

INFORMATION SERIES 55

COLORADO COAL DIRECTORY 2000

**With Statistics on Electric Generation
and Map of Coal Production and Distribution**

**By Christopher J. Carroll
and Beth L. Widmann**

**Colorado Geological Survey
Division of Minerals and Geology
Department of Natural Resources
Denver, Colorado
2000**



FOREWORD

The purpose of Information Series 55, *Colorado Coal Directory 2000*, is to describe and list all the active coal mines in Colorado. The booklet contains information on each mine's location, operating company, mine type, geology, coal quality, and coal production. In the back cover of the booklet is a 1:1,000,000 scale map showing the locations of mines, railroads, power plants that use coal, and through the use of colored flow bands the transportation and distribution of coal in Colorado. Christopher Carroll and Beth Widmann of the Mineral Resources Section of the Colorado

Geological Survey compiled the data in 2000. The objective of this publication is to provide geological information to resource developers, government planners, and interested citizens.

Funding for this project came from the Colorado Department of Natural Resources Severance Tax Operational Fund. Severance taxes are derived from the production of gas, oil, coal, and minerals.

James A. Cappa, Chief, Mineral Resources Section
Vicki Cowart, State Geologist and Director

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PLATE

| | |
|---|----------------|
| 1. Coal production and distribution in Colorado | In rear pocket |
|---|----------------|

INTRODUCTION

The demand for Colorado coal has increased substantially in the late 1990s. Coal mines in Colorado have increased production for the last three years consecutively breaking the annual state coal production record. In 1999, 29.9 million tons of coal were produced from eight underground and four surface operations (Table 1). Most of the coal was produced from the Uinta Coal Region, which extends from Moffat County to Gunnison County. In 1999, coal was produced from nine of Colorado's 63 counties: Delta, Fremont, Gunnison, La Plata, Mesa, Moffat, Montrose, Rio Blanco, and Routt. Routt County had the largest production of any other single county, producing over 9.92 million tons of coal from the Foidel Creek, Seneca, and Yoast mines. The three largest producing mines, Foidel Creek (Twentymile), West Elk, and Colowyo, together accounted for over 70 percent of the state's production. The largest producer was Twentymile Coal Company's Foidel Creek underground mine in Routt County with 8.55 million tons, setting the state annual production record from a single coal mine.

This booklet contains information about eighteen active coal operations in Colorado as of

November 2000. Most of these mines are active operations and currently produce coal. Some of the mines in the directory are not currently producing and have recently closed or intend to open soon. This directory consists of updated coal industry information for Colorado coal producers. It is intended as an information source for coal production, marketing and distribution, and coal consumption within Colorado. The datasheets in the directory include information on coal-producing geologic strata, mine location data, and estimates of distribution and sales of Colorado coal. The directory also contains information on electrical generation from coal, gas, oil, and hydroelectric sources as well. The map included as Plate 1 contains information regarding coal consumption at electric utilities, coal production in 1999, and the estimated distribution of that coal.

Information was collected from representatives at each coal mine in early 2000. Individual power plants were also contacted concerning coal consumption. Additional sources include official coal production data and mine map information from the Colorado Division of Minerals and Geology, coal distribution and electric plant consumption

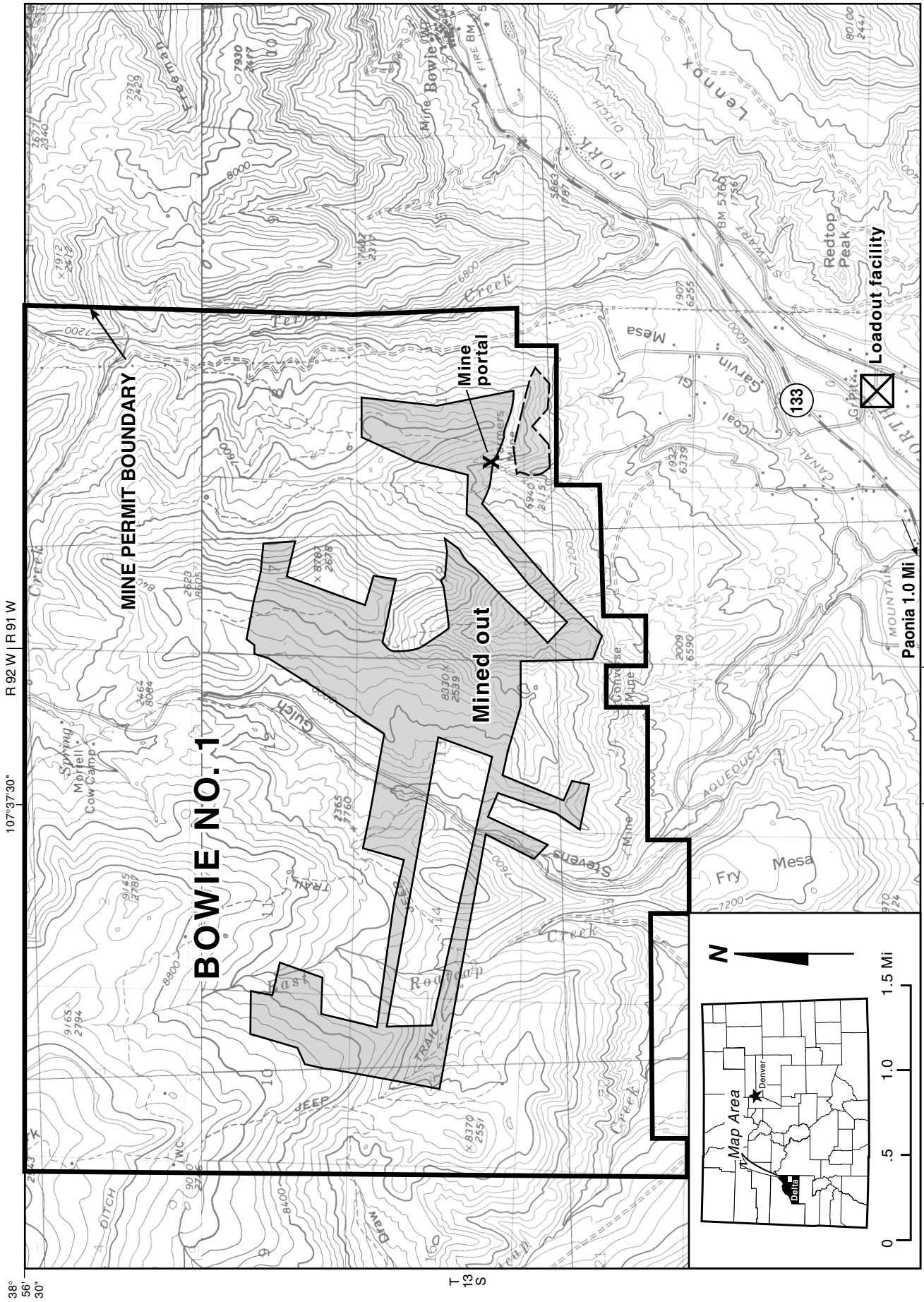
Table 1. Active mines and production figures for 1999.

| Mine Name | County | Coal Region | Coal Field | Geologic Unit | Tons of Coal Produced |
|------------------------------------|------------|----------------|-------------------|---------------------|-----------------------|
| Bowie No. 2 | Delta | Uinta | Somerset | Mesaverde | 1,748,007 |
| Colowyo | Moffat | Uinta | Danforth Hills | Williams Fork | 5,569,385 |
| Deserado | Rio Blanco | Uinta | Lower White River | Williams Fork | 1,336,659 |
| Foidel Creek | Routt | Green River | Yampa | Williams Fork | 8,555,948 |
| King Coal | La Plata | San Juan River | Durango | Menefee (Mesaverde) | 245,719 |
| New Horizon | Montrose | San Juan River | Nucla-Naturita | Dakota | 359,405 |
| Roadside | Mesa | Uinta | Grand Mesa | Mesaverde | 284,540 |
| Sanborn Creek | Gunnison | Uinta | Somerset | Mesaverde | 962,226 |
| Seneca II, Seneca II-W, & Yoast | Routt | Green River | Yampa | Williams Fork | 1,363,463 |
| Southfield | Fremont | Canon City | Canon City | Vermejo | 242,197 |
| Trapper | Moffat | Green River | Yampa | Williams Fork | 2,219,053 |
| West Elk | Gunnison | Uinta | Somerset | Mesaverde | 7,094,972 |
| Total | | | | | 29,981,574 |

from the Energy Information Agency (EIA) of the Department of Energy, the Office of Surface Mining, U.S. Department of the Interior, and the State Board

of Land Commissioners. The *2000 Keystone Coal Industry Manual* was also helpful for Colorado coal facts.

