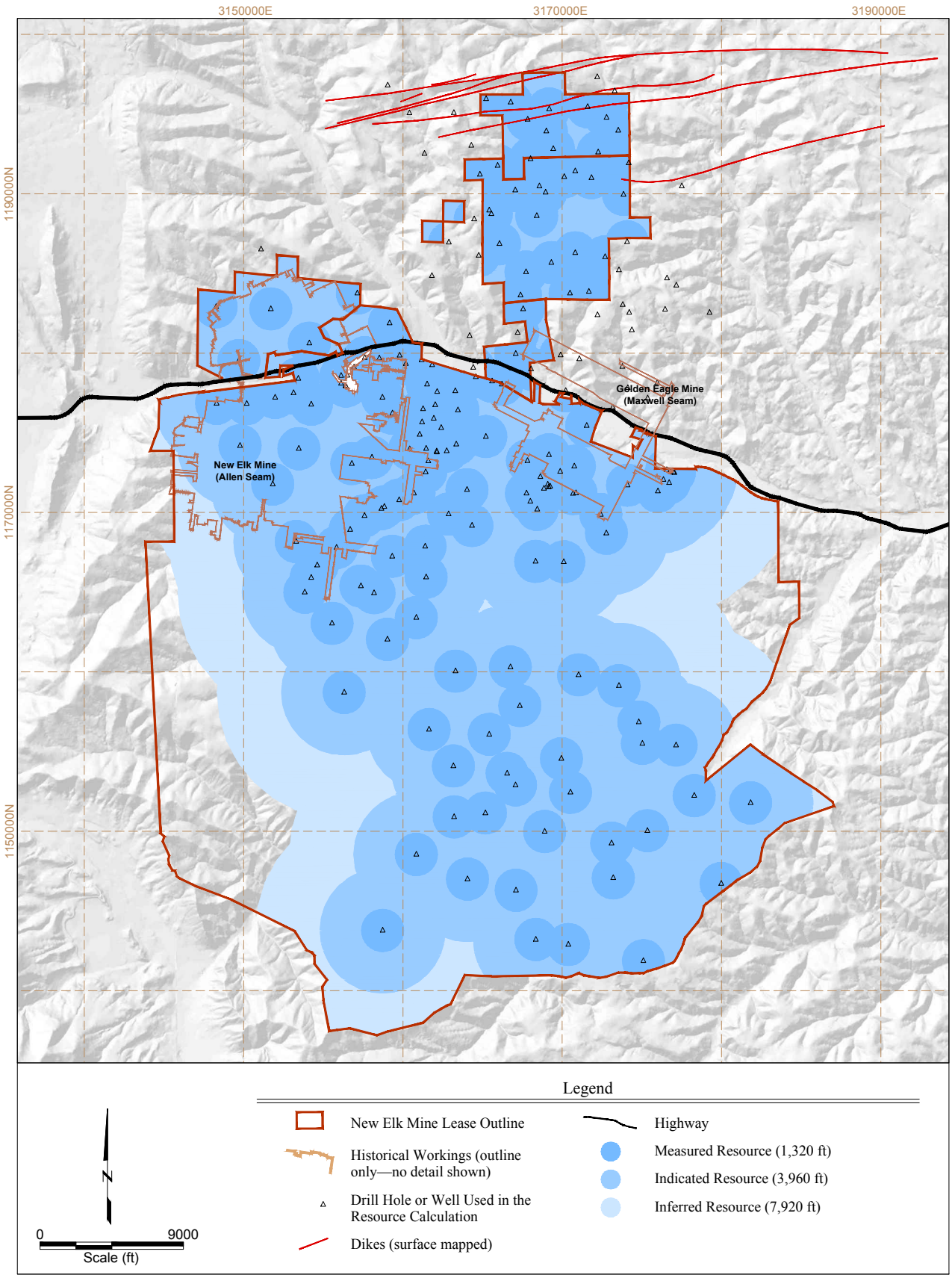
723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal.dwg; Layout: Resource Class_Red]:smvf (6-20-2012)

Figure 14-6. Resource Classification—Red Seam



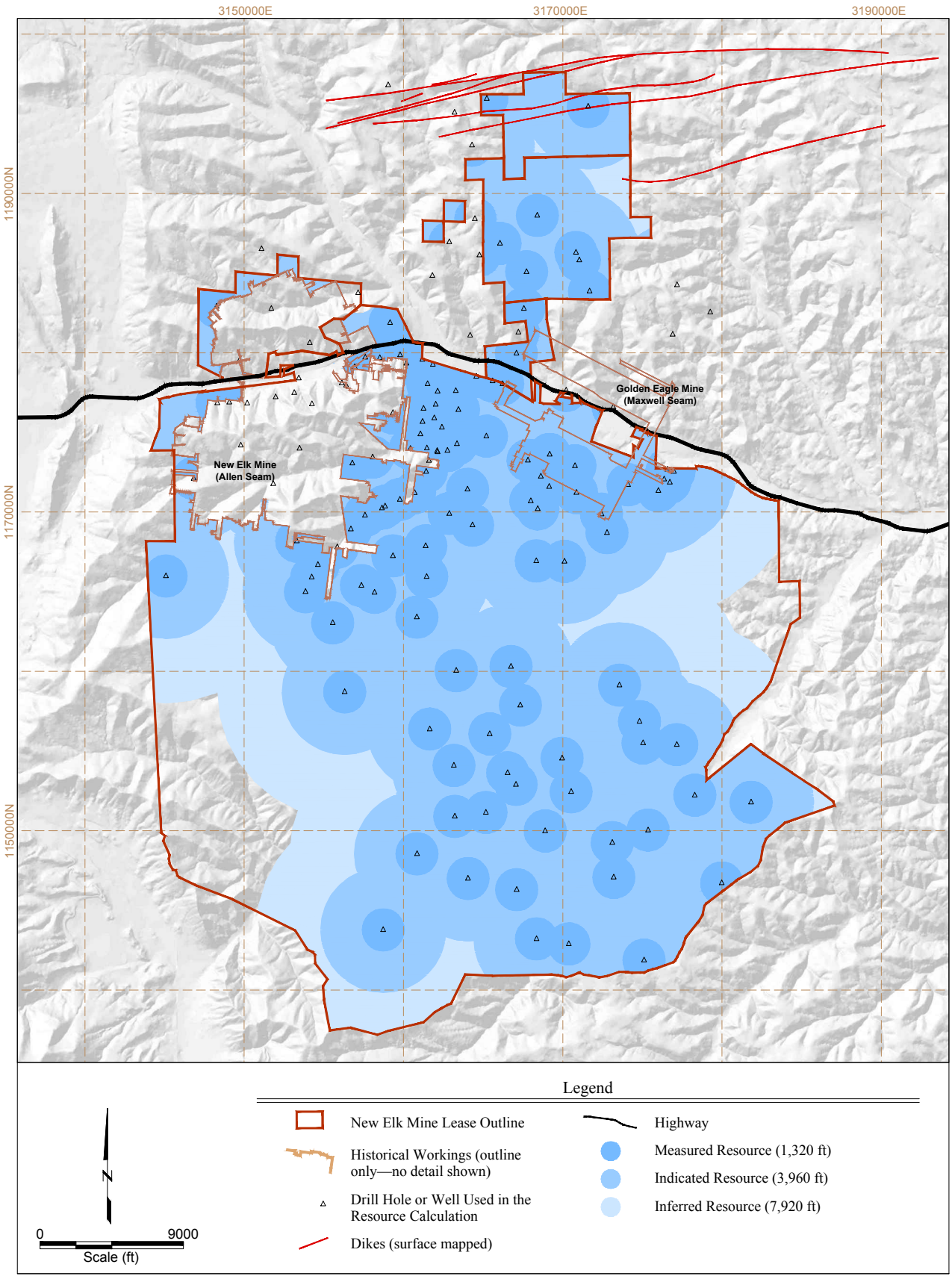
723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal.dwg; Layout: E Size_Resource Class_Maxwell]:smvf (6-20-2012)

Figure 14-7. Resource Classification—Maxwell Seam



723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal.dwg; Layout: Resource Class_Apache]:smvf (6-20-2012)

Figure 14-8. Resource Classification—Apache Seam



723-01 Cline Mining [723-01 New Elk Base Map_Contours_Depth Total Coal.dwg; Layout: Resource Class_Allen]:smvf (6-20-2012)

Figure 14-9. Resource Classification—Allen Seam

Coal quality is reasonably consistent over the New Elk Mine property and does not affect the classification of the coal deposits as a Mineral Resource. Parting thickness is variable, but does not affect the classification of the coal deposits as a Mineral Resource. Table 14-3 summarizes estimated parting thickness and washed coal quality for a 1.40 SG float. A 1.40 SG float represents a best-case scenario for operating the wash plant. NECC anticipates washing the coal between a 1.40 and 1.50 SG float, depending upon actual plant performance characteristics, market requirements and the tradeoff between pricing and plant yield. Coal tonnages in Table 14-3 combine Measured, Indicated, and Inferred tons.

Table 14-3. In-Seam Parting Thickness and Washed Coal Quality by Parcel

Parcel	Coal Average Thickness[1] (ft)	In-Seam Parting Average Thickness[2] (ft)	Compliant Coal Acreage[1]	Parcel Acreage	Coal Tonnage[1,3] (millions)	In-Seam Parting Tonnage[4] (millions)	Total Seam Tonnage (millions)	Drill Holes Reporting Coal Quality	Washed Coal Quality [1.40 SG Float][5]								
									Wash Recovery (wt %)	Ash (wt %)	Sulfur (wt %)	(Btu/lb)	Volatile Matter (wt %)	FSI	P_2O_5 (wt %)	Reflectance (%)	Fluidity (ddpm)
GREEN SEAM																	
NCE North Lease	4.5	2.4	272.8	962	2.3	2.3	4.5		30.1	11.4	0.77	13,650	35.7	7.2	2.5	0.79	1,300
XTO Lease	3.6	1.1	374	1,788	2.5	1.4	3.9		31.7	11.7	0.79	13,560	34.7	7.4	2.5	0.79	1,300
NCE South Lease				340													
DOW Lease	4.3	1.5	6,880	31,123	54.5	37.0	91.5	3	62.1	9.3	0.66	13,710	37.1	6.0	2.5	0.78	1,300
Secora Ranch	3.4	0.3	42	1,138	0.3	0.0	0.3		55.8	12.3	0.67	13,210	36.5	5.5	2.5	0.79	1,300
	4.3	1.5	7,569	35,351	59.6	40.7	100.2	3	59.6	9.5	0.67	13,700	36.9	6.1	2.5	0.78	1,300
LOCO SEAM																	
NCE North Lease	3.5	0.4	29.4	962	0.2	0.0	0.2		46.3	9.9	0.59	13,760	37.8	4.6	4.3	0.78	9,430
XTO Lease	3.6	0.1	292	1,788	2.0	0.1	2.1		50.6	9.7	0.60	13,740	37.9	4.6	4.3	0.78	9,430
NCE South Lease	3.4	0.7	240	340	1.5	0.6	2.1		52.5	9.6	0.60	13,740	38.0	4.5	4.3	0.78	9,430
DOW Lease	3.9	0.3	9,330	31,123	67.1	8.8	75.8	2	55.8	10.3	0.71	13,470	36.2	5.5	4.3	0.78	9,430
Secora Ranch	3.5	1.5	36	1,138	0.2	0.2	0.4		52.6	9.6	0.60	13,740	38.0	4.5	4.3	0.78	9,430
	3.9	0.3	9,928	35,351	70.9	9.7	80.6	2	55.6	10.3	0.70	13,480	36.3	5.4	4.3	0.78	9,430
BLUE SEAM																	
NCE North Lease	4.7	0.3	86.9	962	0.7	0.1	0.8	1	68.1	9.2	0.53	13,890	35.1	7.1	2.8	0.88	6,190
XTO Lease	4.1	0.9	1,371	1,788	10.4	4.3	14.7	5	64.0	10.1	0.60	13,810	35.3	7.5	2.8	0.86	8,500
NCE South Lease	5.4	0.7	340	340	3.4	0.8	4.2	1	72.1	9.1	0.55	13,950	36.0	7.8	2.9	0.85	15,770
DOW Lease	4.0	0.9	10,173	31,123	76.2	32.5	108.7	13	66.3	8.9	0.63	13,930	37.5	7.0	2.7	0.81	7,940
Secora Ranch	3.4	0.3	67	1,138	0.4	0.1	0.5		66.1	8.2	0.54	13,950	35.1	6.2	2.9	0.87	1,900
	4.1	0.9	12,038	35,351	91.2	37.8	128.9	20	66.2	9.1	0.63	13,920	37.1	7.1	2.7	0.82	8,250
BING CANYON UPPER SEAM																	
NCE North Lease				962													
XTO Lease				1,788													
NCE South Lease				340													
DOW Lease	4.7	0.4	9,083	31,123	79.6	13.1	92.7	3	64.3	8.1	0.59	13,970	37.2	7.0			
Secora Ranch				1,138													
	4.7	0.4	9,083	35,351	79.6	13.1	92.7	3	64.3	8.1	0.59	13,970	37.2	7.0			
RED SEAM																	
NCE North Lease	3.3	0.1	219.0	962	1.3	0.0	1.4		72.6	8.0	0.53	14,210	37.1	7.8	4.1	0.88	14,230
XTO Lease	3.6	0.2	453	1,788	3.0	0.3	3.3	4	81.2	7.5	0.46	14,270	35.2	7.9	4.5	0.89	9,600
NCE South Lease	3.7	0.3	340	340	2.3	0.4	2.7	1	68.1	6.7	0.42	14,340	35.0	8.2	5.1	0.88	7,130
DOW Lease	3.5	0.5	4,135	31,123	27.0	7.2	34.2	11	75.1	8.0	0.56	14,160	37.2	7.8	4.5	0.85	4,470
Secora Ranch				1,138													
	3.5	0.4	5,147	35,351	33.6	7.9	41.5	16	75.0	7.9	0.54	14,180	36.8	7.9	4.6	0.86	5,500
MAXWELL SEAM																	
NCE North Lease	6.5	0.9	787.5	962	9.5	2.4	11.9	1	73.5	6.8	0.45	14,440	35.5	8.0	3.5	0.90	8,640
XTO Lease	7.1	1.3	1,782	1,788	23.5	8.2	31.7	4	77.2	6.9	0.47	14,420	35.7	7.9	4.0	0.91	7,880
NCE South Lease	5.4	0.5	263	340	2.6	0.5	3.1	1	74.1	8.8	0.47	14,030	34.3	7.7	4.0	0.89	4,770
DOW Lease	4.3	0.8	15,732	31,123	125.6	41.3	166.9	16	69.5	8.1	0.54	14,080	36.6	7.4	4.5	0.87	7,760
Secora Ranch				1,138													
	4.9	0.8	18,565	35,351	161.2	52.4	213.6	22	70.9	7.9	0.53	14,150	36.4	7.5	4.3	0.88	7,780
APACHE SEAM																	
NCE North Lease				962				1									
XTO Lease				1,788				2									
NCE South Lease				340													
DOW Lease	3.8	0.3	17,283	31,123	121.4	20.3	141.7	22	75.6	6.9	0.57	14,320	36.0	7.2	3.8	0.88	6,730
Secora Ranch	3.4	0.5	177	1,138	1.1	0.3	1.4		52.7	7.2	0.55	14,180	35.2	7.0	3.5	0.86	8,660
	3.8	0.3	17,459	35,351	122.5	20.6	143.1	25	75.4	6.9	0.57	14,320	36.0	7.2	3.8	0.88	6,750
ALLEN SEAM																	
NCE North Lease				962													
XTO Lease				1,788													
NCE South Lease	3.3	0.1	41	340	0.3	0.0	0.3	1	61.6	9.8	0.60	13,970	37.2	7.4	2.2	0.87	18,710
DOW Lease	4.3	0.7	12,845	31,123	102.5	30.8	133.3	16	76.8	7.8	0.58	14,220	36.6	7.7	2.4	0.85	16,620
Secora Ranch	4.8	0.4	224	1,138	2.0	0.3	2.3		92.3	5.7	0.47	14,530	37.8	8.5	2.6	0.82	22,040
	4.3	0.7	13,109	35,351	104.8	31.1	135.8	17	77.1	7.7	0.58	14,230	36.7	7.7	2.4	0.85	16,730
TOTAL	**4.3**	**0.7**		**35,351**	**723.3**	**213.2**	**936.5**		**69.0**	**8.2**	**0.6**	**14,040**	**36.6**	**7.1**	**3.5**	**0.85**	**8,570**

1 In-place clean coal > 3.0 ft thick, excludes in-seam partings and out-of-seam dilution.
2 Aggregate thickness of typically multiple, thin in-seam partings.
3 Average in-place coal density 85.0 pcf. Tonnage listed for sum of Measured, Indicated, and Inferred coal resources.
4 Average in-place rock parting density 160.0 pcf.
5 Quality testing performed on washed seam composite including parting material (ROM equivalent).