BOWIE NO. 1 MINE



BOWIE NO. 1 MINE

M.L.R.D. Permit No. C-1981-038

LOCATION INFORMATION

Previous Mine Names:

Orchard Valley (Colorado Westmoreland, Inc.)

County: Delta

Coal Region: Uinta

Field: Somerset

Topographic Quadrangle(s): Gray Reservoir, Bowie

Permit Location:

Sec. 5-8, 17-20, T. 13 S., R. 91 W.; Sec 1-3, 10-15, 22-24, T. 13 S., R. 92 W.

COMPANY INFORMATION

Parent Company:

Bowie Resources, Ltd.

1500 North Big Run Road, Ashland, KY 41102

(812) 867-7727

Contact: Al Perry, President, Bowie Coal Sales

Mine Operator:

Bowie Resources, Ltd.

P.O. Box 1488, Paonia, CO 81428

(975) 929-5257

Contact: Basil Bear

Contact Geologist: Greg Hunt

GENERAL INFORMATION

Mine Type: Underground

Mine Status: Idle

No. of Acres in Permit: 1,240

Surface: Federal/Private

Mineral: Federal/Private

Start-Up Date: November 1976

Mining Method:

Union Affiliation: Non-Union

No. of Employees:

GEOLOGIC INFORMATION

Geologic Unit: Mesaverde Group

Geologic Age: Cretaceous

Coal Zone(s) or Bed(s): D

Coal Thickness(es): 10-20 ft

Cleat Orientation and Spacing:

Dip of Bedding: 2-5°NNE **Strike of Bedding:**

Thickness of Overburden: 450-1800 ft

Thickness of Interburden:

BOWIE NO. 1 MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|----------|----------|----------|
| Seam: | D | | |
| Rank: | | | |
| Moisture (%): | 12.5 | | |
| Ash (%): | 7.5 | | |
| Fixed Carbon (%): | 47.0 | | |
| Volatile Matter (%): | 34.6 | | |
| Sulfur (%): | 0.45 | | |
| Heating Value (Btu/lb): | 11,400 | | |
| Free Swelling Index: | | | |
| Hardgrove Grindability: | 45 | | |
| Ash-Softening Temperature (F°): | 2,500 | | |
| Methane Characteristics: | | | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | | |
|--|---|--------------------|
| 1998 Production* (tons): | 0 | Preparation Plant: |
| 1999 Production* (tons): | 0 | Tipple: |
| Total Production through 1999* (tons): | | Haulage: |
| Jan-July 2000 Production (tons): | | Equipment: |
| Production per Shift (tons): | | |
| Shifts per Day: | | |
| Remaining Reserves (tons): | | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

SALES DATA

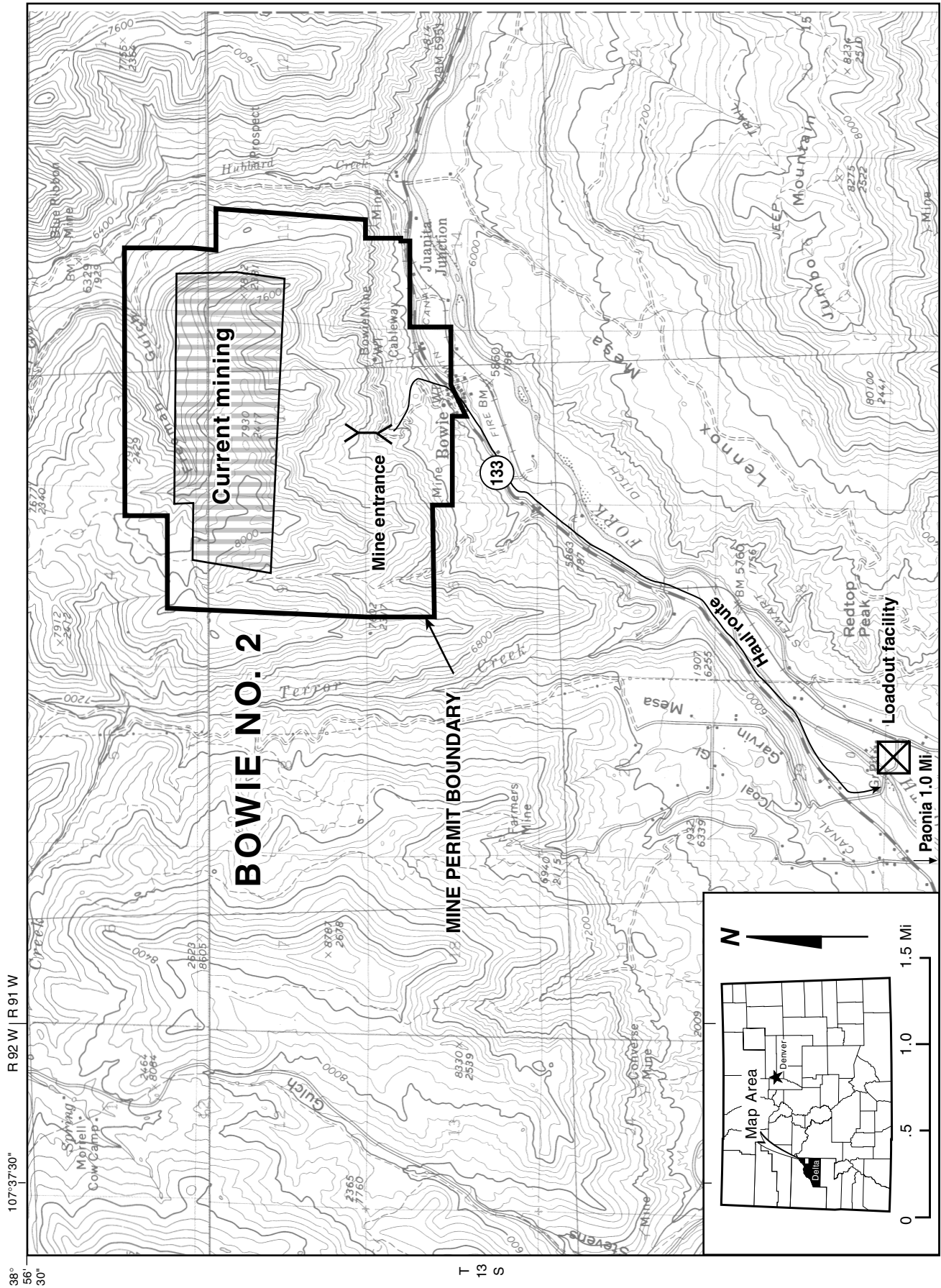
| |
|---------------------------------|
| Mode of Transportation: Rail |
|---------------------------------|

| | Sales | Use | Destination |
|---------------|-------|-----|-------------|
| In-State: | | | |
| Out-of-State: | | | |
| Foreign: | | | |

ADDITIONAL INFORMATION AND COMMENTS

Production ceased December 1997. The loadout facility is to remain open to service Bowie #2. Geologic Reference Map: Dunrud, R.C., 1989, Geologic map and coal stratigraphic framework of the Paonia area, Delta and Gunnison Counties, Colorado: U.S. Geological Survey Map C-115, scale 1:50,000

BOWIE NO. 2 MINE



BOWIE NO. 2 MINE

M.L.R.D. Permit No. C-1996-083

LOCATION INFORMATION

Previous Mine Names:

Orchard Valley Mine

Permit Location:

Sec. 2-4, 9-11, 14-16, T. 13 S., R. 91 W.

County: Delta

Coal Region: Uinta

Field: Somerset

Topographic Quadrangle(s): Bowie

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COMPANY INFORMATION

Parent Company:

Bowie Resources, Ltd.

1500 North Big Run Road, Ashland, KY 41102

(812) 867-7727

Contact: Al Perry, President, Bowie Coal Sales

Mine Operator:

Bowie Resources, Ltd.

P.O. Box 1488, Paonia, CO 81428

(970) 527-4135

Contact: Bill Bear, Jr.

Contact Geologist: Greg Hunt

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GENERAL INFORMATION

Mine Type: Underground

Start-Up Date: October 1997

Mine Status: Producing

Mining Method: Continuous miners, longwall

No. of Acres in Permit: 1,496

Union Affiliation: Non-Union

Surface: Federal/Private

No. of Employees:

Mineral: Federal/Private

.....

GEOLOGIC INFORMATION

Geologic Unit: Mesaverde Group

Geologic Age: Cretaceous

Coal Zone(s) or Bed(s): D

Coal Thickness(es): 9-12 ft

Cleat Orientation and Spacing:

Dip of Bedding: 2-5°NNE **Strike of Bedding:**

Thickness of Overburden: 450-1800 ft

Thickness of Interburden:

.....

BOWIE NO. 2 MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|----------|----------|----------|
| Seam: | D | B | |
| Rank: | | | |
| Moisture (%): | 12.5 | 7.0 | |
| Ash (%): | 7.5 | 7.5 | |
| Fixed Carbon (%): | 47 | 49.0 | |
| Volatile Matter (%): | 34.6 | 36.5 | |
| Sulfur (%): | .045 | 0.5 | |
| Heating Value (Btu/lb): | 11,400 | 12,300 | |
| Free Swelling Index: | | | |
| Hardgrove Grindability: | 45 | 58 | |
| Ash-Softening Temperature (F°): | 2,500 | 2,480 | |
| Methane Characteristics: | | | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | | | |
|--|--|--------------------|--|
| 1998 Production* (tons): | 1,208,347 | Preparation Plant: | Crusher breaker |
| 1999 Production* (tons): | 1,748,007 | Tipple: | Converse |
| Total Production through 1999* (tons): | 3,005,361 | Haulage: | Conveyors |
| Jan-July 2000 Production (tons): | 2,867,892 | Equipment: | Longwall, continuous miners, shuttle cars, roof bolters |
| Production per Shift (tons): | 10,000-20,000 | | |
| Shifts per Day: | 4 (10 hours), 3 (13 hours) per week | | |
| Remaining Reserves (tons): | 65,000,000 | | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

SALES DATA

| |
|---|
| Mode of Transportation: Truck, rail |
|---|

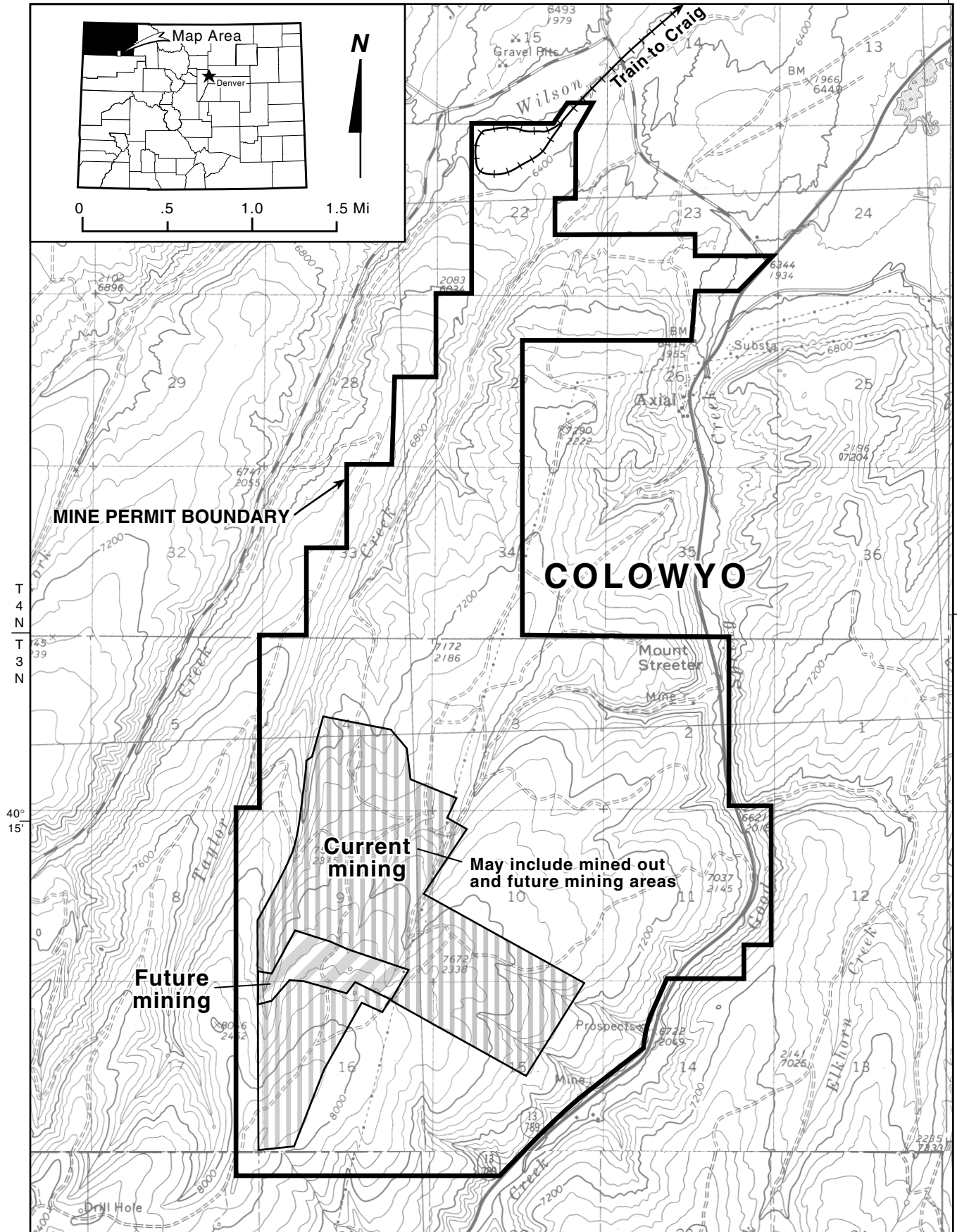
| | Sales | Use | Destination |
|---------------|-------|------------|----------------------------|
| In-State: | 10% | Industrial | Tri-Gen (formerly Coors) |
| Out-of-State: | 90% | Steam | Tennessee Valley Authority |
| Foreign: | | | |

ADDITIONAL INFORMATION AND COMMENTS

* Shifts: 3 during week, 2 on weekends; 4/10-hr shifts, 3/13-hr shifts per week. Geologic Reference Map: Dunrud, R.C., 1989, Geologic map and coal stratigraphic framework of the Paonia area, Delta and Gunnison Counties, Colorado: U.S. Geological Survey Map C-115, scale 1:50,000

COLOWYO MINE

R 93 W



COLOWYO MINE

M.L.R.D. Permit No. C-1981-019

LOCATION INFORMATION

Previous Mine Names:

Permit Location:

Sec. 15, 22, 23, 26-28, 33, 34, T. 4 N., R. 93 W; Sec 2-4, 8-11, 14-17, 20-22, T. 3 N., R. 93 W.

County: Moffat

Coal Region: Uinta

Field: Danforth Hills

Topographic Quadrangle(s): Ninemile Gap, Axial

COMPANY INFORMATION

Parent Company:

Kennecott Energy

Gillette, WY

(307) 687-6000

Contact: Gary J. Goldberg

Mine Operator:

Colowyo Coal Company, L.P.

5731 State Highway 13, Meeker, CO 81641

(970) 824-1501

Contact: John Harmon, G.M.

Contact Geologist:

GENERAL INFORMATION

Mine Type: Surface

Start-Up Date: 1976

Mine Status: Producing

Mining Method: Dragline, truck and shovel

No. of Acres in Permit: 7,402

Union Affiliation: Non-Union

Surface: Federal/State/Private

No. of Employees: 318

Mineral: Federal/State/Private

GEOLOGIC INFORMATION

Geologic Unit: Williams Fork Formation

Geologic Age: Upper Cretaceous

Coal Zone(s) or Bed(s): 8 seams: Y3+Y2, X, A2+A3, B, C, D, E, F

Coal Thickness(es): 57.2 ft total; Y3+Y2=6.8 ft, X=10.7 ft, A2+A3=4.2 ft, B=6.8 ft, C=6.4 ft, D=10.1 ft, E=6.8 ft, F=5.4 ft

Cleat Orientation and Spacing: 132°

Dip of Bedding: 0-20° NE **Strike of Bedding:** N60°W

Thickness of Overburden: 450 ft total overburden and interburden

Thickness of Interburden:

COLOWYO MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|-----------|----------|----------|
| Seam: | Composite | | |
| Rank: | Sub B | | |
| Moisture (%): | 16.93 | | |
| Ash (%): | 5.75 | | |
| Fixed Carbon (%): | 44.76 | | |
| Volatile Matter (%): | 32.79 | | |
| Sulfur (%): | 0.37 | | |
| Heating Value (Btu/lb): | 10,453 | | |
| Free Swelling Index: | | | |
| Hardgrove Grindability: | 49 | | |
| Ash-Softening Temperature (F°): | 2,303 | | |
| Methane Characteristics: | | | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | | | |
|--|--------------|--------------------|--|
| 1998 Production* (tons): | 5,823,380 | Preparation Plant: | Crusher and screens |
| 1999 Production* (tons): | 5,569,386 | Tipple: | Yes |
| Total Production through 1999* (tons): | 85,195,992 | Haulage: | Haulage trucks out of pit to crusher a |
| Jan-July 2000 Production (tons): | 3,140,143 | Equipment: | Shovels, draglines, overburden drills, bulldozers, front-end loaders |
| Production per Shift (tons): | | | |
| Shifts per Day: | 2 (12 hours) | | |
| Remaining Reserves (tons): | 160,000,000 | | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