15.0 MINERAL RESERVE ESTIMATES

No reserves have been determined as no supporting Preliminary Feasibility Study or Feasibility Study has been prepared for the NECC Property.

16.0 MINING METHODS

Mining methods were evaluated as part of the PEAs of the New Elk Mine project and documented in two reports titled *Preliminary Assessment of the New Elk Mine Project,* dated March 13, 2010 and May 21, 2011. The preliminary mine plans for each PEA were developed as the basis for assessing the economic viability of the project. The preliminary mine plans indicate that there is adequate resource to support over 20 years of operation at 3 million tons of saleable product per year. The conclusions of the 2011 PEA generally remain relevant as of the effective date of this report.

On July 3, 2012 Cline announced that it is revising and optimizing the operations of the NECC to include longwall mining. As part of this process, updated production and cost guidance will be developed.

The following text has been updated to reflect progress in project development. The 2011 economic evaluation has not been revised.

16.1 Mining Parameters and Assumptions

Major mining parameters and assumptions are summarized as follows:

- Mining will occur in the Blue seam in the central, northern and southern parts of the Property, in the Maxwell seam in the northern portion of the Property and, to a limited extent, the Apache and Allen seams near the historical Allen Mine.

- Where multi-seam mining is projected, there is at least 220 feet of interburden which should mitigate any material seam interaction issues.

- Room-and-pillar mining will be practiced, with second mining (pillar extraction) on retreat.

- Entry and crosscut spacing vary between 55-foot and 125-foot centers, depending on overburden depth, intended use (main versus production panels), expected life, ventilation requirements, and productivity considerations.

- The mine will operate two 12-hour shifts per day, both production shifts, with maintenance scheduled during those shifts as needed or required.

- Production shifts are scheduled 7 days per week, 52 weeks per year (with 3 scheduled holidays per year).

- Mining sections will be added from startup to full production, with five super sections (two continuous miners per super section) active at full production. Super-section advance rate is assumed to average 360 feet per shift, and the retreat rate will average 500 feet per shift.

- Maximum saleable annual production is assumed to be capped at 3 million tons.

16.2 Mine Development

To minimize the initial cost of accessing the coal resources, NECC intends to utilize the existing Allen Mine slopes and shafts to access some of the mineable resources of the Apache and Allen seams contiguous to the historical Allen Mine workings, and constructed new slopes to the Blue seam which is located approximately 50 feet below the surface near the existing preparation plant.

Mining of the Apache seam between the Allen Mine slopes and East portals shaft has been completed at the time of this report and coal mining is progressing to the north of the existing slopes in the Allen seam via short rock slopes between the Apache and Allen seams.

Construction of the Bates portals and slopes was completed in 2011 and development by one continuous miner section is progressing from the bottom of the new slopes in the Blue seam. As this initial section develops territory in the Blue seam, additional super sections will be added. Three super sections are scheduled for operation in the Blue seam by the end of 2012. The two super sections operating from the Allen slopes will advance development in the Apache and Allen seams accessible from the Allen slopes and move to the Blue seam via the Bates portals.

In 2016, slopes are scheduled for construction between the Blue seam and the Maxwell seam for mining the North Maxwell resources. After construction of the Blue/Maxwell slopes, two super sections will operate in the Maxwell seam and three super sections will continue to operate in the Blue seam until the North Maxwell resources are exhausted. Once the Maxwell seam resources are exhausted in 2026, all five super sections will operate in the Blue seam for the remainder of the 20-year mine plan.

Figures 16-1a and 16-1b show the preliminary 20-year mine plan projections. In areas of multi-seam mining, seam extraction will progress from the top seam to the bottom seam. Second mining (pillar recovery on retreat) is planned in most areas to maximize coal recovery. For optimization of the mine plan, these projection maps show the North Mains for the Blue and Maxwell seams crossing over a corner of a BLM tract for which NECC has submitted an application to lease the coal. If the BLM lease is not obtained, the North Mains will have to be moved slightly to the east through a tract currently controlled by NECC.

16.2.1 Mine Plan

The mine plan was based on the thickness, elevation, and coal-quality grids generated as part of the geological model using Carlson Software's Geology Module™ (as discussed in Sections 7 and 14). Carlson Software's SurvCADD™ and its Underground Mining Module™ were used to compile grid files for mining timing-and-production scheduling.

Mining hazards include methane, poor roof, gas wells, igneous intrusions, faults, old mine works, and impounded water. Historically, methane liberation in the Allen seam has been relatively low; gas desorption studies have indicated that with proper ventilation design and

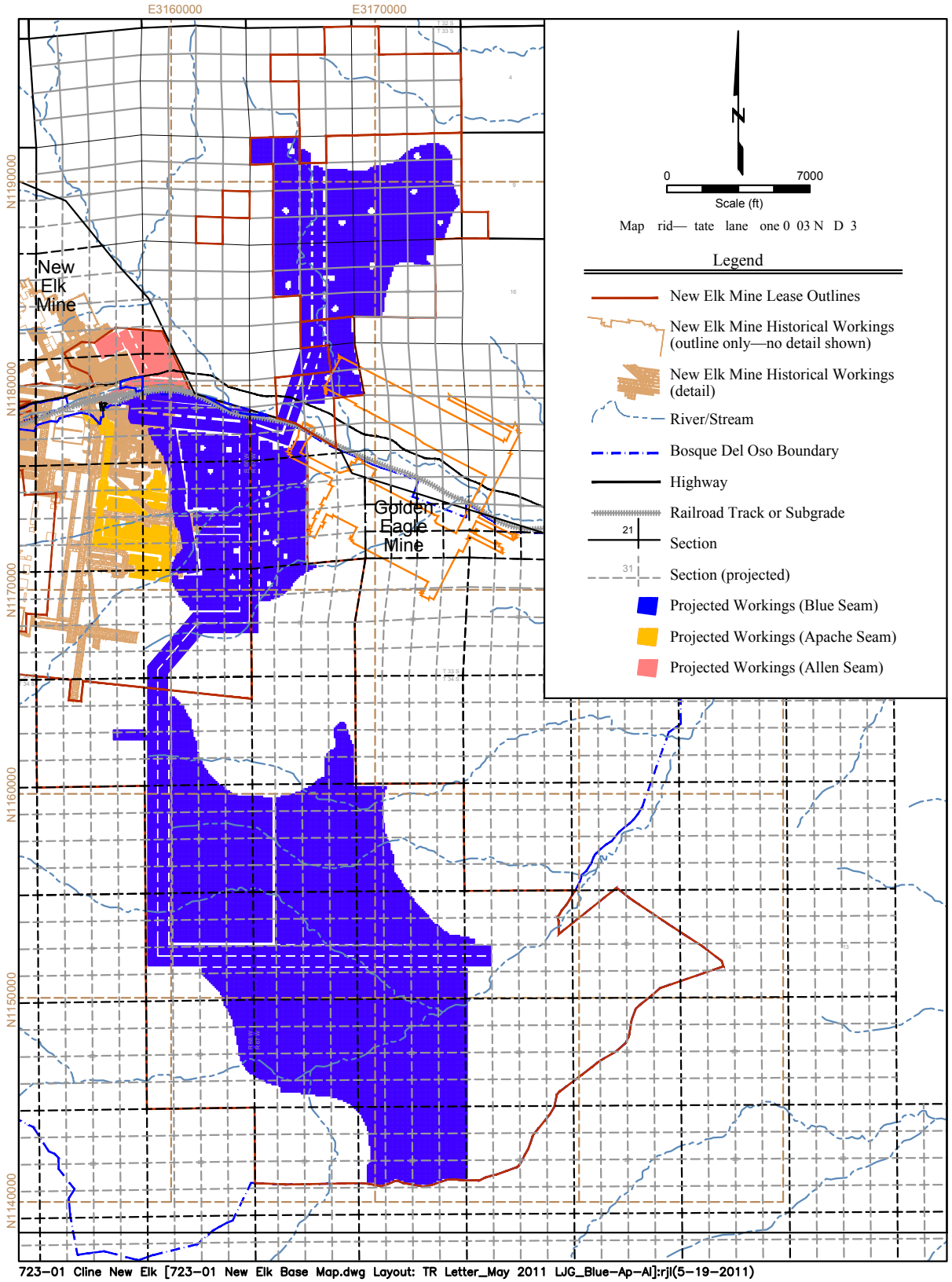


Figure 16-1. New Elk Preliminary 20-Year Mine Plan Projections

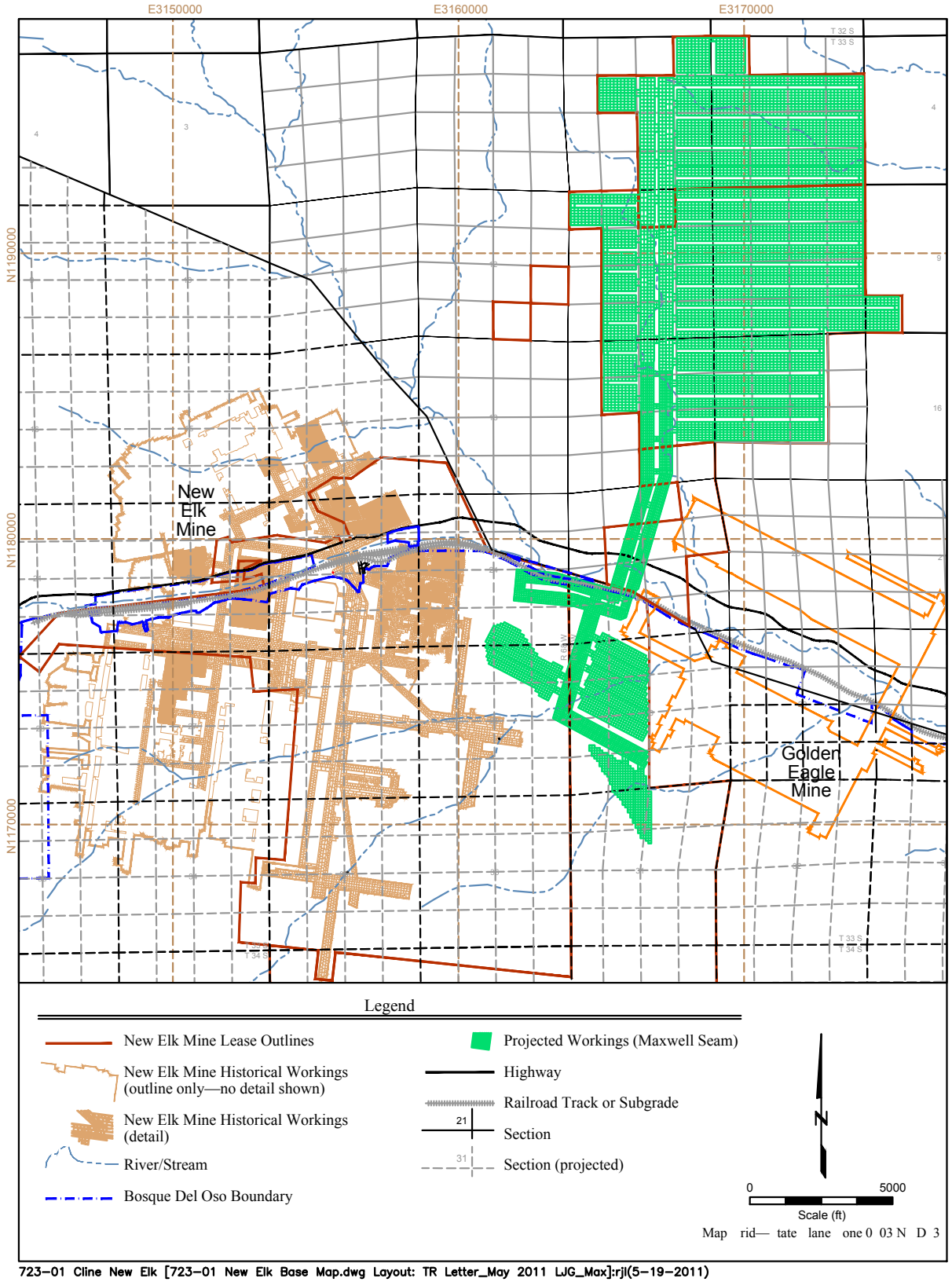


Figure 16-1. New Elk Preliminary 20-Year Mine Plan Projections *(concluded)*

implementation, methane liberation should not hinder productivity. The roof conditions historically experienced in the New Elk Mine (Allen seam) have been stated to be variable, from good to problematic. Inspection and testing of the site exploration rock core and associated data indicates that the mine roof and floor conditions associated with the coal seams targeted for mining are within, but in some locations approaching, the lower range of rock quality generally considered acceptable for productive mining. It is assumed proper design and implementation of ground support will allow mining of the resources. The majority of the gas wells on the property have been drilled in recent years and it is assumed they can be avoided by the mine plan or purchased and removed from service.

Per Behre Dolbear (2008), igneous intrusions are not expected to be a concern in the resources projected for mining in the Blue, Apache or Allen seams, but may occur more frequently as mining progresses north into the North Maxwell resource area. Drilling is insufficient to detect faults, although Allen Mine production section mining in 2E, 6P.E., 7P.E., and east/northeast of the East slopes/4North area encountered fault zones. The old mine maps are expected to be reasonably accurate and impounded water can be removed via pumping or isolated by adequately designed barriers.

16.2.2 Mine Projections

Mine projections were developed taking into consideration seam thickness contours, property boundaries, gas well locations and the historical Allen seam (Allen Mine) and Maxwell seam (Golden Eagle Mine) works. Mains are projected for five, seven, or nine entries, with panels projected for five and seven entries, depending upon various physical constraints and ventilation requirements. To minimize production panel/main infrastructures, panels will generally be developed up to approximately 7,500 feet long, where resource geometry allows.

16.3 Production Ramp-Up Schedule

The ramp-up schedule for each section assumes 25% of full production in the first month the equipment is introduced, with an additional 25% in each month thereafter. This means that full production is achieved at the beginning of the fourth month of equipment use.

17.0 RECOVERY METHODS

Coal processing and coal quality are discussed in Section 13. Additional supporting information concerning refuse disposal and processing costs is as follows:

17.1 Refuse Disposal

Refuse disposal is accomplished by sending combined refuse (plant reject course fragment and filter cake product) on the two-belt refuse conveyance system to the existing refuse area. This replicates the previous methodology used by Wyoming Fuel.