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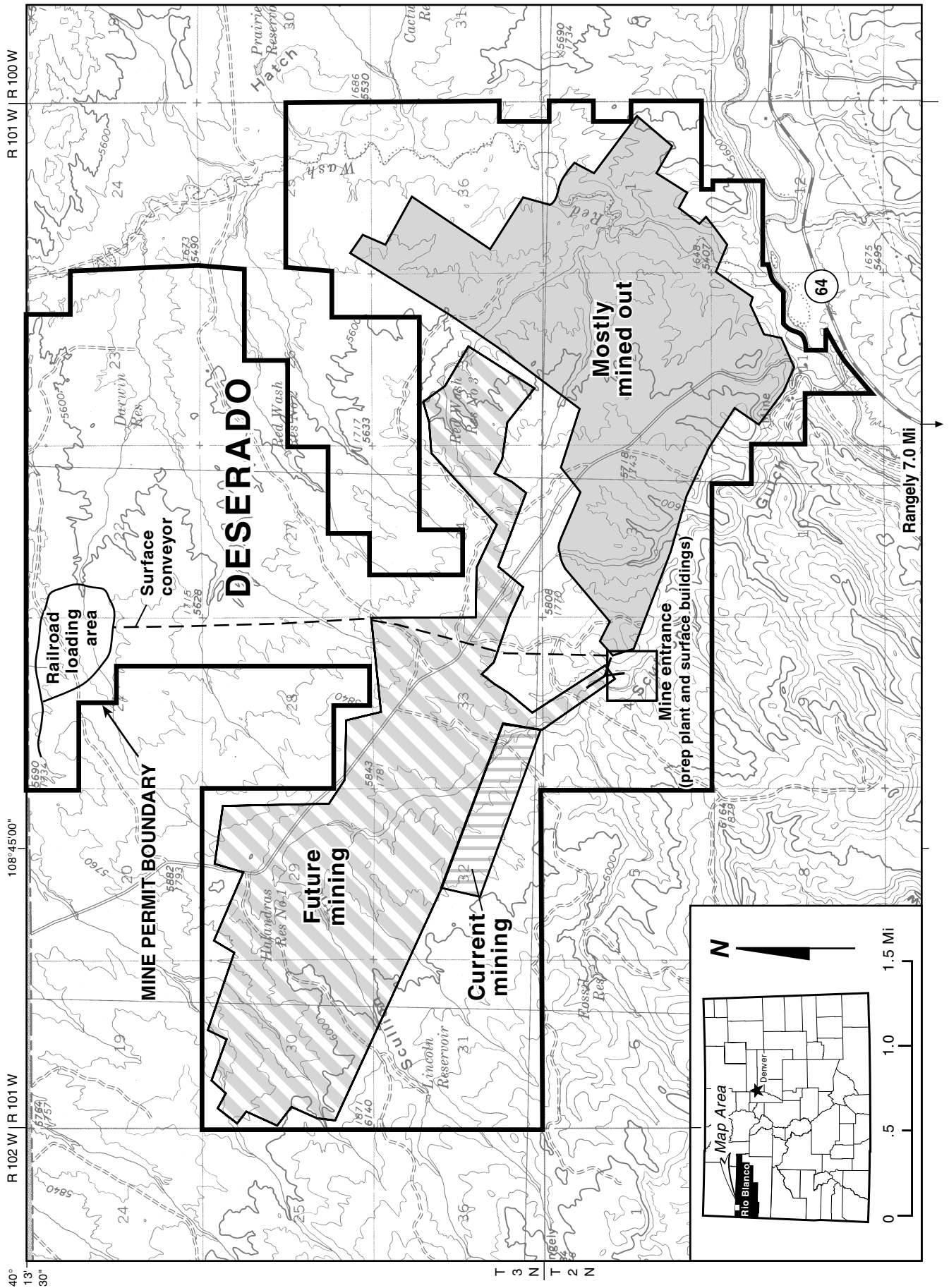
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|--|
| Mode of Transportation: Rail (Union Pacific) |
|--|

| | Sales | Use | Destination |
|---------------|-------|-------------------|--|
| In-State: | 65% | Steam, industrial | Colorado Springs; Public Service Co. of Colorado, Cherokee Plant; Craig |
| Out-of-State: | 35% | Steam, industrial | NB, TX, IL, IA, AZ, KS |
| Foreign: | | | |

ADDITIONAL INFORMATION AND COMMENTS

Geologic Map Reference: Hardy, J.K., and Zook, J.M., 1997, Geologic map and cross sections of the Axial quadrangle, Moffat County, Colorado: Colorado Geological Survey Open-File Report 97-5, scale 1:24,000.

DESERADO MINE



DESERADO MINE

M.L.R.D. Permit No. C-1981-018

LOCATION INFORMATION

Previous Mine Names:

Permit Location:

Sec. 1-4, 10-12, T. 2 N., R. 101 W.; Sec. 21-23, 25-36, T. 3 N.,
R. 101 W.

County: Rio Blanco

Coal Region: Uinta

Field: Lower White River

Topographic Quadrangle(s): Rangely NE, Cactus Reservoir

COMPANY INFORMATION

Parent Company:

Deseret Generation and Transmission Coop.
10714 S. Jordan Gateway 300, S. Jordan, UT 84095
(801) 619-6510
Contact: Edward Thatcher

Mine Operator:

Blue Mountain Energy, Inc.
3607 County Road 65, Rangely, CO 81648
(970) 675-4312
Contact: Alan Hillard, Mine Manager
Contact Geologist:

GENERAL INFORMATION

Mine Type: Underground

Start-Up Date: 1982

Mine Status: Producing

Mining Method: Longwall

No. of Acres in Permit: 9,497

Union Affiliation: UMWA No. 1984

Surface: Federal/Private

No. of Employees: 137

Mineral: Federal

GEOLOGIC INFORMATION

Geologic Unit: Williams Fork Formation

Geologic Age: Upper Cretaceous

Coal Zone(s) or Bed(s): B

Coal Thickness(es): 7-16 ft

Cleat Orientation and Spacing: 84-89° face, 170-175° butt

Dip of Bedding: 3-7° **Strike of Bedding:** N46°W

Thickness of Overburden: 250-2,000 ft

Thickness of Interburden: 10-50 ft

DESERADO MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|----------|----------|----------|
| Seam: | A/B/C | D | |
| Rank: | Sub A | Sub A | |
| Moisture (%): | 12.0 | 11.3 | 11.0 |
| Ash (%): | 16.1 | 13.1 | 8.0 |
| Fixed Carbon (%): | | | |
| Volatile Matter (%): | | | |
| Sulfur (%): | 0.41 | 0.44 | 0.41 |
| Heating Value (Btu/lb): | 9,400 | 10,000 | 10,930 |
| Free Swelling Index: | | | |
| Hardgrove Grindability: | | | |
| Ash-Softening Temperature (F°): | 2,550 | 2,600 | |
| Methane Characteristics: | Low | Low | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | | | |
|--|--------------|--------------------|-------------------|
| 1998 Production* (tons): | 1,722,594 | Preparation Plant: | 750 tons/hour |
| 1999 Production* (tons): | 1,333,044 | Tipple: | |
| Total Production through 1999* (tons): | 18,300,000 | Haulage: | 2,500 tons/hour |
| Jan-July 2000 Production (tons): | 841,338 | Equipment: | Joy Longwall face |
| Production per Shift (tons): | 8,500 | | |
| Shifts per Day: | 3 (10 hours) | | |
| Remaining Reserves (tons): | 25 years | | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

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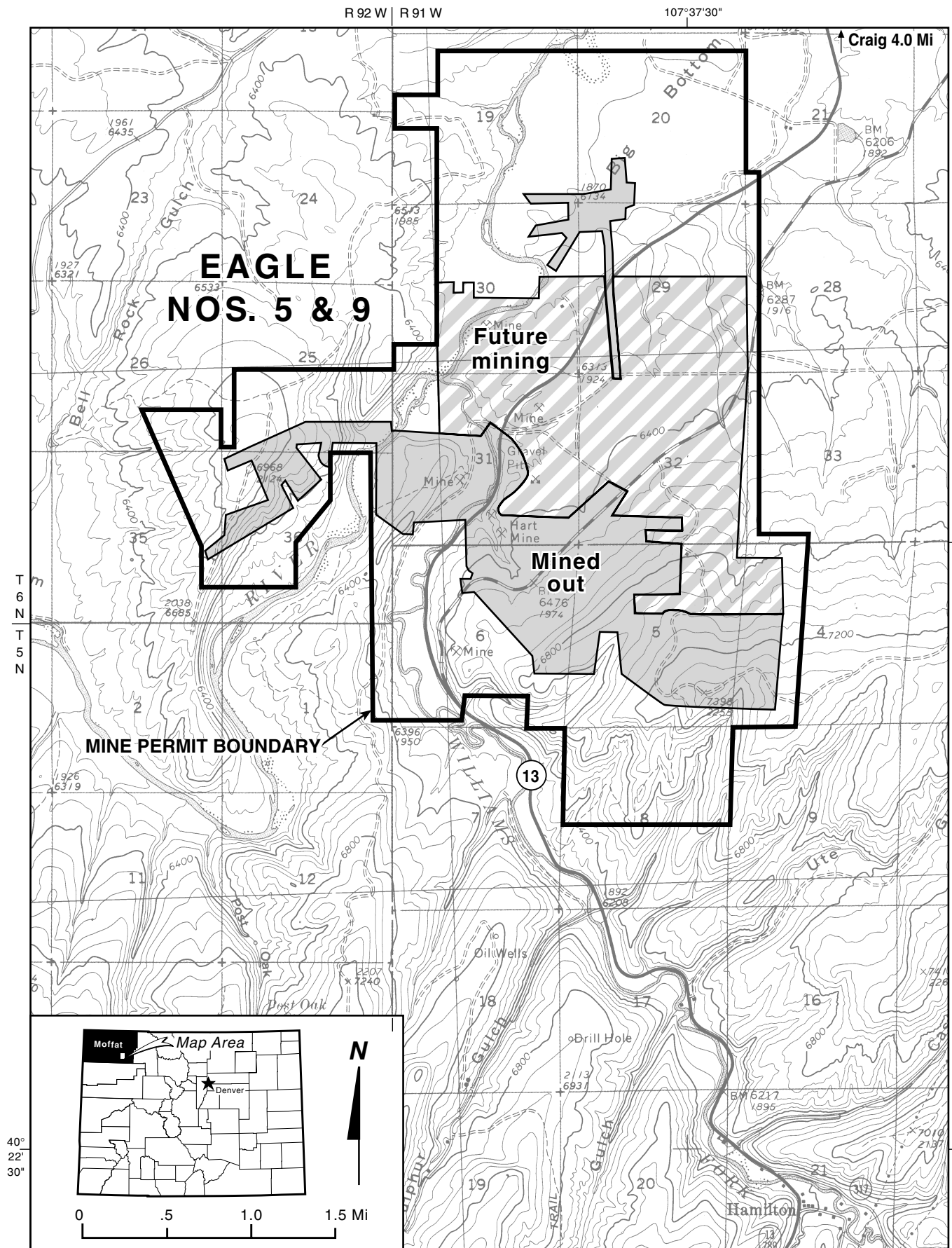
| |
|---|
| Mode of Transportation: Electric unit train |
|---|

| | Sales | Use | Destination |
|---------------|-------|-------|----------------------------|
| In-State: | | | |
| Out-of-State: | 100% | Steam | Utah (Bonanza Power Plant) |
| Foreign: | | | |

ADDITIONAL INFORMATION AND COMMENTS

Captive fuel supply for the Bonanza Power Plant in Utah. Coal is delivered by an electric railroad to the power plant. The B seam is currently being mined. Cumulative production through 1999 estimated from DMG reports. Geologic Map Reference: Barnum, B.E. and Garrigues, R.S., 1980, Geologic map and coal sections of the Cactus Reservoir quadrangle, Rio Blanco and Moffat Counties, Colorado: U.S. Geological Survey Map MF-1179, scale 1:24,000

EAGLE MINE NOS. 5 & 9



EAGLE MINE NOS. 5 & 9

M.L.R.D. Permit No. C-1981-044

LOCATION INFORMATION

Previous Mine Names:

Empire Mine

County: Moffat

Coal Region: Green River

Field: Yampa

Topographic Quadrangle(s): Round Bottom, Castor Gulch

Permit Location:

Sec. 19, 20, 21, 28-33, T. 6 N., R. 91 W.; Sec. 4-6, 8, T. 5 N.,
R. 91 W.; Sec. 25, 26, 35, 36, T. 6 N., R. 92 W.

COMPANY INFORMATION

Parent Company:

RAG American Coal Company
999 Corporate Blvd., Linthicum Heights, MD. 21090

Contact: James F. Roberts, President & CEO

Mine Operator:

RAG American Coal Company
P.O. Box 68, Craig, CO 81626
(970) 879-3800

Contact: Rick Mills, Gary Buchan

Contact Geologist: Rocky Thompson

GENERAL INFORMATION

Mine Type: Underground

Mine Status: Idle

No. of Acres in Permit: 6,387

Surface: Federal/State/Private

Mineral: Federal/State/Private

Start-Up Date: Early 1970s

Mining Method: Longwall, continuous miners

Union Affiliation: UMWA

No. of Employees: 3

GEOLOGIC INFORMATION

Geologic Unit: Williams Fork Formation

Geologic Age: Cretaceous

Coal Zone(s) or Bed(s): F & E

Coal Thickness(es): 10.5 ft

Cleat Orientation and Spacing: 320-314° face cleat fairly well developed in NWSE 31, T. 6 N., T. 91 W.

Dip of Bedding: 12-15° **Strike of Bedding:** NW

Thickness of Overburden: 0-900 ft

Thickness of Interburden:

EAGLE MINE NOS. 5 & 9

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|---------------|----------|----------|
| Seam: | F & E | | |
| Rank: | Bituminous | | |
| Moisture (%): | 8.93-12.84 | | |
| Ash (%): | 4.99-10.36 | | |
| Fixed Carbon (%): | 41.75-52.85 | | |
| Volatile Matter (%): | 35.43-38.83 | | |
| Sulfur (%): | 0.46-0.57 | | |
| Heating Value (Btu/lb): | 10,377-11,567 | | |
| Free Swelling Index: | | | |
| Hardgrove Grindability: | | | |
| Ash-Softening Temperature (F°): | | | |
| Methane Characteristics: | | | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | | |
|--|------------|---|
| 1998 Production* (tons): | 0 | Preparation Plant: |
| 1999 Production* (tons): | 0 | Tipple: Yes |
| Total Production through 1999* (tons): | 19,719,949 | Haulage: |
| Jan-July 2000 Production (tons): | | Equipment: Anderson Mavor, Kloeckner Becroit face conveyor |
| Production per Shift (tons): | | |
| Shifts per Day: | | |
| Remaining Reserves (tons): | 25 years | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

SALES DATA

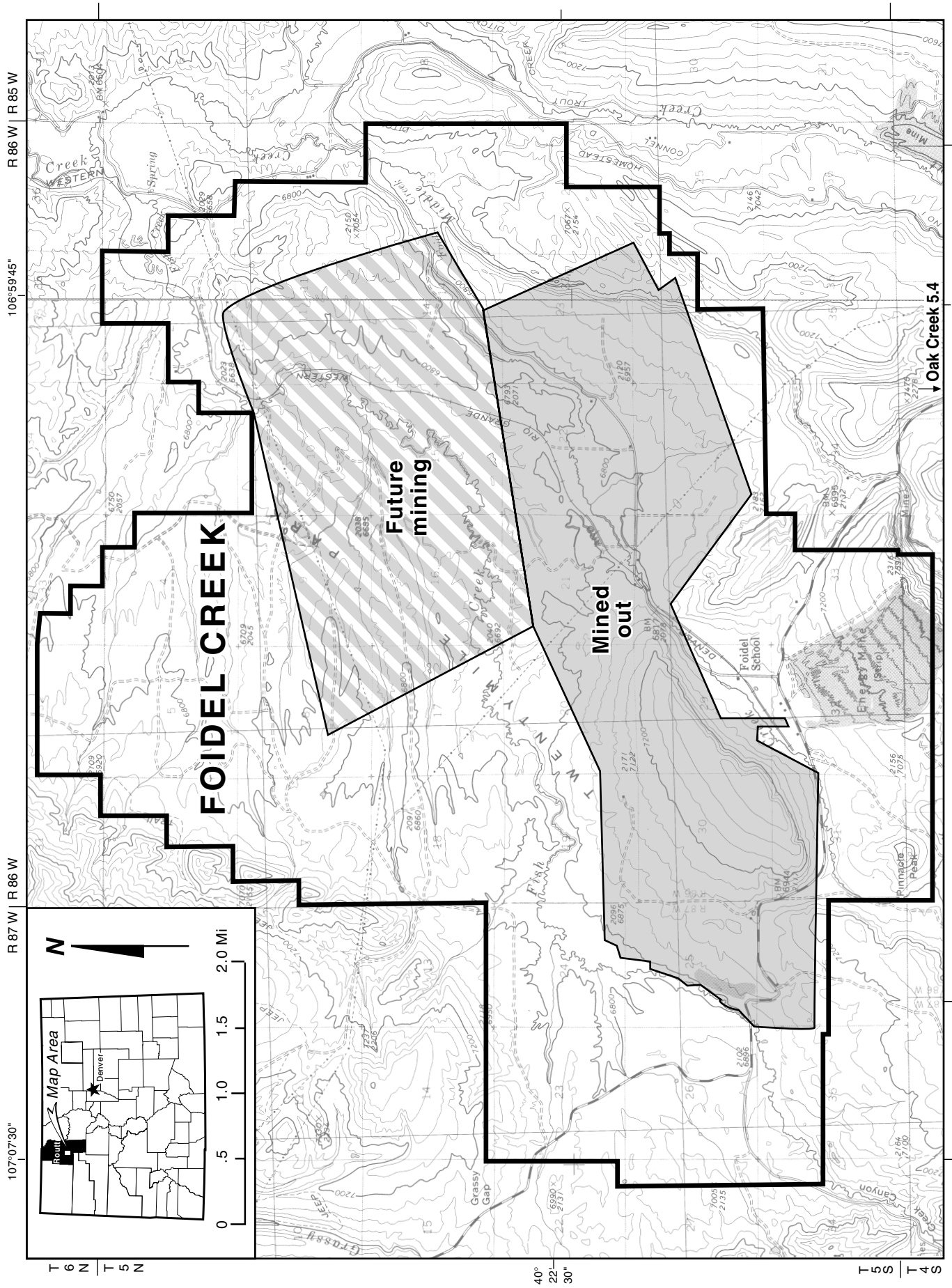
| |
|-------------------------|
| Mode of Transportation: |
|-------------------------|