The 1,346-acre Secora Ranch property, acquired in 2012, is in close proximity to the coal preparation plant and has more refuse storage capacity than required for the 2011 PEA.

17.2 Preparation Plant Costs

Capital and operating cost assumptions for the plant are detailed below.

Capital: The capital costs associated with bringing the existing plant up to full production capacity include:

- $3.5 million spent in 2010 for repairs and upgrades
- $2.0 million in 2011 to upgrade the existing plant to a rated capacity of 750 tons per hour
- $5.0 million in 2011 and 10 million in 2012 to construct a modular 500-tons-per-hour parallel plant circuit.

Staffing: The manpower associated with the plant is contained in Section 21.3.2.

Operating Costs: The following costs (on a per raw ton basis) were estimated for NECC based on experience at other similar coal preparation facilities:

- Plant maintenance supplies: $0.64 per raw ton
- Magnetite: $400 per ton of magnetite, usage 0.9 pound of magnetite per ton of raw coal
- Reagents: Flocculants, etc. at $0.18/ton
- Water treatment: $0.05/ton
- Electric power: $0.09/ton
- Diesel fuel: fuel cost $3/gallon, average consumption 60 gallons per operating hour
- Equipment operating costs (less fuel and labor):
  - Loader: $25/hr
  - Refuse truck: $25/hr
  - Refuse dozer: $30/hr
- Coal sampling and analysis: $0.05/ton
- Contract services: $10,000/month

18.0 PROJECT INFRASTRUCTURE

The category "infrastructure" includes all items required for supporting mine operations outside of the underground mine and preparation plant. Examples are buildings, roads, power supplies, and loadouts. This section discusses the major items of infrastructure that are included in the PEA.

18.1 Buildings

To support the operation, the following buildings are required (note that some of these facilities are new and some are modified from existing structures):

- Changehouse: Federal regulations require adequate shower and sanitary facilities be provided for employees. The preliminary economic analysis includes funds to construct a changehouse to staff the full complement of surface and underground personnel. Provisions include showers, sanitary facilities, clean-side and dirty-side lockers, lamp racks, offices for underground supervisors, a meeting room, and the mine communications center.

- Offices: An office building is provided to house management and administrative personnel.

- Warehouse: The existing shop facility near the East portals will be utilized as a warehouse. Funds are included for racks, bins, shelving, etc.

- Shop: The shop facility last used by Savage Trucking is to be converted to a mine shop. Funds for the crane and tools are included.

The cost estimate is $2.5 million for the changehouse and offices (in year 2011), $250,000 for upgrading the warehouse (2011), and $500,000 to rebuild and equip the shop (2011). Another $270,000 (2011) is included to provide a power center at the mine shop for powering up underground equipment.

18.2 Roads, Ponds, etc.

The existing system of roads on site must be upgraded to comply with regulations. The mine water treatment/discharge pond leaks and requires a liner. Funds are provided for the liner drainage structures, berms, and surfacing. The estimate for these items is $250,000 (2010).

A new refuse area will be required sometime between roughly 2013 and 2015. Permitting, design and construction is estimated at $5 million (2011–2015) and expansion construction in 2018 amounts to $13 million.

18.3 Power

The substation and power distribution system has been upgraded to meet the new requirements of the underground mine and preparation plant, and to comply with current regulations.

A cost of $2.45 million was spent in 2010 and early 2011 to upgrade the existing substation.

18.4 Water Supply and Sewage Treatment

The freshwater supply system requires repair and upgrading to establish it as a reliable source of processing water for the mine and plant. Funds ($700,000) have been included to address pump and line replacement and head tank repair (2010).

The existing package plant for sewage treatment requires an upgrade or replacement. The estimated cost is $400,000.

18.5 Loadout

Initially, coal loadout on site will be accomplished with front-end loaders dumping directly into trucks at the clean coal stockpile. There are no funds required for this with respect to infrastructure.

In the intermediate term, silos will be used for clean coal storage, and a truck-loading belt and bin will be installed below the silos for automated truck loading. The economic analysis includes funding of $250,000 in 2011 for this.

In the long term, NECC intends to re-establish rail from the site to the BNSF main line outside of Trinidad. This will require significant funds to complete. AAI estimates $20 million to be spent in 2012 for this item.

AAI assumes the Jansen loadout will be used as a short-term solution using front-end loaders, and as an intermediate-term solution, build a stockpile/reclaim and flood-loading system. An expenditure of $2.0 million is allowed for this in 2010. Once the main-line rail becomes operational to site, this facility will be removed from service.

18.6 Gas Wells

It is assumed that NECC will need to acquire and plug a significant number of gas wells property-wide that intersect the proposed underground mine workings. A preliminary study was conducted by Raven Ridge Resources, Inc. (RRR) (2011) to determine which wells should be removed from operation prior to mining and to provide a valuation of those well. Wells are generally scheduled to be purchased one year before mining approaches within 1,000 feet of each well, to allow time for acquisition and plugging. Also, the well cost decreases over the life of the well; therefore it is more cost effective to purchase the wells as late as possible, to minimize cost. Purchase costs are about $15 million per year, for the first few years to acquire

wells in the north and central areas. Purchase costs decline to about $6 million per year when the southern area is mined. The estimated well acquisition cost are include in projects surface capital cost. Although the PEA assumes certain wells will be purchased, alternatives to purchasing exist and may be pursued in the future.

18.7 West Portal

AAI assumes the West portal area will be sealed off and not utilized over the life of the project. Funds are provided for in 2010 to seal and reclaim the West portal openings, estimated to cost $200,000. The portals continue to be used for ventilation as of 2012.

18.8 Administration Costs

These costs include operating costs not associated specifically with the mine or the plant (water sampling, security, etc.) and the overhead associated with the corporate support.

NECC estimates corporate overhead of $1 million in 2011, and $1.5 million annually thereafter. AAI understands these expenses include Cline and NECC salaries and administrative costs (legal fees, office expenses, associated rents and utilities, regulatory fees and fines, etc.). AAI believes these costs are reasonable and has included them in the economic model.

Royalties in the model include an 8% royalty to the leaseholders plus $0.82 per ton to NECC. The Colorado coal severance tax is included. A 2% sales commission for coal sales is included in the model. This recognizes the participation of outside sales persons. The following site cost categories are contained in the model:

- General and administrative allowance of $0.09 per raw ton, to cover miscellaneous administrative items not included in the corporate overhead category discussed above.

- Surface consumables of $0.09 per raw ton for items not included elsewhere on the surface (i.e., road salt, silt fences, signage, etc.).

- Reclamation fee (regulatory) of $0.14 per clean ton.

- Property taxes at $0.16 per raw ton. This figure was provided by NECC.

- Liability insurance of $25,000 in 2011 and $50,000 annually thereafter. This figure was provided by NECC.

- An ongoing permitting allowance of $0.02 per ton. This is separate from major permitting efforts, such as a new refuse area, which are addressed in capital costs.

- A $0.09 per raw ton cost assigned to surface utilities and their maintenance.

- Reclamation cost at $0.05 per ton, to address periodic ongoing activities such as ditch maintenance, hydro-seeding, culvert cleanout, etc.

- "Other costs" at $0.09 per raw ton to capture those miscellaneous expenses not assigned to specific categories.

- Trucking: Until the rail is re-established to site, a cost of $3.18 per clean ton is assigned to trucking. Based on recent quotes, it is believed this figure is reasonable for the short-term trucking requirement.

- Rail Car Loading: Estimated at $0.95 per ton at the Jansen yard, based on a recent contractor proposal.

- Jansen yard lease: AAI assumes NECC can negotiate a monthly lease rate at Jansen for $0.45 per clean ton, which will be expanded to the right-of-way once the rail is re-established. This is consistent with Kern Valley Railroad's recent offer of a monthly lease of $50,000 plus $0.45 per ton on all tons above 1.3 million per year. AAI has adjusted the early lease rate just for the Jansen yard, and believes such a rate is realistically achievable through negotiation, versus a flat $50,000 minimum in the early years.

19.0 MARKET STUDIES AND CONTRACTS

NECC commissioned Wood Mackenzie, Inc. to provide an independent high-volatile metallurgical 20-year coal price forecast completed in April 2011. The preliminary economic analysis of cash flows was based on the 20-year Wood Mackenzie forecast (Table 19-1). The average market price (constant dollar) used in the economic model is $139/ton Free on Rail (FOR).

Table 19-1. Wood Mackenzie, Inc. Coal Price Forecast (2011)
(Note: coal prices stated in 2011 US$ per metric tonne)

	Real US $/tonne for Japanese Fiscal Period											
	Q1-11	**Q2-11**	**Q3-11**	**Q4-11**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Reference Brand												
Queensland Benchmark	330	300	280	270	295							
Base Case New Elk												
New Elk HV Met (FOBT)					251	215	189	172	171	172	173	180
New Elk Transportation					39	39	39	39	39	39	39	39
New Elk HV Met (FOR)					212	176	150	133	132	133	134	141
Low Case New Elk												
New Elk HV met (FOBT)					241	200	171	153	148	146	144	147
New Elk Transportation					37	37	37	37	37	37	37	37
New Elk HV Met (FOR)					204	163	134	116	111	109	107	110
High Case New Elk												
New Elk HV Met (FOBT)					272	247	228	217	220	221	222	232
New Elk Transportation					41	41	41	41	41	41	41	41
New Elk HV Met (FOR)					231	206	187	176	179	180	181	191
	2019	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2020**	**2030**
Base Case New Elk												
New Elk HV Met (FOBT)	188	194	196	194	194	193	193	193	193	193	193	193
New Elk Transportation	39	39	39	39	39	39	39	39	39	39	39	39
New Elk HV Met (FOR)	149	155	157	155	155	154	154	154	154	154	154	154
Low Case New Elk												
New Elk HV Met (FOBT)	151	154	154	152	152	151	152	153	150	152	155	158
New Elk Transportation	37	37	37	37	37	37	37	37	37	37	37	37
New Elk HV Met (FOR)	114	117	117	115	115	114	115	116	113	115	118	121
High Case New Elk												
New Elk HV Met (FOBT)	242	250	252	250	250	249	249	249	241	241	241	241
New Elk Transportation	41	41	41	41	41	41	41	41	41	41	41	41
New Elk HV Met (FOR)	201	209	211	209	209	208	208	208	200	200	200	200

FOBT = Free on board trimmed; FOR = Free on rail

20.0 ENVIRONMENTAL, PERMITTING AND COMMUNITY IMPACT

No advanced evaluation of environmental, permitting, or community impacts is disclosed in this Technical Report.

21.0 CAPITAL AND OPERATING COSTS

21.1 Mining Equipment

AAI has developed a comprehensive list of equipment anticipated as necessary for operating the New Elk Mine. This section briefly describes each type of equipment anticipated for the New Elk Mine. This equipment has been accounted for in the project economics. A list of equipment including the total estimated number and cost of each equipment type, including spares and replacements, is provided in Table 21-1.

On July 3, 2012 Cline announced that it is revising and optimizing the operations of the NECC to include longwall mining. As part of this process, updated production, cost guidance and updated capital and operating costs will be developed.

21.1.1 Conveyors

The conveyor system brings coal from the mining section out to the surface raw-coal sizing facility. Typical underground conveyor installations are shown in Figure 21-1 (Joy Mining Machinery [Joy] 2010a).

Section conveyors are sized to move material efficiently from one mining unit to the mainline. Mainline belts (including the slope conveyor) generally handle the entire mine's coal production. Conveyor design is based on estimated peak production rates.

For this study, it is assumed that the conveyor structure will be roof hung and channel-mounted, as shown in Figure 21-1 (left photo). AAI has allowed for new, or like-new pricing, although used components may be available (the market for used underground conveyor components is variable). Underground belting must meet the new MSHA flame-retardant standard; consequently, it is assumed no used belting will be available.

As currently envisioned, the section conveyors will be 48 inches wide and the mainline conveyors will be 60 inches wide. Major components of the conveyor system at the New Elk Mine include:

- Remote discharge pulley
- Drive pulley unit (Figure 21-1, right photo)
- Power units
- Variable-frequency drives and controller
- Take-up
- Tailpiece
- Remote loading section
- Carrying and return idlers
- Belting
- Chains and channel
- Wipers

- Transfer chutework
- Splicing table
- Belt power center
- Belt winder

Table 21-1. Summary of New Capital Cost (excluding receding face)

Item	Detailed Description	Total Number	Unit of Measure	Unit Cost Each	Total, Excluding Freight and Taxes
Continuous Miner Sections (5)					
Bobcat/skidsteer	With utility attachments	10	Ea	$90,000	$900,000
Booster pump	Sunflow or equivalent satellite pump	21	Ea	$22,000	$462,000
Cable trailer	For high-voltage cables on section	10	Ea	$42,000	$420,000
Roof bolter	Fletcher dual-boom crawler mounted	30	Ea	$670,000	$20,100,000
Continuous miner	Joy 14CM or equivalent	50	Ea	$2,250,000	$112,500,000
Dewatering tank	Also known as “Fish Tank” for section	5	Ea	$11,000	$55,000
Electrical cables	Lot of trailing cables	5	lot	$90,000	$450,000
Face pump 7HP	Switch among faces	50	Ea	$11,000	$550,000
Face pump 58HP	One in fish tank with one installed spare	50	Ea	$32,000	$1,600,000
Feeder breaker	3-way dump Stamler or Cogar	10	Ea	$550,000	$5,500,000
First aid station	MSA	10	Ea	$800	$8,000
Garbage trailer	One on section and one in transit	10	Ea	$43,000	$430,000
Lube trucks	One per section	10	Ea	$85,000	$850,000
Lunch room	With storage bins	5	Ea	$20,000	$100,000
Mantrips	One active, one spare for hot seat	60	Ea	$60,000	$3,600,000
Mine phones	Section phone	5	Ea	$500	$2,500
Mobile roof supports		4	set of 4	$2,400,000	$9,600,000
Parts trailer	Also known as “War Wagon”	5	Ea	$34,000	$170,000
Portable drill	For anchoring tail, etc	25	Ea	$7,500	$187,500
Portable radios	For section efficiency	200	Ea	$500	$100,000
Section parts inventory	On war wagon	5	lot	$40,000	$200,000
Section power center	Setup for super section	5	Ea	$270,000	$1,350,000
Section switchhouse	At mouth of section	5	Ea	$90,000	$450,000
Section tools	1 lot of specialty tools	25	lot	$25,000	$625,000
Scoop	Permissible	10	Ea	$600,000	$6,000,000
Shuttle car	Joy 10SC or equivalent	62	Ea	$690,000	$42,780,000
Slinger duster	AL Lee—fits in scoop bucket	25	Ea	$15,000	$375,000
Supply trailer	For bolts, etc	20	Ea	$38,000	$760,000
Trickle duster	1 each return, 1 belt	18	Ea	$17,000	$306,000

Table 21-1. Summary of New Capital Cost (excluding receding face) *(continued)*

Item	Detailed Description	Total Number	Unit of Measure	Unit Cost Each	Total, Excluding Freight and Taxes
Ventilation tubing (or line curtain)	Initial setup	5	lot	$30,000	$150,000
Water hose	Initial setup to miner	6	lot	$5,000	$30,000
Toilets	1 underground (UG) and 1 changing out	45	Ea	$2,000	$90,000
Total Continuous Miner Sections					**$210,701,000**
Outby					
Rehabilitation contractor		1	Ea	$3,450,000	$3,450,000
Seals placed during rehabilitation		1	Ea	$1,600,000	$1,600,000
Post-rehabilitation roadway upgrades		1	Ea	$500,000	$500,000
Upgrade East portals to larger main mine fan		1	Ea	$600,000	$600,000
Fifth wheel tractor	For hauling supplies	4	Ea	$400,000	$1,600,000
CM transport trailer.	Low-boy to move miners, etc. UG	1	Ea	$220,000	$220,000
Bobcat/skidsteer	For outby belts and cleaup	2	Ea	$90,000	$180,000
Concrete trailer	For setting drives	1	Ea	$180,000	$180,000
Diesel scoop	Outby use	4	Ea	$700,000	$2,800,000
Feeder breaker	Outby and cleanup—none yet	2	Ea	$550,000	$1,100,000
Gravel trailer	Road building	1	Ea	$55,000	$55,000
Group vehicles	Supervisors, guests	18	Ea	$60,000	$1,080,000
Lube truck	Outby for belts—none yet	4	Ea	$85,000	$340,000
Mantrips	For outby personnel	12	Ea	$60,000	$720,000
Mechanic trucks	For roving mechanics	18	Ea	$90,000	$1,620,000
Mobile rock duster	Dry or wet slinger	5	Ea	$85,000	$425,000
Portable generator	For equipment moves and to support construction	1	Ea	$225,000	$225,000
Radio and tracking system	Leaky feeder based system	1	Ea	$250,000	$250,000
Road grader	Road maintenance	2	Ea	$550,000	$1,100,000
Roof bolter	outby rehab and construction	3	Ea	$640,000	$1,920,000
Salt spreader	Road maintenance	5	Ea	$3,500	$17,500
Supervisor vehicles	Foremen	24	Ea	$50,000	$1,200,000
Electrical switchhouse	Outside	1	Ea	$90,000	$90,000

Table 21-1. Summary of New Capital Cost (excluding receding face) *(continued)*

Item	Detailed Description	Total Number	Unit of Measure	Unit Cost Each	Total, Excluding Freight and Taxes
Underground rock dust system	Surface bin, tank, and compressor	1	Ea	$250,000	$250,000
Underground rock dust tank	Place 2 every 4,000 feet from portal	22	Ea	$50,000	$1,100,000
Underground rock dust system pipe	1 lot of pipe and laterals from surface to first section	1	lot	$100,000	$100,000
Water trailer	Road maintenance	1	Ea	$29,000	$29,000
Gunnite machine	Roof rehabilitation	3	Ea	$18,000	$54,000
Portable air compressor	Exclude if installing UG compressed air system	2	Ea	$50,000	$100,000
Toilets	UG and change out units in transit	50	Ea	$2,000	$100,000
Pressure washer	For UG equipment	5	Ea	$1,000	$5,000
Stoppings	40 replacements from portal to section	1	lot	$48,000	$48,000
Regulators	Replacements from portal to section	4	lot	$1,200	$4,800
Mandoors	Replacements from portal to section	10	lot	$500	$5,000
Fuel trailer	For UG equipment	2	Ea	$7,000	$14,000
Pager phone system	6 phones 500 foot cable from portal to mouth of section	1	lot	$8,150	$8,150
Engineering	Planning, design	1	lot	$800,000	$800,000
Underground ambulance	For transport from section to slope bottom	1	Ea	$34,000	$34,000
Portable welder	For UG equipment	18	Ea	$19,000	$342,000
Rock slopes	Three slopes: Surf-Bl (Bates), Ap-Al, Bl-Mx	3	Ea	2 x 3$M 1 x 12 $M	$18,000,000
Air shafts (2 shafts to the north)	Estimage 536 feet with escape hoist, plus Bl-Ap seal	2	Ea	$4,000,000	$8,250,000
Main ventilation fan		1	Ea	$2,500,000	$2,500,000
Total Outby					**$53,016,450**
Conveyor Components					
Engineering	Planning, design	1	lot	$100,000	$100,000
Slope belt terminal group (drive, discharge, takeup, tail)	Slope belt	1	Ea	$2,166,000	$2,166,000
Slope structure	Crusher building to slope bottom (3800 feet)	1	lot	$350,000	$350,000
Slope truss work	Portal to crusher building	1	lot	$250,000	$250,000

Table 21-1. Summary of New Capital Cost (excluding receding face) *(continued)*

Item	Detailed Description	Total Number	Unit of Measure	Unit Cost Each	Total, Excluding Freight and Taxes
Slope belting	1500 pounds per inch width rubber	1	lot	$500,000	$500,000
Belt power center	Outside	1	Ea	$250,000	$250,000
Mains belt power center		18	Ea	$250,000	$4,500,000
Mains belt terminal group	12 Blue, 6 Maxwell	18	Ea	$1,813,000	$32,634,000
Panel belt power center		5	Ea	$250,000	$1,250,000
Panel belt terminal group	One per section	5	Ea	$1,710,000	$8,550,000
Pony terminal groups		2	Ea	$1,308,000	$2,616,000
Pony belt power center		2	Ea	$250,000	$500,000
Total Conveyor Components					**$53,666,000**
Belt Support Equipment					
Belt tools	Spicing, skiver, come-a-longs, clamps, etc.	5	lot	$70,000	$350,000
Belt magnet	On slope belt, outside	2	Ea	$80,000	$160,000
Belt guards (cross-unders)	Screen gaurds	24	Ea	$500	$12,000
Belt stairs (cross-overs)	Stairs and pltform	48	Ea	$500	$24,000
Conspec control station	Conspec or equivalent	4	Ea	$100,000	$400,000
Conspec surface cable		1	lot	$1,500	$1,500
Belt scale	On slope belt, outside	1	Ea	$9,000	$9,000
Total Belt Support Equipment					**$956,500**
Working Capital					
Capitalized spares	Estimated warehouse stock and G & A	1	Ea	$2,000,000	**$2,000,000**
Safety					
Dosimeters (noise)	Need during cutting and bolting	4	Ea	$1,500	$6,000
AED	1 surface, 1 underground	12	Ea	$800	$9,600
Fire extinguishers	Property-wide	50	Ea	$100	$5,000
Fire fighting—hoses, nozzles, hydrants	MSHA requirement	1	lot	$20,000	$20,000
First aid supplies	Outside	1	lot	$1,000	$1,000
Foam generator	If not on-site, need quick acquisition plan	1	Ea	$20,000	$20,000
Hearing protectors	Inventory	1	lot	$2,000	$2,000

Table 21-1. Summary of New Capital Cost (excluding receding face) *(continued)*

Item	Detailed Description	Total Number	Unit of Measure	Unit Cost Each	Total, Excluding Freight and Taxes
Knee/shin protectors	Inventory	1	lot	$500	$500
Meter—sound	Need 1 for surveys	3	Ea	$500	$1,500
Multi-gas detectors	3- or 4-gas type	126	Ea	$1,600	$201,600
Miner belts	Spares	1	lot	$500	$500
Miners cap lamps	For all UG personnel and visitors	2	lot	$15,000	$30,000
Miners hard hats	Spares	1	lot	$500	$500
Respirable dust samplers	Need during cutting and bolting	48	Ea	$1,300	$62,400
Respirators	Inventory	1	lot	$500	$500
Training equipment		4	lot	$100,000	$400,000
Self-contained self-rescuers	For all personnel UG and caches	2050	Ea	$800	$1,640,000
Total Safety					**$2,401,100**
Surface Facilities					
Re-establish surface power supply and lines	Lump sum from Art Bruno	1	Ea	$2,095,000	$2,095,000
Seal/reclaim West portal surface area		1	Ea	$200,000	$200,000
Jansen loadout—short-term solution		1	Ea	$2,000,000	$2,000,000
Rail extension engineering		1	Ea	$500,000	$500,000
Establish truck loadout near silo		1	Ea	$250,000	$250,000
Lease water rights		19	Ea	$500,000	$9,500,000
Mine shop power center	Unload mining equip, power equip in shop	1	Ea	$270,000	$270,000
Deep-well pump	Backup for existing borehole pump	2	Ea	$60,000	$120,000
Change house and administrative facility	Rental or new	1	Ea	$2,500,000	$2,500,000
Office equipment and furniture		1	Ea	$150,000	$150,000
Crushing/screening system	Second circuit	1	Ea	$1,750,000	$1,750,000
Prep plant rehab and modification	Electrical repairs, circuit upgrades	1	lot	$20,671,500	$20,671,500
Refuse belt drive	Short term to get existing belt running	1	lot	$250,000	$250,000
Refuse belt extension and bin		1	lot	$2,000,000	$2,000,000
Escape hoist system	Torpedo hoist	1	Ea	$400,000	$400,000
Gas well purchase	Designated area	500	Ea	$255,712	$127,856,000
Water storage pond (seasonal water rights)	Storage	1	Ea	$2,500,000	$2,500,000
Add second substation transformer	Art Bruno quote	1	lot	$350,000	$350,000

Table 21-1. Summary of New Capital Cost (excluding receding face) *(continued)*

Item	Detailed Description	Total Number	Unit of Measure	Unit Cost Each	Total, Excluding Freight and Taxes
Mine water supply system	Pumps, tanks, piping	1	lot	$700,000	$700,000
Mine water treatment system	Pond upgrades	1	Ea	$150,000	$150,000
Miscellaneous small buildings	As needed	1	Ea	$50,000	$50,000
Online analyzer		1	Ea	$800,000	$800,000
Gas well locations	All	1	lot	$100,000	$100,000
Gas well plugging costs	All	18	Ea	$100,000	$1,800,000
Permitting (trucking, loadout, etc.)	As needed	1	lot	$250,000	$250,000
Portal area ponds (sewage and storm)	As needed for permit compliance	1	Ea	$150,000	$150,000
Potable water system	Drinking water	1	Ea	$50,000	$50,000
Refuse truck	Use Volvo first 3 yrs, then CAT 735	3	Ea	$477,000	$1,431,000
Refuse dozer	D7E LGP	4	Ea	$594,000	$2,376,000
Stockpile dozer	Use current D8 3 years, then new D8	2	Ea	$623,000	$1,246,000
Coal loader	980HG	4	Ea	$433,000	$1,732,000
Batch weigh bin rail loadout	Located at mine (not a loadout silo)	1	Ea	$3,500,000	$3,500,000
Sewage transfer facility	As needed	1	Ea	$400,000	$400,000
Engineering equipment	Plotter, surveying equip, computers, software	1	lot	$75,000	$75,000
Shop/warehouse building	Upgrade existing facilities	1	Ea	$750,000	$750,000
Stockpile and reclaim system	Repair/rehab to make functional	1	lot	$250,000	$250,000
Surface conveyors	Repair/rehab to make functional	1	lot	$250,000	$250,000
Upgrading county road	As required for trucking, if needed	1	Ea	$200,000	$200,000
Wash bay	For surface equipment	1	Ea	$50,000	$50,000
Foreman’s pickup truck	Evaluate current fleet and acquire as needed	7	Ea	$25,000	$175,000
Electrical to new shafts	Estimated	1	Ea	$4,000,000	$4,000,000
Permitting for mine boundary expansion		1	Ea	$1,500,000	$1,500,000
New refuse area permitting/construction		1	Ea	$18,000,000	$18,000,000
Lease Pacesetter refuse area		18	Yr	$10,000	$180,000
Purchase Montoya refuse area		1	Ea	$1,500,000	$1,500,000
Re-establish rail service to site		1	Ea	$20,000,000	$20,000,000
NECC royalty buyout		1	Ea	$15,000,000	$15,000,000

Table 21-1. Summary of New Capital Cost (excluding receding face) *(concluded)*

Item	Detailed Description	Total Number	Unit of Measure	Unit Cost Each	Total, Excluding Freight and Taxes
Total Surface					**$250,027,500**
TOTAL NEW CAPITAL COST					**$572,768,550**

Figure 21-1. Typical Underground Conveyor Installations (from Joy 2010a)

21.1.2 Underground Section Equipment

The assumed mining method is continuous mining, with shuttle car haulage and dual-boom roof bolters used for roof support. A walk-between super section concept will be employed.

The development sections consist of the following equipment types:

- Continuous miner (2)
- Shuttle cars (3)
- Roof bolter (2)
- Section power center
- Section switch house
- Feeder breaker
- Diesel scoop (2)
- Auxiliary fan(s)
- Maintenance/parts trailers
- Section mantrip

The economics assessment assumes place-change mining will occur. Place-change mining consists of the continuous miner extracting one cut of coal, ranging generally from 20 to 40 feet past the last row of permanent roof support, then moving to the next face (place). The roof bolter then supports the just-mined face. On a "walk-between" super section, one miner operates at a time. Each miner operator stays with his or her continuous mining machine, and while the other continuous mining machine is mining coal, the first machine changes working places, services the machine, assists with face ventilation adjustments, and prepares to mine the next cut of coal. If air quality permits, walk-between super sections use one single split of air to ventilate the section.

After each panel is advanced to its limit, second mining (pillaring) will be undertaken with the aid of mobile roof supports (MRS). MRS provide temporary roof support and enhanced protection of workers near the retreat face. As second mining of pillars progresses, the MRS are retreated and the roof is allowed to cave in a controlled manner.

Each major type of equipment assumed for this study is discussed below:

- Continuous Miner: A 950-volt-alternating-current (VAC), Joy 14CM15 or equivalent) continuous miner (Figure 21-2) is appropriate for the project. Although 2,300 VAC machines are becoming more popular, they are still in the minority in the USA, and come with safety concerns related to cable handling.

Figure 21-2. Joy 12CM12 Continuous Miner (from Joy 2010b)

There will be two continuous miners on each section. Low ground pressure crawlers will be specified to minimize damage to and generation of out-of-seam dilution from the mine floor. The continuous miners will also be specified to be equipped with automation, which provides for better horizon control, consistent loading of shuttle cars, and easier, more effective training of new personnel.

- Shuttle Car: The shuttle cars haul coal from the continuous miner to the belt-conveyor feeder breaker. There are three types of shuttle cars: electric trailing cable-powered, battery-powered, and diesel-powered. It is assumed the trailing-cable-type shuttle car (Figure 21-3) is used.

Figure 21-3. Example of Trailing Cable Shuttle Car (from Joy 2010c)

It is additionally assumed there will be three shuttle cars assigned to each section. This allows for improved utilization of other equipment and personnel assigned to the sections, and provides flexibility to use the shuttle cars for construction projects and out-

of-service rotation for maintenance. Payload capacity is assumed at 10–12 tons of coal depending on mining height.

- Roof Bolter: The roof bolter is required to install the prescribed ground support after the removal of the coal by the continuous miners. Roof bolters may be crawler-mounted or rubber tire-mounted (Figure 21-4 shows a rubber tire-mounted bolter). The machines are equipped with dust collectors and pre-cleaners for dry (vacuum) bolting. Because of expected areas of poor roof conditions, a tilt-head dual-boom walk-through machine is the recommended model for the New Elk Mine. If height does not allow walk-through-style bolters, low-seam tilt-head bolters (LDDR class) will be utilized. Roof bolters can be converted to wet bolting at minimal cost and with lower ongoing maintenance costs, if necessary.

Figure 21-4. Example Rubber Tire-Mounted Bolter
(from Fletcher Mining Equipment 2010a)

It is assumed there will be two roof bolters assigned to each section. In addition, there will be one bolter assigned to the outby area for rehabilitation and construction work.

- Feeder Breaker: The shuttle cars dump coal into the belt-conveyor feeder breaker, which performs size reduction (generally to –8 inches) and regulate coal flow onto the section conveyor belt. The feeder breaker is assumed to be similar to that shown in Figure 21-5, a three-way-dump model, capable of accepting shuttle cars from any of three directions (front and both sides).

Figure 21-5. Example Three-Way Dump Feeder Breaker (from Joy 2010d)

It is assumed there will be one feeder breaker on each section, with an additional unit budgeted for outby use in construction and rehabilitation.