| | Sales | Use | Destination |
|---------------|-------|-----|-------------|
| In-State: | | | |
| Out-of-State: | | | |
| Foreign: | | | |

ADDITIONAL INFORMATION AND COMMENTS

No production or sales since 1995; mine was idle from 1995-2000.

FOIDEL CREEK MINE



FOIDEL CREEK MINE

M.L.R.D. Permit No. C-1982-056

LOCATION INFORMATION

Previous Mine Names:

Main, Twentymile

County: Routt

Coal Region: Green River

Field: Yampa

Topographic Quadrangle(s): Rattlesnake Butte, Milner

Permit Location:

Sec. 1-33, T. 5 N., R. 86 W.; Sec. 32, 33, T. 6 N., R. 86 W.,

Sec. 23-27, 34-36, T. 5 N., R. 87 W.; Sec. 7-9, T. 4 N., R. 86 W.

COMPANY INFORMATION

Parent Company:

RAG American Coal Company

999 Corporate Blvd, Linthicum Heights, MD. 21090

Contact: James F. Roberts, President & CEO

Mine Operator:

Twentymile Coal Company

29515 Routt Cty Rd. 27, Oak Creek, CO 80467

(970) 870-2712

Contact: Ron Spangler, Gary Buchan

Contact Geologist: Rocky Thompson

GENERAL INFORMATION

Mine Type: Underground

Mine Status: Producing

No. of Acres in Permit: 22,000

Surface: Federal/State/Private

Mineral: Federal/State/Private

Start-Up Date: April 1983

Mining Method: Longwall, continuous miners

Union Affiliation: Non-Union

No. of Employees: 306

GEOLOGIC INFORMATION

Geologic Unit: Williams Fork Formation

Geologic Age: Cretaceous

Coal Zone(s) or Bed(s): Wadge

Coal Thickness(es): 7-11 ft

Cleat Orientation and Spacing: N40°W

Dip of Bedding: 5-15° **Strike of Bedding:** N25°E-N50°W

Thickness of Overburden: 500-1700 ft, avg. 1100 ft.

Thickness of Interburden:

FOIDEL CREEK MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|--------------|----------|----------|
| | As shipped | | |
| Seam: | Wadge | | |
| Rank: | Bituminous C | | |
| Moisture (%): | 10.0 | | |
| Ash (%): | 9.5 | | |
| Fixed Carbon (%): | 44.5 | | |
| Volatile Matter (%): | 35.5 | | |
| Sulfur (%): | 0.49 | | |
| Heating Value (Btu/lb): | 11,300 | | |
| Free Swelling Index: | | | |
| Hardgrove Grindability: | | | |
| Ash-Softening Temperature (F°): | 2,515 | | |
| Methane Characteristics: | | | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | | |
|--|--------------|--|
| 1998 Production* (tons): | 7,750,000 | Preparation Plant: |
| 1999 Production* (tons): | 8,500,000 | Tipple: |
| Total Production through 1999* (tons): | 48,200,000 | Haulage: |
| Jan-July 2000 Production (tons): | 4,089,223 | Equipment: MTA shields, Anderson EL 3000 shearer, MTA face conveyor |
| Production per Shift (tons): | 22,500 | |
| Shifts per Day: | 1 (10 hours) | |
| Remaining Reserves (tons): | 23 years | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

SALES DATA

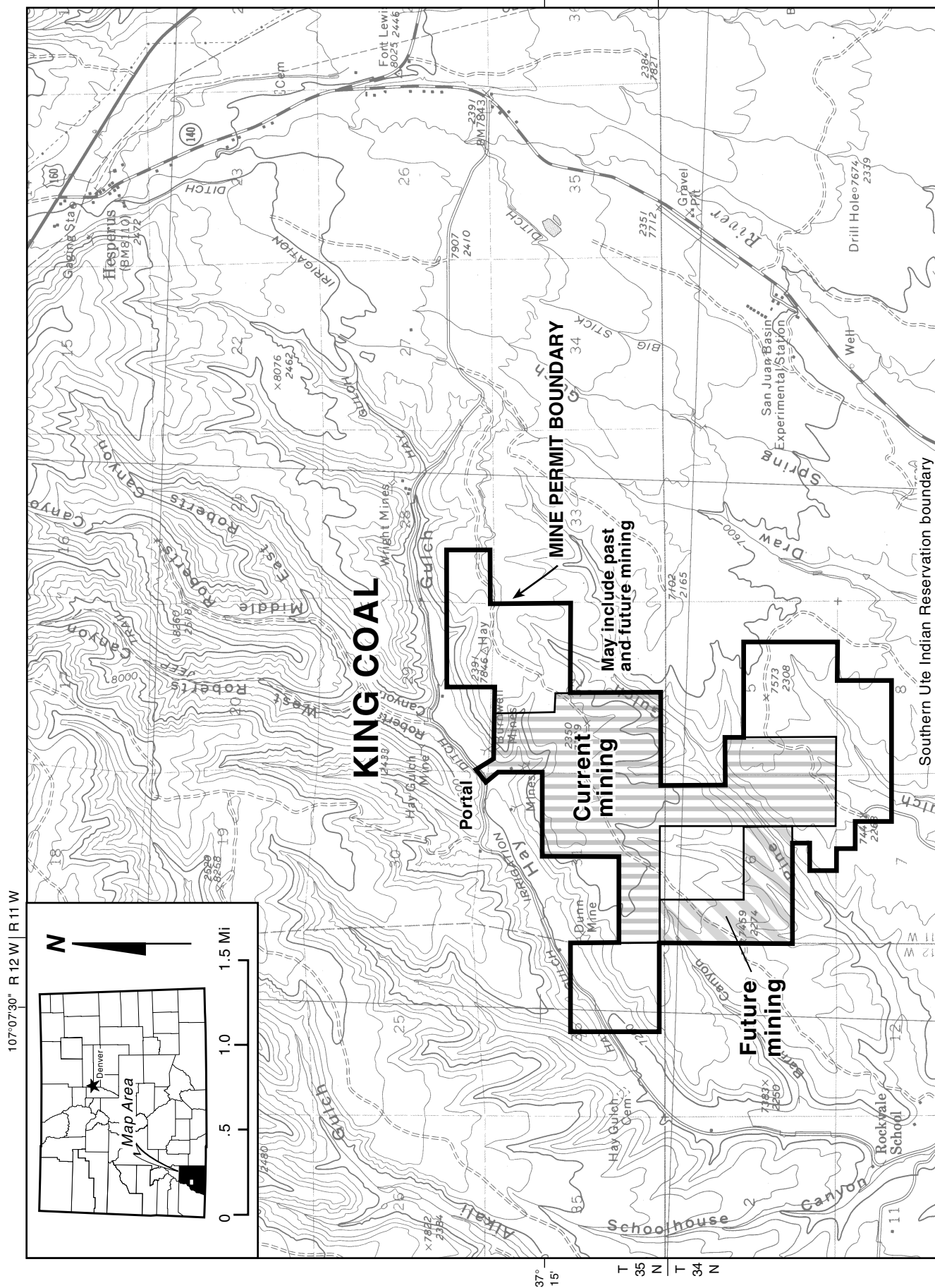
| |
|--|
| Mode of Transportation: Rail (Union Pacific) |
|--|

| | Sales | Use | Destination |
|---------------|-------|-------------------|--------------------------------|
| In-State: | 35% | Steam | Colorado Springs, Denver |
| Out-of-State: | 50% | Steam, industrial | AZ, TX, MS, KS, IA, WY, AL, KY |
| Foreign: | 15% | Steam | Mexico |

ADDITIONAL INFORMATION AND COMMENTS

Geologic Map References: Dames & Moore, 1979, Coal resource occurrence and coal development potential maps of the Milner quadrangle, Routt County, Colorado: USGS Open-File Report 79-815; Dames & Moore, 1979, Coal resource occurrence and coal development potential maps of the Rattlesnake Butte quadrangle, Routt County, Colorado: USGS Open-File Report 1396; Carroll, C.J., and Morgan, M.L., 2000, Demonstrated reserve base for coal in Colorado; Yampa coal field: CGS Open-File Report 00-12.