- Scoop: This utility machine is used for a variety of section jobs, including cleanup, hauling supplies to the roof bolter, pushing/cleaning faces/ribs, and aiding in construction of ventilation controls. With a hydraulic power takeoff, it can also power stopping sprayers, portable hydraulic drills, and other small equipment. The models assumed for use at NECC are MSHA-permissible, meaning they are approved to work inby the last open crosscut and in return air splits.

  It is assumed there will be two scoops per mining section and two designated for outby use (once the full mine capacity is reached). Figure 21-6 shows a typical battery-powered scoop suitable for work in the section. Outby scoops are expected to be diesel-powered.

Figure 21-6. Example Battery-Powered Scoop

- Auxiliary Fan: The main mine fan provides ventilation throughout the mine, from portal to last open crosscut. Inby the last open crosscut (near the production faces), there are special and additional ventilation requirements. These requirements can be provided by use of ventilation curtains or auxiliary fans. Auxiliary fans allow for better control of the ventilating circuit, particularly for controlling fugitive dust generated during the mining process.

  It is assumed the fans required for NECC are dual 100-horsepower models, self-tramming, powered by 950 VAC (Figure 21-7). These fans should be equipped with silencers and rock dusters to maintain rock dust in the return airways. There would be up to four fans assigned to each section. Note that when lower seam heights are being mined, ventilation curtains will likely be used *in lieu* of fans due to equipment clearance issues.

- MRS: As shown in Figure 21-8, an MRS is a crawler-mounted electro-hydraulic piece of equipment that supports the mine roof. It is used in place of traditional timbers during second mining (pillaring) operations. Generally, pillaring with MRS is more economical, safer, and more productive than pillaring with timbers.

Figure 21-7. Specified Self-Tramming Fan (from Spendrup Fan Co. 2009)

Figure 21-8. Example MRS (from Fletcher Mining Company 2010b)

- Other Support Equipment: Other equipment includes mantrips, bobcat/skid-steer loaders, mechanic's trucks, parts cars, etc. These are all itemized in Table 21-1.

21.1.3 Outby Equipment

The infrastructure in outby areas (not in producing section) of the mine includes roadways, piping, communication, and electrical systems. A comprehensive list of outby equipment is supplied in Table 21-1. Descriptions of some of the more important outby equipment follows:

- Bulk Rock-Dust System: It is a regulatory requirement that rock dust be applied throughout the mine as a means to mitigate the danger of explosion (coal dust is highly explosive). The industry standard, best practice for rock dusting, is the use of an automated feed system that allows large volumes of dust to be transported from the surface to the application area underground. The alternatives, hand dusting or the use of mobile pod dusters, are not economical in larger mines due to labor and efficiency considerations. As shown in Figure 21-9, a bulk rock-dust system consists of the following few key components:
  - A bulk storage tank on the surface that holds the inventory of dry rock dust.
  - A compressed air system that provides pneumatic power to transport the dust in pipelines.
  - Pressure tanks to receive and transfer rock dust throughout the mine.

- Pipelines to distribute and apply the rock dust. These lines are generally installed along conveyor belts, with hoses that can be extended into adjacent entries.

Figure 21-9. Automatic Rock-Dust System (from A. L. Lee Corporation 2010)

- Prime Movers: These diesel tractors are used for transporting all supplies into the mine, and bringing trash and used components back outside. Additionally, prime movers are used to relocate equipment underground.

  There are two of prime movers included in the project economics. They are assumed to be fifth-wheel-style tractors (Figure 21-10).

Figure 21-10. Example Fifth-Wheel Tractor (from Getman Underground Diesels 2010a)

- Trailers: Significant amounts of supplies must be delivered to the underground works, a large component of which are roof- and rib-support materials. Supply delivery will be accomplished through the use of trailers pulled by the prime movers. There are several types of trailers that will be utilized underground, including trailers for mine supplies,

gravel, concrete, trash (Figure 21-11), and mine equipment. Table 21-1 contains a complete itemized listing of all trailers included in the project economics.

Figure 21-11. Example Trash Trailer (from LeMar 2009)

- Road Grader: Underground road maintenance is very similar to surface road maintenance. Typically, a grader (Figure 21-12) is used as the primary tool, supplemented with gravel trailers, a road drag, and, in the worst areas, concrete placement.

Figure 21-12. Example Road Grader (from Getman Underground Diesels 2010b)

There is one road grader included, along with a gravel trailer, water trailer, concrete trailer, and salt spreader (for dust suppression).

- Miscellaneous Vehicles: There are a number of different vehicles required for operation of the mine. These include pickups, mantrips (Figure 21-13), lube trucks, group vehicles, belt trucks, etc. All of the vehicles used underground should be powered by diesel engines, and specified to meet stringent MSHA regulations.

- Other Outby Equipment: Table 21-1 lists a wide assortment of pumps, small equipment, mine monitoring and communications systems, personnel tracking systems, and other miscellaneous equipment. Safety-related equipment is also accounted for in Table 21-1.

Figure 21-13. Example Mantrip (from JBL Co 2010)

21.2 Ventilation Equipment

Providing adequate mine ventilation for the underground mine is critical to workplace health, safety, and worker efficiency. Mine ventilation is required to dilute the contaminant gases to safe levels. The contaminants of primary concern at the New Elk Mine are methane, diesel particulate matter (DPM), and dust. Methane emissions are expected to drive the dilution requirements. To minimize mine ventilation requirements with regard to DPM mitigation, production section equipment is assumed to be electric-powered to the extent practical. To optimize utilization, non-production support equipment is assumed to be diesel-powered.

Ventilation infrastructure currently in use at the New Elk Mine for rehabilitation, construction and production from the existing Allen slopes includes two exhausting fans. An SMJ Inc. model AFS 2.44 single-stage fan rated at 300 thousand cubic feet per minute (kcfm) is located on the East portals shaft. The East portals shaft is 14 feet in diameter, 400 feet deep, and is concrete-lined. The second fan is located at the West portal. The West portal fan is an SMJ Inc. model AFS 1.6-1/2 rated at 100 kcfm. The West portal shaft is 40 feet deep, 14 feet in diameter, and is not lined. The West portal fan will be replaced by a new high-pressure fan later in 2011.

A new fan will be purchased in 2011 and installed for ventilation at the Bates portals slopes. The existing Apache Canyon intake shaft #1 will be rehabilitated and used for intake air during mining of the central Blue seam central resource area starting in late 2012. The Apache Canyon intake shaft #1 is 16 feet in diameter, concrete-lined, and extends down approximately 400 feet to the Allen seam.

Air velocities in the mains should not exceed 1,200 feet per minute (fpm). The preferred velocity is 600 fpm (McPherson 2009). The belt is assumed to be on a separate split of fresh air. Leakage is estimated at 50%. Ventilation quantities required are listed in Table 21-2.

After 2013 through the end of the 20-year mine plan, the Bates Mine is expected to have all five super sections. An entry velocity maximum of 1,200 fpm equates to the number of entries required to carry the entire design quantity. As the air travels further into the mine, leakage occurs and the quantity is diminished. With diminished quantity, the velocity is also reduced to more manageable levels approaching 600 fpm, or the maximum recommended velocity to limit dust re-entrainment.

Table 21-2. Ventilation Quantities by Area

Area	Design Quantity (kcfm)
Single section	35
Super section	70
Shop	50
Pump power	5
Belt drive	5
Seal ventilation	100

The six intake and seven return entries, as included in the current mine design, will accommodate the airflow in districts with up to three super sections. A separate split of air will accommodate the additional super section. Splitting the air reduces the quantities and keeps the velocities within the recommended ranges.

As the mine works extend further from the original slopes and shafts, additional intake and exhaust shafts or slopes will be required to maintain minimum ventilation requirements. Mine advance will dictate when and where those surface connections are necessary. Early planning indicates that an exhaust shaft with a fan will be necessary in 2012. The capital cost of this shaft is estimated at $7,000 per foot for a depth of 536 feet, or $4.0 million. This shaft will also be equipped with emergency escape hoists at a cost of $250,000 each and a 1.0 million cubic feet per minute (cfm) fan with variable drive which is estimated to cost $2.5 million installed. An additional intake shaft will be required in year 2013 with an estimated capital cost of $4.0 million.

The main mine fans provide ventilation throughout the mine, from the portals to the last open crosscuts. Inby the last open crosscut, additional means of ventilation are required. This can be provided by ventilation curtains or auxiliary fans. Auxiliary fans allow for much greater control of the ventilating circuit, particularly as related to control of fugitive dust generated during the mining process; however, ventilation curtain must be used in areas that are too low to provide fan and tubing clearance. For costing, it is assumed that all face ventilation will be provided by ventilation curtains.

The conditions of the airways and, in particular, the methane gas emission rates influence the mine ventilation system. Assumptions for this preliminary evaluation are based on historical data and methane desorption data from coal cores. These assumptions cannot be verified until full production is established. AAI's investigation for this study has not revealed any ventilation issues that cannot be resolved with appropriate underground coal mine ventilation practices.

21.3 Personnel/Staffing Requirements

To develop this PEA, several assumptions were required, including:

- Work schedules
- Number of personnel
- Pay rates for hourly and salaried personnel

- Source and skill level of personnel
- Training requirements, both from a skills perspective and a safety perspective
- Ramp-up from mine startup to "normal" sustained production level

These issues are discussed below.

21.3.1 Work Schedules

The mine is essentially a 24-hours-per-day, 7-days-per-week operation in that there will be personnel working continuously. Production will occur 7 days per week. Once the mine reaches full production, the plant will also have to work 24 hours per day, 7 days per week.

There are various scheduling approaches that can be applied to achieve total coverage. The scheduling approach assumed is there will be 4 crews for each producing unit. At any given time, two of the crews will be working 12-hour shifts, one crew on dayshift and one crew on nightshift, while the other two crews are off.

21.3.2 Number of Personnel

It is assumed that most positions will be filled by the company's prime contractor employees although some management positions will be company employees. There will also be a few smaller contractors for such tasks as security monitoring, custodial work, water sampling, and seasonal work, such as pond cleaning.

Hourly Employees:

- Continuous Mining Section: The mining sections will consist of the following manpower (at the current level of detail, no differentiation is made between mains and panels):
  - Production crew (two per super section):
    - Bolter operators 4
    - Shuttle car operators 3
    - Miner operators 2
    - Miner helper/utility 2
    - Scoop/utility 2
    - Electrician/mechanic 2
  - Down-shift crew (one per section):
    - Bolter operators 2
    - Scoop/utility 4
    - Electrician/mechanic 4
- Belts:
  - All crews (five total):

        - Two belt men plus one additional belt man per crew per 10,000 feet of conveyor installed

- Supplies: Ramp-ups with number of production units to the peak shown below.

    - All crews (three total):
        - One employee per crew plus one employee per crew per 20,000 feet of mains/submains developed

- Roadway:

    - All crews (two total)
        - One grader operator
        - One additional person (gravel hauler, etc.)

- General Underground: Ramp-ups with the number of production units at the peak shown below.

    - All crews (five total)
        - Electricians 3
        - General utility/construction 6
        - Shop/rovers 2
        - Examiner/fireboss 3

- Outside:

    - All crews (five total)
        - Yardman 1
        - Electrician 1
        - Equipment operator 1
        - Hoistman 1

    - Plant (five crews once mine production reaches target level)
        - Operator 1
        - In-plant rovers 2
        - Belt press 1
        - Refuse truck 1
        - Refuse dozer 1
        - Raw coal stockpile/belts 1
        - Clean coal stockpile/belts 1
        - Truck loadout 1
        - Rail loadout 1

Salaried Employees: Ramp-ups with number of production units at the peak shown below.

- Mining:
  - Production crews 1 foreman per crew
  - Down-shift crews 1 foreman per crew

- General Underground:
  - Shift foreman 1 per shift
  - Maintenance foreman 1 per shift

- Management:
  - Vice president/general manager 1
  - Mine manager 1
  - Safety coordinator 1
  - Tech services manager 1
  - Mining coordinator 1
  - Maintenance coordinator 1
  - Electrical coordinator/engineer 1
  - Belt coordinator 1
  - Plant/surface coordinator 1
  - General mine foreman 1

- Planning:
  - Mining planner 1
  - Belt planner 1
  - Maintenance planner 1

- Safety and Training:
  - Safety technicians 2
  - Safety administrative assistant 1
  - Trainers 2

- Mine Monitoring System and Communications Center:
  - Mine monitoring technicians 5

- Engineering:
  - Ventilation/water/conveyor 1
  - Geology 1
  - Geotechnical/roof control 1
  - Environmental 1
  - Chief surveyor 1
  - Surveyor assistant 1
  - Draftsman 1

- Administrative Support:
  - Warehouse manager 1
  - Warehouse clerks 5
  - Human resources 2

- Purchasing 2
- Payroll 2
- Accounting 2
- Administrative assistant 2
- Lab 2

21.3.3 Pay Rates

In order to attract and keep skilled workers, it is assumed that the level of compensation at the New Elk Mine will be near the upper end of current western USA underground coal operations. There are two primary reasons for this assumption:

1. There is very little, if any, local experienced workforce.

2. It is necessary to offer a competitive pay package in order to attract and retain an adequate workforce

Hourly and salaried compensation assumptions are listed in Table 21-3. Benefits are not included in Table 21-3, and are calculated based on a "burden" of 40% for hourly employees and 50% for salaried personnel. This allows for a competitive level of benefits.

Table 21-3 contains the wage and salary assumptions input to the financial model. In addition to the pay rates listed, the following assumptions apply to the prefeasibility economic model:

- Overtime will average 12% of annual pay
- Hourly unpaid absenteeism rate is 5%

21.3.4 Source and Skill Level

In estimating labor skill level, it is necessary to evaluate the likely source of labor for the New Elk Mine. It is assumed that few experienced miners remain in the Trinidad area from earlier mining activities. Of those that do, only a small proportion may be qualified, as it is unlikely that they will have recent underground coal mining experience.

The nearest underground coal operations are the San Juan Underground Mine (BHP, Farmington, New Mexico) and King Coal (outside of Durango, Colorado). The compensation package at BHP is excellent, and it is doubtful NECC will attract more than a handful of experienced miners from that operation. King Coal is smaller and maintains what appears to be an experienced and loyal workforce.

In northwest Colorado, Twentymile Coal Company faces some longevity challenges, but its parent Peabody Energy has a replacement operation planned.

The North Fork of the Gunnison River Valley, encompassing Paonia and Somerset, Colorado, is currently home to three mines. It is possible that one or more of these mines will close or scale back production in the next few years. The most unlikely outcome would be a net

Table 21-3. Wage and Salary Assumptions

Position	Rate	Comments
Hourly	$28.00/hour	This rate will be used as the average for all hourly personnel. It includes shift differential consideration.
Salaried		
Vice president/general manager	$209,600/year	
Mine manager	$184,900/year	
Maintenance coordinator	$148,000/year	
Mining coordinator	$120,000/year	
Technical services coordinator	$120,000/year	
Health and safety coordinator	$ 85,000/year	
Electrical coordinator	$ 95,000/year	
General mine foreman	$100,000/year	
Belt coordinator	$ 90,000/year	
Plant/surface coordinator	$120,000/year	
Shift foreman	$ 90,000/year	
Underground foreman	$ 90,000/year	Average of face supervisors and outby
Electrical foreman	$ 85,000/year	
Maintenance foreman	$ 80,000/year	
Planner	$ 70,000/year	
Safety/training	$ 70,000/year	
Engineer/surveyors	$ 75,000/year	Average of all in department
Mine monitoring technicians	$ 45,000/year	
Human resources manager	$ 92,500/year	
Human resources assistant	$ 45,000/year	
Purchasing manager	$ 96,200/year	
Administrative manager	$ 90,000/year	
Accountant	$ 60,000/year	
Warehouse manager	$ 70,000/year	
Warehouse clerk	$ 35,000/year	
Payroll	$ 35,000/year	
Administrative assistant	$ 40,000/year	

expansion in the North Fork Valley area. Thus, it is likely the New Elk Mine will be able to attract some number of experienced miners from this area, assuming competitive compensation is offered.

Carbon and Emery Counties in Utah contain several mature coal mines. By the 2012–2013 timeframe, it is very likely additional mine closures in this area will occur. There are only two properties with potential to absorb displaced miners locally in the near term. The most likely scenario is for the New Elk Mine to be able to attract some personnel from Utah, but not in any great numbers. The existence of two large power plants in Emery County suggests Utah production will remain relatively stable.

An unknown factor in the labor picture is the trona mining district near Green River, Wyoming. This area has undergone several periods of expansion and contraction since multiple producers opened operations in the 1970s. For purposes of evaluating the trona mines as a source of, or competitor for, labor, the assumption is that the employment levels in trona will remain relatively stable in the future.

In summary, the New Elk Mine should be able to count on attracting some experienced personnel from various areas. The majority of personnel, however, are likely to be local inexperienced labor, and consequently, a great deal of expense has been included in the scoping study for training purposes.

21.3.5 Training Requirements

It is likely NECC will face a significant training need as it staffs the underground mine. The BHP San Juan Mine in New Mexico began operations in 2001 with 72% of its workforce inexperienced in underground mining. Today, San Juan is operating at its budgeted level of production. This required well-engineered mine plans and infrastructure, and a massive and well-planned training effort.

Purely from a skills perspective, it is assumed that two-thirds of the employees will have to be trained in basic mining, and all employees will need to be trained in specifics of NECC's mining plans. This training is assumed to take many forms, including classroom and hands-on training in the mine. This will result in a significant investment in time and cost.

Staffing and funding have been provided for in the project economics to attain a high level of safety and skills training at NECC. Details are discussed below:

- Safety and training staffing: It is assumed that a total of six persons will be recruited for the safety department. This includes two full-time trainers.

- Training tools: An initial investment of $300,000 has been included in the first 3 years of operation (at $100,000 per year) to acquire the necessary tools for intensive training. This will include training materials and training equipment.

- Hands-on Training: The production ramp-up schedule has been intentionally lengthened to allow skilled operators to work side-by-side with trainees to achieve training without the overbearing pressure of high production targets.

21.3.6 Ramp-up

There are several reasons new mines do not immediately achieve budgeted production. The most common of these are:

- Equipment start-up problems
- Equipment not matched to mining conditions
- Unfamiliarity with mining conditions
- Personnel skills
- Management culture/leadership

Normally, equipment-related start-up problems are overcome within the first 1–3 months of operations, if the proper equipment is selected. Conditions-related problems can last longer,

sometimes 3–4 months, as operators gain familiarity with certain factors related to depth of cut, roof-bolter drill speed, alternate roof support methods, rib sloughage, etc.

Personnel-related issues are most commonly addressed by placing the most skilled operators on equipment to gain the highest immediate production rate. Less skilled or unskilled employees basically learn by watching, which takes considerable time and often leads to exposing those employees to unfamiliar surroundings with little guidance. Poor safety performance almost always results.

The start-up methodology recommended for NECC includes intensive classroom training before the underground operation starts, followed by a "training friendly" hands-on program. Specifically, trainees will operate equipment with skilled operators at their side. Production will suffer in the short term; however, safety performance will be enhanced. AAI considers this form of training critical for two main reasons:

- There will not be experienced underground coal miners available to meet NECC's aggressive ramp-up schedule.

- The enforcement mindset of the MSHA, already difficult for a new mine with inexperienced personnel, is undergoing a dramatic revision where significantly greater penalties will be applied, and plan approvals will be subjected to inclusions restricting productivity.

The ramp-up schedule proposed represents a reasonable case when the recommended safety and skills training is taken into consideration. The ramp-up schedule is as follows:

- 1st month—Production is 25% of full production
- 2nd month—Production is 50% of full production
- 3rd month—Production is 75% of full production
- 4th month—Production is 100% of full production

It should be noted that this schedule applies to each new unit that enters production.

21.4 Operating Costs

This section discusses the assumptions from which the operating costs were generated for the PEA.

21.4.1 Sources

There are several methods for calculating operating costs:

- Calculated Values from Engineered Designs: This applies to items for which the usage can be reasonably estimated based on productivity or foot of advance. Basic roof support costs fall into this category. Wherever possible, this is the preferred method of cost determination.

- Estimated Cost Extrapolated from Historical Costs of Similar Operations: Where usage cannot be accurately estimated, the actual unit costs from similar operations are used. Adjustments are made for dissimilar conditions. An example of this type of cost is rock dust.

- Estimated Costs Allowances: There are some circumstances where engineering calculations or similar mine costs are not directly applicable to the anticipated mining environment at the New Elk Mine. In these cases, engineering judgment and the experience of the authors were used to estimate cost.

21.4.2 Operating Cost Assumptions

The inputs for the initial cost estimation process for NECC are presented below, along with the basis for the estimate. These items form the cost inputs into the economic model.

The per ton costs shown in Table 21-4 represent the mine's projected operating and maintenance costs excluding the receding face category and roof support. All costs shown in Table 21-4 were estimated based on unit costs from similar operations.

Table 21-4. Projected Operating and Maintenance Costs
(excluding the receding face category and roof support)

Category	Cost per Ton
Rock dust	$0.09
Gravel	$0.03
Dust suppression	$0.02
Power	$0.59
Fuel	$0.09
Oil and lubricants	$0.14
Bits	$0.09
Trailing cables	$0.45
Conveyor maintenance	$0.14
Tools	$0.05
Safety equipment (personal protective equipment)	$0.02
Ventilation tubing	$0.05
Water hose	$0.05
Continuous miner maintenance	$0.27
Shuttle car maintenance	$0.23
Roof-bolter maintenance	$0.14
Feeder-breaker maintenance	$0.02
Miscellaneous section maintenance (scoops, bobcats, etc.)	$0.05
Outby maintenance costs (diesel equipment, electrical system, etc.)	$0.45
Miscellaneous costs (signs, sanitary facilities, consumables, etc.)	$0.09

Per unit costs for receding face items are summarized as follows:

- Mine monitoring system cable, communications cable, pager cable, lifelines: Cost is $10.00 per foot, with an assumed reuse factor of 80%.

- High-voltage cable (4/0): $22.00 per foot, reuse of 98% assumed.

- High-voltage cable couplers: Cost $1,400 each, two are needed per 1,000 feet of cable. Reuse of 98% assumed.

- Rock dust pipe: Cost is $4.00 per foot installed, including all appurtenances. Reuse of 80% assumed.

- Rock dust tank: Cost is $25,000 each, complete. Two tanks are spaced every 3,500 feet, making the cost equal to $14.29 per foot of advance. Reuse of 100% assumed.

- Compressed air pipe: Cost is $33.00 per foot installed for 8-inch aluminum pipe in the mains, and $29.50 per installed foot of 6-inch line in the panels. Reuse of 80% assumed.

- Conveyor belt: Cost is $161.00 per foot of advance for 60-inch belt (mains, other than slope belt) and $130 per foot for 48-inch belt (sections). Note that 2 feet of belt is required per foot of advance. Reuse of 95% assumed.

- Conveyor structure: Cost is $92.00 per foot for 60-inch structure (mains) and $75.00 per foot for 48-inch structure (section). Reuse of 95% assumed.

- Water supply pipe: Cost is $34.00 per foot for mains (8-inch pipe complete) and $22.90 per foot in the panels (4 inches). Reuse of 80% assumed.

- Discharge water line: Cost is the same as for freshwater pipe. Reuse of 80% assumed.

- Overcasts: Cost is $8,000.00 each. There is an average of six overcasts at every intersection of the mains with a section. Additional overcasts are associated with some of the shaft locations. For costing purposes, the average panel length is assumed to be 5,000 feet, yielding an overcast cost factor (new) of $9.60/foot. Assuming an average life of seven installations, yields a reuse factor of 86%.

- Stoppings: Main-line entries will have permanent block stoppings installed. All other areas will be provided with reusable Kennedy stoppings. Costs are estimated at $1,200 for a Kennedy stopping and $500 for a block stopping. There are four stoppings per crosscut in the mains; assuming 75-foot centers, the cost is $27 per foot. Assuming three stoppings per crosscut in panels, with a crosscut spacing of 75 feet, the cost per foot of advance is $48. Assuming an average life of seven installations yields a reuse factor of 86% for the Kennedy units.

The above items combine to form the receding face cost category. Based on estimates of reusage of these items, the estimated cost per ton for each of four scenarios (always new items in the mains and panels, reused items in the mains and panels) is summarized in Table 21-5.

Table 21-5. Summary of Receding Face Costs

Item	Mains (New) (per foot)	Mains (Reused) (per foot)	Panel (New) (per foot)	Panel (Reused) (per foot)
Communications cable	$10.00	$2.00	$10.00	$2.00
High-voltage cable and couplers	$24.80	$0.50	$24.80	$0.50
Rock-dust pipe	$4.00	$0.80	$4.00	$0.80
Rock-dust tank	$14.29	-	$14.29	-
Compressed air pipe	$33.00	$6.60	$29.50	$5.90
Belt	$161.00	$8.05	$130.00	$3.25
Structure	$92.00	$4.60	$75.00	$4.50
Water pipe	$34.00	$6.80	$22.90	$4.58
Discharge pipe	$34.00	$6.80	$22.90	$4.58
Overcasts	-	-	$9.60	$1.34
Stoppings	$27.00	$3.78	$48.00	$6.72
Total cost per foot	**$434.09**	**$39.93**	**$390.99**	**$34.17**

Roof support at the New Elk Mine can only be roughly estimated at this time because of insufficient geotechnical and lithologic data over much of the resource area. However, based on what is known, a conservative approach to roof support has been taken (i.e., robust roof support has been assumed). Over the life-of-mine, roof support represents the largest single development cost item. The cost for roof support has been estimated based on engineering design assumptions as described below.

- Primary roof support will consist of 4- or 5-foot fully grouted bolts. These bolts will be installed four per row. Rows will be spaced from 4 feet to a maximum of 5 feet apart. The bolt lengths represent the most common usage in the Blue and Maxwell seams. Due to the presence of a rider seam above the Allen seam, and known roof control issues in past Allen and Maxwell seam mining, bolt length will be selected based on prevailing conditions and test hole observations. Relevant units costs are bolt ($4.30 to $5.36), plate ($1.39), and resin ($1.84).

- Every row of bolts will be installed with a steel strap. The cost per strap is $19.50.

- An average 20% of the total roof area will be meshed during the bolting process. A section of mesh is estimated to cost $29.42.

- No truss bolts will be installed.

- No rib bolting or meshing is currently contemplated.

- There is a 10% allowance in costing to account for material wastage, rehabilitation expense for primary support, and sporadic use of longer and/or more robust support.

The total roof bolting cost per foot of mining (as opposed to feet of advance) is calculated as $15.00 to 16.10. The cost per clean ton will vary due to recovery and mining height; however, the overall average cost is approximately $2.07 per clean ton.

21.4.3 Equipment Overhauls

A simple equipment overhaul and replacement schedule has been assumed for the New Elk Mine. All exchange and overhaul costs are assumed to be a percentage of original new prices, based on experience at other mines with similar machinery. This percentage varies by machine. Some representative examples are given below:

- Continuous Miners: Rebuild at 1 million tons for 60% of original cost and replace at 2 million tons.
- Shuttle Cars: Rebuild at 0.75 million tons at 60% of original cost and replace at 1.5 million tons.
- Roof Bolters: Rebuild after 5 years of service at 60% of original cost. Replace 3 years after the rebuild.
- Feeder Breakers: Rebuild after 5 years of service at 40% of original cost. Replace 5 years after rebuild.
- Scoops: Rebuild every 3 years at 60% of original cost; replace every 12 years.
- MRS: Rebuild every 8 years at 60% of original cost; do not replace.
- Bobcats/Skid-steers: Rebuild every 5 years at 60% of original cost; replace every 10 years.
- Mobile Diesel Equipment (vehicles): Replace equipment used on multiple shifts every 3 years, all other equipment every 5 years.
- Power Centers: Rebuild every 10 years at 40% of original cost.
- Auxiliary Fans: Rebuild every 5 years at 40% of original cost; replace every 10 years.
- Fifth-Wheel Tractor: Rebuild every 3 years at 60% of original cost and replace at 9 years.
- Road Grader: Rebuild every 5 years at 40% of original cost and replace at 10 years.

22.0 ECONOMIC ANALYSIS

22.1 Economic Model

The economic model was developed using Excel™ to calculate projected free cash flows from basic inputs related to projected mine revenues from coal sales and projected mine costs from labor, materials, consumable items, energy and utilities, maintenance and parts, capital expenses, and all statutory royalties and taxes. To the extent possible, information obtained directly from mine equipment and material suppliers has been utilized. In those cases where direct information was unavailable, AAI has used its expertise in the industry and engineering estimates to arrive at suitable inputs to the model. AAI checked these inputs against historical operating cost data from other mines in the region to the extent it was available on a non-confidential basis and applicable to the proposed mine operations at New Elk Mine.

The purpose of the model is to determine projected mine cash flow, cash production costs, and economic feasibility of the coal resources held by NECC and proposed to be exploited by the New Elk Mine Project. Accordingly, the model's primary focus is calculation of earnings before interest, taxes, and depreciation. Royalty calculations are approximations made based on known federal and state taxes and royalty rates. Although AAI believes the model to be correct in all material respects, it has not been audited by a Certified Public Accountant in Colorado, nor has it been audited by any accountant with equivalent certification from another legal jurisdiction. The model is an operating and engineering estimate made by engineering and mine operating professionals.

The economic model results are detailed in Table 22-1. The analysis indicates the project having a payback period of 1.74 years, producing positive cash flow in 2012, and results in the mine being economic from a financial and engineering standpoint. The economics of a merchant metallurgical coal operation are more robust than of a thermal coal operation. This is expected as metallurgical coal enjoys a substantial price premium over thermal coal during periods of average or better-than-average steel and coke markets; currently, steel and coke are enjoying some of the stronger markets in recent history.

On July 3, 2012 Cline announced that it is revising and optimizing the operations of the NECC to include longwall mining. As part of this process, updated production, cost guidance and project economics will be developed.