KING COAL MINE



KING COAL MINE

M.L.R.D. Permit No. C-1981-035

LOCATION INFORMATION

Previous Mine Names:

National King Coal, LLC

County: La Plata

Coal Region: San Juan River

Field: Durango

Topographic Quadrangle(s): Kline, Hesperus

Permit Location:

Sec. 28, 29, 31, 32, T. 35 N., R. 11 W.; Sec. 5, 6, T. 34 N., R. 11 W.; Sec. 36, T. 35 N., R. 12 W.

COMPANY INFORMATION

Parent Company:

AMCI Colorado; N.S. Resources
P.O. Box 2905, Durango, CO 81301
(970) 385-4528
Contact: Trent Peterson

Mine Operator:

National King Coal, LLC
4424 County Rd. 120, Hesperus, CO 81326
(970) 385-4606
Contact: Tom Bird
Contact Geologist: Steve Korte

GENERAL INFORMATION

Mine Type: Underground

Mine Status: Producing

No. of Acres in Permit: 1,433

Surface: State/Private

Mineral: Federal/State/Private

Start-Up Date: 1936

Mining Method: Continuous miner

Union Affiliation: Non-Union

No. of Employees: 37

GEOLOGIC INFORMATION

Geologic Unit: Upper Menefee

Geologic Age: Cretaceous

Coal Zone(s) or Bed(s): Upper

Coal Thickness(es): 52-72 in.

Cleat Orientation and Spacing: N51°W, dip 90° face, Sec. 32, T. 35 N., R. 11 W.

Dip of Bedding: 3° S-SW **Strike of Bedding:**

Thickness of Overburden: 0-300 ft

Thickness of Interburden:

KING COAL MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|-----------|----------|----------|
| Seam: | Menefee A | | |
| Rank: | | | |
| Moisture (%): | 5 | | |
| Ash (%): | 8 | | |
| Fixed Carbon (%): | 57 | | |
| Volatile Matter (%): | 36 | | |
| Sulfur (%): | .8 | | |
| Heating Value (Btu/lb): | 12,800 | | |
| Free Swelling Index: | 4.2 | | |
| Hardgrove Grindability: | 44 | | |
| Ash-Softening Temperature (F°): | 2,700 | | |
| Methane Characteristics: | | | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | | |
|--|--------------|--------------------------------------|
| 1998 Production* (tons): | 298,000 | Preparation Plant: |
| 1999 Production* (tons): | 242,000 | Tipple: Screen and crusher |
| Total Production through 1999* (tons): | 3,559,854 | Haulage: Shuttle car to belt |
| Jan-July 2000 Production (tons): | 101,752 | Equipment: Continuous miner sections |
| Production per Shift (tons): | 1,000 | |
| Shifts per Day: | 1 (10 hours) | |
| Remaining Reserves (tons): | | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

SALES DATA

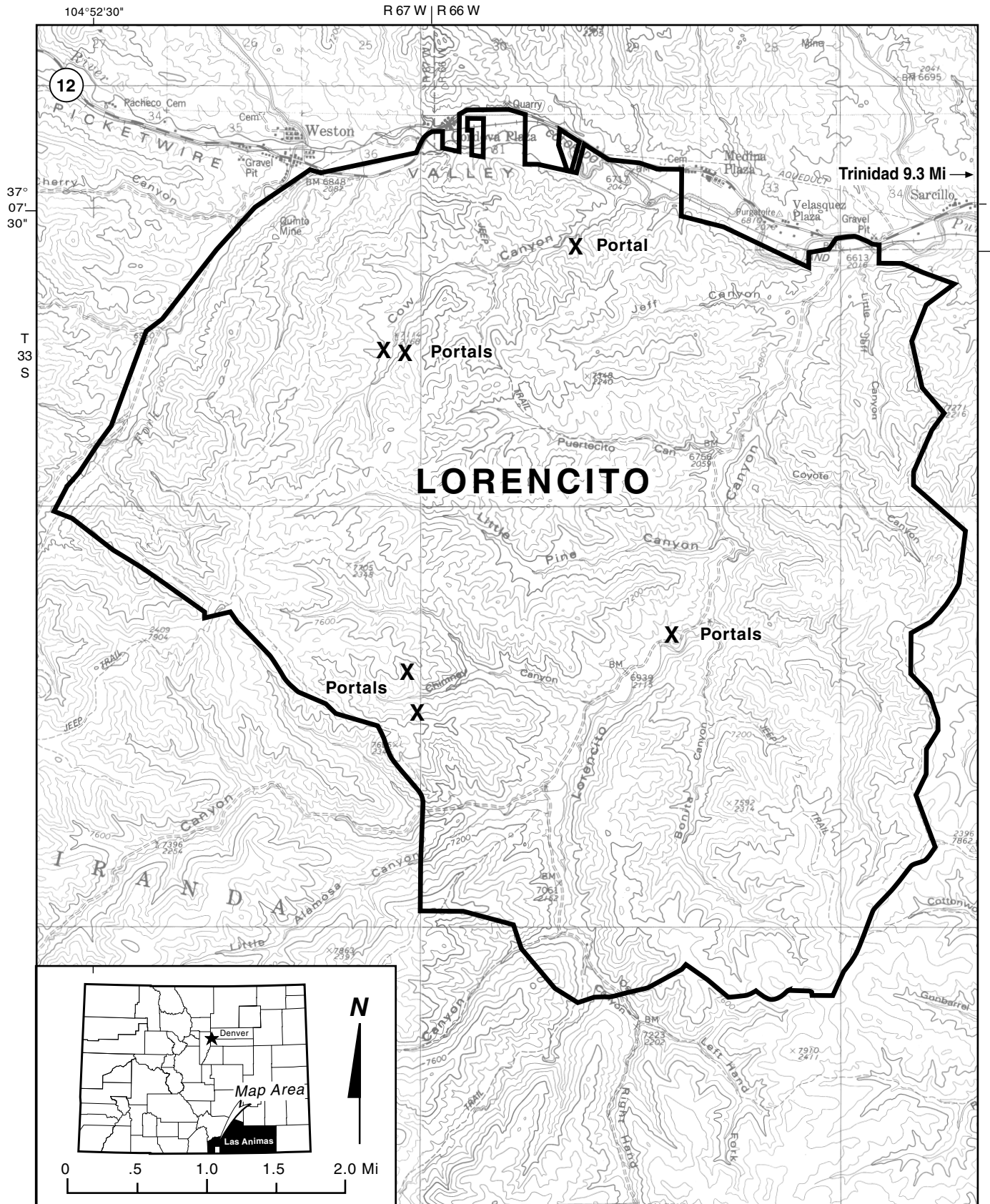
| |
|----------------------------------|
| Mode of Transportation: Truck |
|----------------------------------|

| | Sales | Use | Destination |
|---------------|-------|----------------------|-------------|
| In-State: | 10% | Domestic, industrial | Durango |
| Out-of-State: | 90% | Industrial | AZ, NM, UT |
| Foreign: | | | |

ADDITIONAL INFORMATION AND COMMENTS

Geologic Map Reference: Zapp, A.D., 1949, Geology and coal resources of the Durango area, La Plata and Montezuma Counties, Colorado: U.S. Geological Survey Oil Investigations Map 109, scale 1:236,720.