22.2 Cash Flow Projections and Financial Analysis

The financial analysis includes NPV and IRR calculations, as well annual cash flow analysis. The common industry discount rate of 10% was assumed for the NPV calculations. This rate is utilized to discount the projected pre-taxation free cash flow (total cash flow from [to] the mine, including capital expenses, but excluding costs of financing) of the mine through its life (while resources are substantially more, mine life is assumed to be 20 years in this analysis) to obtain a projected NPV for the New Elk Mine Project. The pre-tax NPV obtained with this method represents the value of the mine as an enterprise; financing cash flows are

Table 22-1. Economic Model*

Mine Plan Year		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Total ROM short tons (ROMt)			636	5,000	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	5,455	103,818
Total clean short tons (CCt)			350	2,750	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	57,100
Price Free-on-Rail (FOR) per short ton			$193	$160	$136	$121	$120	$121	$122	$128	$135	$141	$143	$141	$141	$140	$140	$140	$140	$140	$140	$140	139.09
Total Revenue			**67,455**	**440,000**	**409,091**	**362,727**	**360,000**	**362,727**	**365,455**	**384,545**	**406,364**	**422,727**	**428,182**	**422,727**	**422,727**	**420,000**	**420,000**	**420,000**	**420,000**	**420,000**	**420,000**	**420,000**	**7,794,727**
On-Site Costs	$/ton																						
UG coal mining			$24,383	$86,127	$83,946	$82,656	$83,831	$85,919	$83,588	$81,171	$80,195	$79,759	$79,832	$80,829	$82,799	$81,888	$78,153	$82,940	$83,431	$82,920	$82,652	$80,937	$1,587,955
Receding face cost			$6,056	$13,411	$1,700	$1,450	$4,530	$6,552	$13,293	$1,318	$2,244	$1,847	$1,031	$1,009	$1,692	$1,624	$555	$1,549	$1,594	$2,239	$2,989	$988	$67,672
Equipment rebuild/ overhaul cost				$5,674	$12,031	$6,671	$1,812	$11,763	$11,816	$2,963	$6,326	$15,810	$17,137	$6,874	$5,682	$12,933	$10,876	$8,888	$4,675	$9,500	$12,983	$12,983	$177,399
General and admin (ROMt)	$0.09		$58	$455	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$9,438
Surface consumables (ROMt)	$0.09		$58	$455	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$9,438
Reclamation fees (CCt)	$0.14		$48	$375	$409	$409	$409	$409	$409	$409	$409	$409	$409	$409	$409	$409	$409	$409	$409	$409	$409	$409	$7,786
Preparation and loading			$7,585	$17,970	$18,615	$18,615	$18,615	$18,615	$18,615	$18,615	$18,615	$18,615	$18,615	$18,615	$18,615	$18,615	$18,615	$18,615	$18,615	$18,615	$18,615	$18,615	$360,622
Property and other taxes (ROMt)	$0.16		$104	$818	$893	$893	$893	$893	$893	$893	$893	$893	$893	$893	$893	$893	$893	$893	$893	$893	$893	$893	$16,988
Permitting (ROMt)	$0.02		$13	$100	$109	$109	$109	$109	$109	$109	$109	$109	$109	$109	$109	$109	$109	$109	$109	$109	$109	$109	$2,076
Property and liability insurance			$25	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$975
Utilities (ROMt)	$0.09		$58	$455	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$9,438
Reclamation (ROMt)	$0.05		$29	$227	$248	$248	$248	$248	$248	$248	$248	$248	$248	$248	$248	$248	$248	$248	$248	$248	$248	$248	$4,719
Other cash costs (ROMt)	$0.09		$58	$455	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$496	$9,438
Equipment leases			$250																				$250
Jansen and Right-of-way Lease rate (/CCt)	$0.45		$159	$1,250	$1,364	$1,364	$1,364	$1,364	$1,364	$1,364	$1,364	$1,364	$1,364	$1,364	$1,364	$1,364	$1,364	$1,364	$1,364	$1,364	$1,364	$1,364	$25,955
Rail Loading (CCt)	$0.95		$334	$2,625																			$2,959
Short Line Rail Cost (CCt)	$2.73				$8,182	$8,182	$8,182	$8,182	$8,182	$8,182	$8,182	$8,182	$8,182	$8,182	$8,182	$8,182	$8,182	$8,182	$8,182	$8,182	$8,182	$8,182	$147,273
Trucking (CCt)	$3.18		$1,114	$8,750																			$9,864
Total On-Site Costs			**$40,331**	**$139,195**	**$129,530**	**$122,629**	**$122,026**	**$136,087**	**$140,550**	**$117,304**	**$120,617**	**$129,268**	**$129,852**	**$120,565**	**$122,025**	**$128,298**	**$121,436**	**$125,230**	**$121,553**	**$126,511**	**$130,477**	**$126,761**	**$2,450,245**
Costs Per CCt			$115.23	$50.62	$43.18	$40.88	$40.68	$45.36	$46.85	$39.10	$40.21	$43.09	$43.28	$40.19	$40.68	$42.77	$40.48	$41.74	$40.52	$42.17	$43.49	$42.25	$42.91
Off-Site Costs	$/CCt																						
Royalties (coal properties) CCt FOR	8.00%		$5,396	$35,200	$32,727	$29,018	$28,800	$29,018	$29,236	$30,764	$32,509	$33,818	$34,255	$33,818	$33,818	$33,600	$33,600	$33,600	$33,600	$33,600	$33,600	$33,600	$623,578
NECC royalty $/CCt FOR	$0.82		$286	$2,250	$2,455	$2,455	$2,455																$9,900
Colorado severance tax (CCt)	$0.35			$494	$580	$580	$580	$580	$580	$580	$580	$580	$580	$580	$580	$580	$580	$580	$580	$580	$580	$580	$10,941
Sales commissions % of sales	2%		$1,349	$8,800	$8,182	$7,255	$7,200	$7,255	$7,309	$7,691	$8,127	$8,455	$8,564	$8,455	$8,455	$8,400	$8,400	$8,400	$8,400	$8,400	$8,400	$8,400	$155,895
Corporate Administration			$1,000	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$29,500
Total Off-Site Costs			**$8,032**	**$48,244**	**$45,444**	**$40,808**	**$40,535**	**$38,353**	**$38,626**	**$40,535**	**$42,717**	**$44,353**	**$44,899**	**$44,353**	**$44,353**	**$44,080**	**$44,080**	**$44,080**	**$44,080**	**$44,080**	**$44,080**	**$44,080**	**$829,813**

Table 22-1. Economic Model* *(concluded)*

Mine Plan Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Costs per CCt		$22.95	$17.54	$15.15	$13.60	$13.51	$12.78	$12.88	$13.51	$14.24	$14.78	$14.97	$14.78	$14.78	$14.69	$14.69	$14.69	$14.69	$14.69	$14.69	$14.69	$298.34
TOTAL: On-Site + Off-Site Costs		**$48,362**	**$187,439**	**$174,974**	**$163,437**	**$162,561**	**$174,440**	**$179,176**	**$157,839**	**$163,334**	**$173,621**	**$174,751**	**$164,918**	**$166,378**	**$172,379**	**$165,517**	**$169,311**	**$165,633**	**$170,592**	**$174,557**	**$170,841**	**$3,280,059**
Costs per CCt		$138.18	$68.16	$58.32	$54.48	$54.19	$58.15	$59.73	$52.61	$54.44	$57.87	$58.25	$54.97	$55.46	$57.46	$55.17	$56.44	$55.21	$56.86	$58.19	$56.95	$57.44
EBITDA		**19,092**	**252,561**	**234,117**	**199,290**	**197,439**	**188,287**	**186,278**	**226,706**	**243,030**	**249,107**	**253,431**	**257,809**	**256,349**	**247,621**	**254,483**	**250,689**	**254,367**	**249,408**	**245,443**	**249,159**	**4,514,669**
Capital																						
Continuous miner section equipment		$32,943	$9,109	$1,456	$9,947	$19,118	$7,162	$693	$12,403	$18,955	$5,109	$10,268	$9,673	$18,392	$393	$4,351	$19,629	$19,170	$308	$2,518	$2,518	**204,113**
Outby equipment (includes rehab/ exploration /seals)		$15,705	$6,012	$8,764	$514	$448	$12,621	$438	$325	$247	$1,500	$1,168	$525	$1,844	$325	$869	$498	$467	$10			**52,280**
Underground conveyors		$16,459	$14,403				$10,820	$10,820														**52,502**
Underground conveyor support equipment		$393	$9		$73		$113	$8	$73				$178				$73		$105			**1,027**
Working capital (warehouse inventory)		$1,049		$525																		**1,574**
Safety equipment		$888	$211	$150	$226	$84	$84	$108	$98	$97	$45	$206	$86	$85	$109	$98	$99	$45	$206			**2,925**
Surface and plant equipment		$27,542	$58,283	$21,183	$12,591	$33,586	$12,030	$5,218	$15,175	$4,536	$673	$10,239	$13,058	$2,864	$5,617	$4,537	$6,705	$4,676	$7,878	$1,337	$1,337	**249,062**
CAPITAL COST		**$94,978**	**$88,027**	**$32,078**	**$23,351**	**$53,236**	**$42,829**	**$17,286**	**$28,075**	**$23,835**	**$7,327**	**$21,879**	**$23,519**	**$23,184**	**$6,445**	**$9,854**	**$27,005**	**$24,359**	**$8,507**	**$3,855**	**$3,855**	**$563,483**
Project Pre-Tax Cash Flow	***(Actual Cost)*** **($46,677)**	**($75,886)**	**$164,533**	**$202,040**	**$175,939**	**$144,203**	**$145,458**	**$168,992**	**$198,632**	**$219,195**	**$241,780**	**$231,552**	**$234,291**	**$233,165**	**$241,177**	**$244,629**	**$223,685**	**$230,008**	**$240,902**	**$241,588**	**$245,304**	**$3,904,509**
Cumulative Cash Flow	**($46,677)**	**($122,563)**	**$41,970**	**$244,010**	**$419,949**	**$564,152**	**$709,610**	**$878,602**	**$1,077,234**	**$1,296,429**	**$1,538,208**	**$1,769,760**	**$2,004,051**	**$2,237,216**	**$2,478,392**	**$2,723,021**	**$2,946,706**	**$3,176,715**	**$3,417,616**	**$3,659,204**	**$3,904,509**	**$3,904,509**

*Quantities are expressed in 1,000s, unless otherwise specified.

Red indicates negative cash flow values.

excluded as the goal is to evaluate the asset on the basis of its industry as opposed to capital structure.

The NPV calculation is based on year 2011 and applies the discount rate to the prior year expenditures. The IRR is calculated to be the discount rate that produces a zero 2011 NPV for the projected cash flow. The year 2010 cash flow (cost) was carried forward at a 10% rate for this calculation.

Table 22-2 summarizes the assumed discount rate (r_i) and the resulting pre-tax IRR and NPV for the project.

Table 22-2. Pre-Tax Cash Flow Summary

Case	r_i	IRR	NPV
Merchant Metallurgical Coal Sales	10%	98%	$1,383,000,000

As discussed previously, the New Elk Mine Project appears to be an economic resource and mining project when analyzed on an economic basis appropriate to the industry in which the mine and its output is utilized.

The PEA is preliminary in nature and includes approximately 250,000 tons of inferred resources that are considered too geologically speculative to have economic considerations applied to them that would enable them to be categorized as mineral reserves. There is no certainty that the PEA will be realized.

22.3 Project Risks

The following risks could impact project economics:

- **Coal Sales Price**—The coal sales pricing assumed for the project revenue was taken from a study completed specifically for NECC by Wood Mackenzie, Inc. in April of 2011. As with all pricing projections, accuracy decreases with time. The length of this project analysis and the Wood Mackenzie coal price projections cover a 20-year period. There is some risk that the price of NECC coal, and consequently revenue, will be less than assumed.

- **Mining Conditions**—Inspection and testing of the site exploration rock core and associated data indicate that the mine roof and floor conditions associated with the coal seams targeted for mining are within the lower range of rock quality generally considered acceptable for productive mining. A reasonable amount of ground reinforcement was included in the projections for predicted mining conditions. If the ground conditions encountered during mining are worse than predicted, either locally or across large areas currently projected for mining, are worse than anticipated, consequences could include: (1) higher mining costs, (2) increased amounts of rock mixed with the produced coal that will have to be separated during the coal preparation process, resulting in higher

preparation costs and possibly a reduction in the preparation plant capacity, (3) reduced productivity, and (4) lost resource.

- **Qualified Personnel**—The mine plan production assumptions for 2011 and 2012 require NECC to hire a significant number of qualified personnel for key labor and management positions. Generally, there is a shortage of mining personnel in the USA, but availability can vary depending on the hiring/layoff activities of other mining operations. If an adequate number of qualified personnel are not available during NECC's production ramp-up period, there may be additional costs associated with attracting qualified personnel or the ramp-up period may be extended while less experienced personnel are trained.

- **MSHA Plan Approvals**—The mine plan production schedule assumes that NECC will receive timely approvals for the multiple plans that MSHA must approve prior to various future phases of the ramp-up plan and for future special construction activities. Initial plans have been approved; however, long review/approval times have delayed some startup activities.

- **State of Colorado DRMS Approvals**—The mine plan production schedule assumes that NECC will receive timely approval of the environmental permits required from the DRMS to allow mining of the areas included in the mine plan footprint. NECC has the required permits for the earliest mining area and has submitted or has a schedule plan for submitting the additionally required permits to the DRMS; however, as with all environmental regulatory issues, there is some risk in receiving timely approvals.

- **Gas Wells**—More than 200 gas wells, owned and operated by two companies, are operating in or close proximity to the projected mining footprint. Some of the wells can be avoided, however it is assumed that the majority will have to be purchased and plugged prior to mining within 1,000 feet. RRR (2011) conducted an investigation and provided a preliminary valuation of the fair market value for each of the gas wells. The RRR estimated fair market value for each of the gas wells that must be purchased was included in the project economics. The legal obligation and willingness of the gas companies to negotiate is unknown (but in AAI's opinion this is low risk) and the actual payoff costs to gas companies may be higher than assumed.

- **Water Supply**—NECC has water rights agreements for approximately 50% of their estimated full production annual water consumption requirements. NECC has had discussions with the owner of additional local water rights that, with an appropriate water storage plan (some of the water rights are seasonal), should provide the remaining water requirements. The estimated cost for acquiring the additional water rights and building adequate water storage capacity is included in the costs. There is a risk that acquiring the required water rights will take more time or cost more than assumed. Insufficient water availability would limit annual production. This risk is considered low.

- **Coal Quality**—Production of consistent B-quality metallurgical coal is assumed and expected, but not guaranteed. Bulk coal sampling and testing is planned to confirm coal quality. This is a low technical risk that could impact marketability and pricing.

- **Truck Haul from Mine-to-Jansen Yard**—It is assumed that in 2012, clean coal will be trucked approximately 24 miles from the mine site to the Jansen Yard located in Trinidad, Colorado. After 2012, it is assumed the coal will be loaded into railcars at the mine site. NECC has CDOT permits in place that allow 3 million tons per year (MTPY) truck hauling over the public roads. High-volume truck traffic is expected to be tolerated by the local community in the short term, but could face county-level restrictions in the long term if the mine-to-Jansen rail cannot be completed in the planned timeframe.

23.0 ADJACENT PROPERTIES

NECC is the only active development property in the district.

Coal properties adjacent to the New Elk Mine Property are controlled by a variety of owners, predominately XTO, the Federal government (BLM), and the DOW. These DOW and XTO properties were at one time owned or leased by predecessor owners of the New Elk Mine property.

There are no known limitations on the adjacent properties that would impede mining operations for the New Elk Mine project. The Golden Eagle Mine was to the east of the New Elk Mine and is abandoned, sealed, and reclaimed. The New Elk Mine's old works extend west of the main portal site (the East portals) and are near the Allen seam outcrop. No significant mineable resources are to the west of the East portals site. Mineable resources exist beyond the northwest, north, east, and south boundaries of the property, and immediately north of the Secora Ranch.

Surface properties adjacent to the mine portal site are owned by private landowners and the State of Colorado. NECC will have to negotiate with some of the adjacent surface property owners to construct water storage reservoirs, remote air shafts, and any power or communication lines that may need to be constructed to access remote air shafts or miner tracking communications. Permission is required from landowners to conduct exploration drilling and collect environmental baseline data for permitting.

24.0 OTHER RELEVANT DATA AND INFORMATION

The New Elk Mine is a brownfield underground mine and portal site that is currently being reactivated. The existing underground mine is the old Allen Mine originally developed by CF&I and later renamed the New Elk Mine. NECC has rehabilitated the East portals slopes (belt conveyor and supply track) to use as the initial access to the Apache seam and nearby remaining minable resources in the Allen seam. The East portals return air shaft has been reactivated, a drainage borehole and pump system has been installed, and dewatering of the old works sufficient to access the coal seam has been completed.

Slope access to the Blue seam was completed in 2011 via the new Bates portals and slopes east of the existing East portals. Longer term plans may include connecting to the Red, Maxwell, Apache and, Allen seams through the Bates portals.

As of the effective date of this Technical Report, NECC has developed mains off the East portals slopes in the Apache seam above portions of the old Main South works in the Allen seam and ramped down to the Allen seam. Mains development is underway in the Allen and Blue seams. Major revisions to the DRMS permit have been submitted to expand the mine permit boundary and allow for additional coal removal. Expansion beyond the current PR02 boundary (4,198 acres) by an additional 1,618 acres is pending under PR04.

The 1,346-acre Secora Ranch property was acquired in 2012, is in close proximity to the coal preparation plant, and has adequate refuse storage capacity for more than 20 years production at the currently projected production rate.

Opposition to the permit revisions is anticipated to be minimal, as the local area is seeking good paying jobs. The typical environmental protests that are common to all mining permitting or other mining activities are expected, but are not likely to succeed in blocking the permit modifications.

The BLM coal lease applications have been submitted by NECC. It is anticipated that the BLM will ultimately decide in favor of leasing, but the outcome cannot be assured. NECC has access and sufficient property to modify the mine plan if the BLM leases are not obtained. If the BLM decides to lease the tracts nominated, it will be a competitive bidding process. No reasonable access is available for these BLM tracts other than via NECC-controlled property.

The eastern portion of the Allen Mine reportedly had poor roof conditions in several headings, and these headings were stopped at various times from the late 1960s to the early 1980s. Maps, scaled 1 inch = 200 feet, show that numerous roof falls and faults existed in the eastern portion of the mine. Roof control methods and materials have improved since the Allen Mine was operated in the 1980s. Additional exploration and geotechnical testing was completed by NECC between 2010 and 2012, and continues in 2012 for evaluating the most effective roof support techniques.

The rail line from the Property's main portal site to near Trinidad was removed in 2004 by then-owner Kern Valley Railroad Company (KVRR). KVRR owns the Jansen Yard coal loadout facility and 2 miles of track between Mile Posts 0.0 and 2.0 that was not removed in 2004. The Jansen Yard connects with the BNSF mail line track in Trinidad. NECC entered into a Coal Storage and Loading Facility Agreement with KVRR on September 28, 2010, to operate the Jansen Yard for storing and loading New Elk coal. On September 1, 2011, NECC entered into a lease agreement with American Trails Association and KVRR securing NECC's control of the railroad right-of-way between Mile Posts 2.0 and 15.0 for purposes of reinstalling a rail line between the Property and Jansen Yard.

25.0 INTERPRETATION AND CONCLUSIONS

25.1 Interpretation

There have been sufficient data obtained through historical mining and past and contemporary exploration programs to support the geologic interpretations of seam structure and thickness for the New Elk Mine Property. The eight coal seams evaluated as of the effective date of this Technical Report are the Green, Loco, Blue, Bing Canyon Upper, Red, Maxwell, Apache, and Allen seams. These eight seams are of sufficient quality to be marketed as metallurgical, PCI, or thermal coal.

The determination of the coal resource was completed using Carlson Mining 2011 Software© mine planning software. Additional coal resources exist beyond the Property boundaries.

No reserves have been determined as no supporting Preliminary Feasibility Study or Feasibility Study has been conducted for the New Elk Mine project.

25.2 Conclusions

All mine production will have to be washed to make a saleable product. The coal is near or at the lower limit of the high-volatile coal ranking. FSI variances and ash content may preclude some the coal from being classified as a premium hard coking coal; however, the coals in this area have been used for many years to make coke. The coal will make a good blend coal and PCI coal. It also would make a good, compliant, high-Btu thermal coal.

The mine plan geology shows that in-seam rock partings are variable in thickness and location, and average as low as 23% of the ROM material in the Allen seam and as high as 45% of the ROM material in the Loco seam, excluding out-of-seam dilution. Actual plant yield will vary depending upon actual production unit sequencing relative to the overall mine, out-of-seam dilution required for equipment clearance and near-seam weak rock that must be mined with the coal.

26.0 RECOMMENDATIONS

Specific recommendations for a phased development of the New Elk Mine project are:

1. Complete a comprehensive prefeasibility study for the New Elk Mine project. This study should include the full property area as described in Section 4 and shown on Figure 4-2. A prefeasibility study should include an updated coal market analysis based on the additional coal quality testing results.

2. Continue the infill exploration drilling on the DOW Lease.

3. Construct a depositional geologic modeling to assist in determining the roof and floor conditions and aid in creating a geologic hazard map of the property for feasibility evaluation.

4. Collect bulk samples from the seams of interest during mine development for size consistency and coal quality testing, including carbonization testing.

5. Collect baseline hydrology and rock mechanics data for detailed mine planning in the southern part of the DOW Lease.

6. Extended collection of environmental baseline data to the southern part of the DOW Lease to facilitate expansion of the mine permit boundary to include the south resources.

7. Extended collection of environmental baseline data to the northern part of the XTO lease and NCE fee coal parcels to facilitate expansion of the mine permit boundary to include the northern resources.

8. Secure the three BLM leases, with priority given to the two southernmost leases.

9. The coal resource remains open to the north, northwest, east, south, and southwest of the NECC Property. Favorable geology merits evaluation and potential acquisition of neighboring properties for expanding the resource base. Priority should be given to ground contiguous to the XTO lease and NCE fee coal parcels.

Detailed costs for the recommended environmental data collection, permit modification, coal exploration, coal and geotechnical testing and analysis program, and prefeasibility study are estimated to range between $3 and $4 million for a life-of-project level effort.

27.0 REFERENCES

Agapito Associates, Inc. (2010), "Preliminary Assessment of the New Elk Mine Project," March 13.

Agapito Associates, Inc. (2010), "NI 43-101 Technical Report of the New Elk Mine Project, Las Animas County, Colorado, USA," March 13.

Agapito Associates, Inc. (2010), "NI 43-101 Technical Report of the New Elk Mine Project, Las Animas County, Colorado, USA," November 1.

Agapito Associates, Inc. (2011), "NI 43-101 Technical Report of the New Elk Mine Project, Las Animas County, Colorado, USA," May 21.

A. L. Lee Corporation (2010). "Mars II." Accessed by Art Palm, March 5, <http://www.alleecorp.com/Products.aspx?id=35>.

Behre Dolbear & Company Ltd. (2008). *Technical Report on the New Elk Coal Company, LLC, Los* [sic] *Animas County, Colorado, USA.* Prepared for Cline Mining Corporation, May 8.

Carlson Mining 2011 Software© (2011). Web site <http://www.carlsonsw.com>.

Canadian Institute of Mining, Metallurgy and Petroleum (CIM) (2010), "CIM Definition Standards - For Mineral Resources and Mineral Reserves: Canadian Institute of Mining, Metallurgy and Petroleum," 2010, <http://www.cim.org/UserFiles/File/CIM_DEFINITON_STANDARDS_Nov_2010.pdf>.

Daniels Company (2012), 800 TPH Preparation Plant Flowsheet, New Elk Coal Company, Current Flow Diagram, Job No. 3628, Code No. FS, Drawing Revision 1, June 17.

Fletcher Mining Equipment (2010a). "Coal Mine Roof Bolters (Seam less than 96")." Accessed by Art Palm, March 5, <http://www.jhfletcher.com/loweam.htm>.

Fletcher Mining Equipment (2010b). "Fletcher Mobile Roof Support (MRS) – Fixed Frame Mid Seam." Accessed by Art Palm, March 5, <http://www.jhfletcher. com/mobile.htm>.

Geologic Survey of Canada (1989). *A Standardized Coal Resource/Reserve Reporting System for Canada.* Authored by J. D. Hughes, L. Klatzel-Murty, and D. J. Nikols, Paper 88-21, 17 pages.

Getman Underground Diesels (2010a). "LRD-214, 224, 226 Tow Tractor." Accessed by Art Palm, March 5, <http://www.getman.com/index.php?option=com_content&view=article&id=20&Itemid=47&lang=en>.

Getman Underground Diesels (2010b). "RDG-1504C Roadbuilder." Accessed by Art Palm, March 5, <http://www.getman.com/index.php?option=com_content&view=article &id=22&Itemid=49&lang=en>.

Holland and Hart, LLP (2010), legal review conducted by attorney Ms. Jeanine Feriancek, Denver, CO.

Joy Mining Machinery (2010a). "Underground Conveyors." Accessed by Art Palm, March 5, <http://www.joy.com/Joy/Products/Underground-Conveyors.htm>.

Joy Mining Machinery (2010b). "12M Series Continuous Miners." Accessed by Art Palm, March 5, <http://www.joy.com/Joy/Products/Continuous-Miners/12CM-Continuous-Miner.htm>.

Joy Mining Machinery (2010c). "Shuttle Cards." Accessed by Art Palm, March 5, <http://www.joy.com/Joy/Haulage-Systems/Shuttle-Car-Options.htm>.

Joy Mining Machinery (2010d). "Feeder-Breakers." Accessed by Art Palm, March 5, <http://www.joy.com/Joy/Products/Feeder-Breakers.htm>.

LeMar (2009). "Product Brochure."

McPherson, M. (2009). *Subsurface Ventilation and Environmental Engineerin.* Chapman and Hall, New York, 905 pages.

New Elk Coal Company, LLC. Various documents provided including mine maps, area maps, drill data, coal quality data, and copies of legal documents.

Raven Ridge Resources Incorporated (2011). "Investigations and Evaluation of Gas Well Located in and Around New Elk Coal Company's Mining Leases." Report to Agapito Associates, Inc., March 28.

Spendrup Fan Company (2009). "2009 Spendrup Fan Company Product Brochure."

State of Colorado Oil and Gas Conservation Commission (2001). *Raton Basin Coal Mine Feature Inventory*, Greg Lewicki and Associates, July.

U. S. Geological Survey (1983). *Coal Resource Classification of the U. S. Geological Survey.* Circular 891.

U. S. Geological Survey (1999). *A Summary of Tertiary Coal Resources of the Raton Basin, Colorado and New Mexico*, Professional Paper 1625-A, by R. M. Flores and L. R. Bader.

U. S. Geological Survey (2003). *Coal Resource Classification System of the U. S. Geological Survey*, Geological Survey Circular 891, by Gordon H. Wood, Jr., Thomas M. Kehn, M. Devereaux Carter, and William C. Culbertson, March.

U. S. Geological Survey (2006). *Coal Resource Classification System of the U. S. Bureau of Mines and U. S. Geological Survey*, Bulletin 1450-b.

Wood Mackenzie, Inc. (2011). "New Elk Marketing Strategy." Report to Cline Mining Corporation and Agapito Associates, Inc., April.

APPENDIX A

CERTIFICATES OF QUALIFIED PERSONS

(Serving as Date and Signature Page)

A.1 Statement of Certification by Principal Author

Leo J. Gilbride, P.E.
Agapito Associates, Inc.
715 Horizon Drive, Suite 340
Grand Junction, Colorado 81506
USA

Telephone: 970-242-4220, extension 113
Fax: 970-245-9234
Email: gilbride@agapito.com

CERTIFICATE OF QUALIFIED PERSON

I, Leo J. Gilbride, P.E., do hereby certify that:

1. I am a Senior Consultant with:

   Agapito Associates, Inc
   715 Horizon Drive, Suite 340
   Grand Junction, Colorado, 81506
   USA

2. I graduated with a degree in Civil Engineering *summa cum laude* from California Polytechnic State University, San Luis Obispo, California, USA, in 1992, and a Master of Science in Mining Engineering at the Mackay School of Mines, University of Nevada, Reno, USA, in 1995.

3. I am licensed as a professional engineer in the State of Colorado (Number 33329).

4. I am a member of the Society of Mining Engineers (Member Number 4028449) and the American Society of Civil Engineers (Member Number 271529).

5. I have practiced as a consulting mining engineer for 16 years since graduation from the Mackay School of Mines, University of Nevada, Reno, in 1995.

6. As a consulting engineer, I have completed mineral resource and mineral reserve estimations, and scoping, prefeasibility, and feasibility studies in industrial minerals, metals, and coal, including trona, potash, nahcolite, phosphate, uranium, vanadium, molybdenum, cobalt, and nickel. Extraction methods with which I have experience include room-and-pillar, longwall, drift-and-fill, open stoping, block caving, open pit, and solution mining.

7. I have consulted on projects for more than one dozen underground coal mines located in the southwestern USA in the last ten years.

8. I have read the definition of "qualified person" as defined in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101), and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

9. I am responsible for the authoring Sections 7.0 through 15.0 and co-authoring Sections 1.0 through 6.0 and 23.0 through 27.0 in the Technical Report titled *Technical Report, New Elk Mine Property, Las Animas County, Colorado, USA,* prepared for New Elk Coal Company LLC, a subsidiary of Cline Mining Corporation, dated July 5, 2012 (effective date May 24, 2012).

10. I have no financial involvement with New Elk Coal Company, Cline Mining Corporation, or their affiliates.

11. I am independent of the issuer as described in Section 1.4 of NI 43-101.

12. I undertook a site visit to the property on September 28, 2010.

13. I have not had prior direct involvement with the Property that is the subject of the Technical Report.

14. As of the date of this certificate, to the best of my knowledge, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

15. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Dated this 5th day of July, 2012.

"SIGNED AND SEALED"

_____
Signature of Qualified Person

PROFESSIONAL SEAL

Leo J. Gilbride, P.E.
Print name of Qualified Person

A.2 Statement of Certification by Author

Timothy A. Ross, P.E.
Agapito Associates, Inc.
1726 Cole Blvd., Building 22, Suite 130
Golden, Colorado 80401
USA

Telephone: 303-271-3750, extension 151
Fax: 303-271-3891
Email: tross@agapito.com

CERTIFICATE OF QUALIFIED PERSON

I, Timothy A. Ross, P.E., do hereby certify that:

1. I am Vice President and Principal of:

   Agapito Associates, Inc.
   1726 Cole Blvd., Building 22, Suite 130
   Golden, Colorado 80401
   USA

2. I graduated with a BS degree in Mining Engineering from Virginia Polytechnic Institute and State University, USA in 1977.

3. I am licensed as a professional engineer in Colorado, Alabama, Kentucky, West Virginia, Virginia, Wyoming, New Mexico and Utah. I am a Registered Member of the Society of Mining, Metallurgy and Exploration, Inc.

4. I have worked as a mining engineer for 35 years since graduation from Virginia Polytechnic Institute, with 21 years of experience with coal mining companies in engineering and management, and 14 years consulting.

5. I have read the definition of "qualified person" as defined in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101), and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

6. I am responsible for the authoring Sections 16.0 through 22.0 and co-authoring Sections 1.0 through 6.0 and 23.0 through 27.0 in the Technical Report titled *NI 43-101 Technical Report, New Elk Mine Property, Las Animas County, USA,* prepared for New Elk Coal Company LLC, a subsidiary of Cline Mining Corporation, dated July 5, 2012 (effective date May 24, 2012).

7. I visited the properties multiple times between October 9, 2009, and June 13, 2012.

8. I have not had prior direct involvement with the Property that is the subject of the Technical Report.

9. As of the date of this certificate, to the best of my knowledge, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

10. I am independent of the issuer as described in Section 1.4 of NI 43-101.

11. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Dated this 5th day of July, 2012.

"SIGNED AND SEALED"

Signature of Qualified Person *PROFESSIONAL SEAL*

Timothy A. Ross, P.E.
Print name of Qualified Person