LORENCITO MINE



LORENCITO MINE

M.L.R.D. Permit No. C-1996-084

LOCATION INFORMATION

Previous Mine Names:

Permit Location:

Lorencito Canyon area (no survey)

County: Las Animas

Coal Region: Raton Mesa

Field: Trinidad

Topographic Quadrangle(s): Weston

COMPANY INFORMATION

Parent Company:

Lorencito Coal Company, LLC.
9203 Petersburg Rd., Evansville, IN 47725
(812) 867-7727
Contact: Al Perry

Mine Operator:

N/A

Contact:

Contact Geologist:

GENERAL INFORMATION

Mine Type: Combination

Start-Up Date:

Mine Status: Proposed start-up 2000/2001

Mining Method: Contour, mountaintop removal,
longwall, room and pillar

No. of Acres in Permit: 18,000

Union Affiliation: Non-Union

Surface: Private

No. of Employees:

Mineral: Private

GEOLOGIC INFORMATION

Geologic Unit: Raton Formation

Geologic Age: Paleocene

Coal Zone(s) or Bed(s): Primero seam, Weston seam, and Ciruela seam

Coal Thickness(es): 3-9 ft

Cleat Orientation and Spacing:

Dip of Bedding: 1% NE **Strike of Bedding:**

Thickness of Overburden: Curuela: 0-350 ft; Weston: 200 ft; Primero: 250 ft

Thickness of Interburden:

LORENCITO MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|---------------|----------|----------|
| Seam: | | | |
| Rank: | | | |
| Moisture (%): | 7.0 | | |
| Ash (%): | 10.0 | | |
| Fixed Carbon (%): | 57.0 | | |
| Volatile Matter (%): | 31.0 | | |
| Sulfur (%): | 0.5 | | |
| Heating Value (Btu/lb): | 12,500-13,000 | | |
| Free Swelling Index: | 7.5-9 | | |
| Hardgrove Grindability: | 65 | | |
| Ash-Softening Temperature (F°): | 2,000-2,300 | | |
| Methane Characteristics: | | | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | |
|--|--------------------|
| 1998 Production* (tons): | Preparation Plant: |
| 1999 Production* (tons): | Tipple: |
| Total Production through 1999* (tons): | Haulage: |
| Jan-July 2000 Production (tons): | Equipment: |
| Production per Shift (tons): | |
| Shifts per Day: | |
| Remaining Reserves (tons): | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

SALES DATA

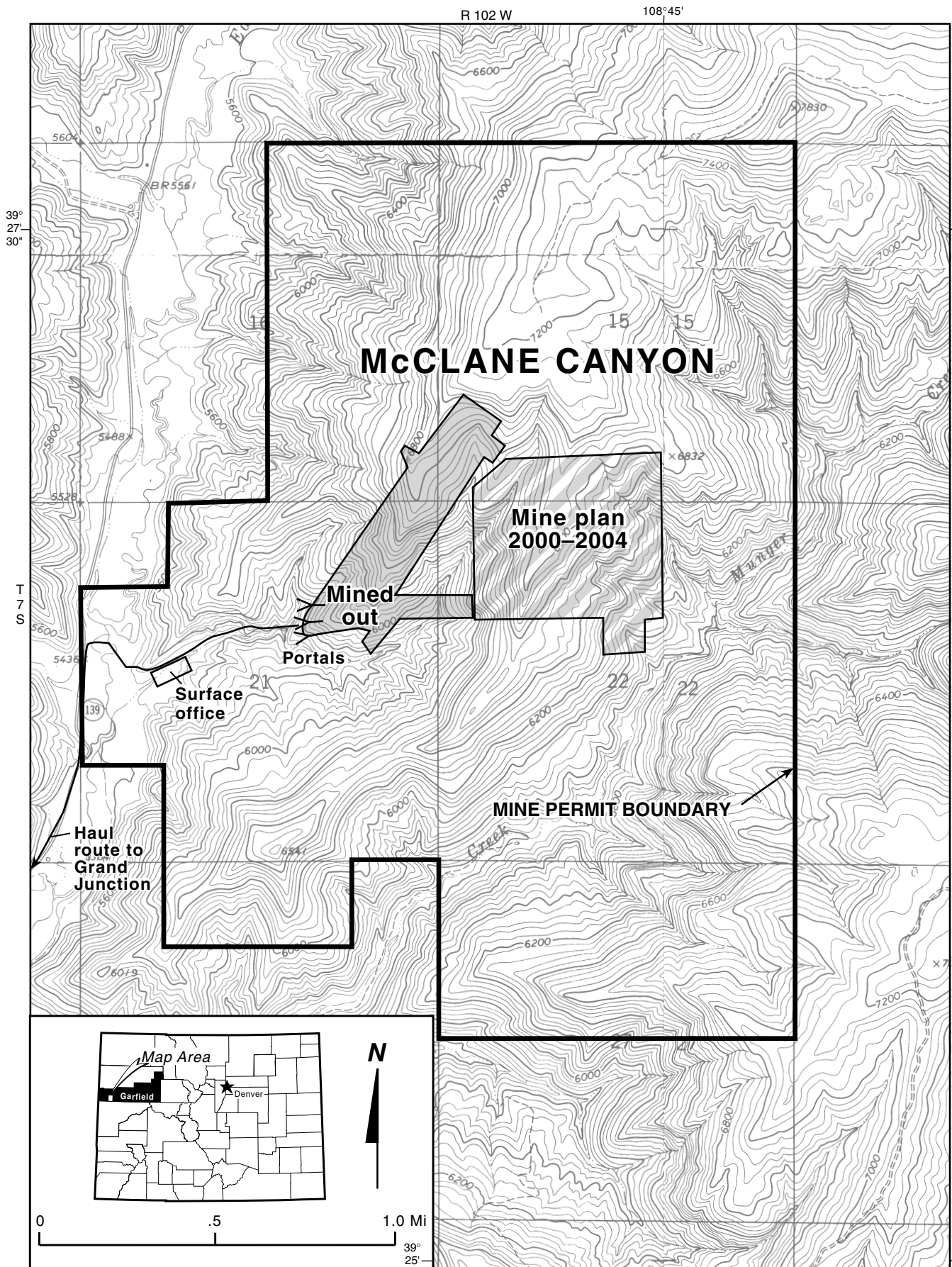
Mode of Transportation:

| | Sales | Use | Destination |
|---------------|-------|-----|-------------|
| In-State: | | | |
| Out-of-State: | | | |
| Foreign: | | | |

ADDITIONAL INFORMATION AND COMMENTS

Geologic Map Reference: Johnson, R.B., 1969, Geologic map of the Trinidad quadrangle, south-central Colorado: U.S. Geological Survey Miscellaneous Investigations Map I-558, scale 1:250,000.

McCLANE CANYON MINE



McCLANE CANYON MINE

M.L.R.D. Permit No. C-1980-004

LOCATION INFORMATION

Previous Mine Names:

McClane Canyon (Salt Creek Mining Company)

Permit Location:

Sec. 15, 16, 21, 22, T. 7 S., R. 102 W.

County: Garfield

Coal Region: Uinta

Field: Book Cliffs

Topographic Quadrangle(s): Howard Canyon, Garvey Canyon

COMPANY INFORMATION

Parent Company:

Lodestar Energy, Inc.
333 W. Vine St., Suite 1700, Lexington, KY 40507
(606) 255-4006
Contact: John Hughes (President)

Mine Operator:

Lodestar Energy - Mountain Operations
HC 35, Box 370, Helper, UT 84526
(435) 637-9200
Contact: Dave Miller
Contact Geologist:

GENERAL INFORMATION

Mine Type: Underground

Start-Up Date: February 2000**

Mine Status: Producing

Mining Method: Continuous miners

No. of Acres in Permit: 2,560

Union Affiliation: Non-Union

Surface: Federal

No. of Employees: 11

Mineral: Federal

GEOLOGIC INFORMATION

Geologic Unit: Williams Fork Formation

Geologic Age: Upper Cretaceous

Coal Zone(s) or Bed(s): Upper Cameo, Lower Cameo

Coal Thickness(es): Upper Cameo: 5-9 ft; Lower Cameo: 8-17 ft

Cleat Orientation and Spacing:

Dip of Bedding: 2-3°NE **Strike of Bedding:** N50°W

Thickness of Overburden: 500 ft to more than 1,500 ft

Thickness of Interburden: 0-70 ft

McCLANE CANYON MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|----------------------|----------------------|----------|
| | Average of 6 samples | Average of 9 samples | |
| Seam: | Upper Cameo | Lower Cameo | |
| Rank: | | | |
| Moisture (%): | 11.1 | 9.82 | |
| Ash (%): | 13.5 | 16.42 | |
| Fixed Carbon (%): | 40.43 | 32.57 | |
| Volatile Matter (%): | 31.49 | 24.52 | |
| Sulfur (%): | .53 | 0.5 | |
| Heating Value (Btu/lb): | 10,475 | 10,259 | |
| Free Swelling Index: | 1 | 1 | |
| Hardgrove Grindability: | 50 | 50 | |
| Ash-Softening Temperature (F°): | 2,700 | 2,700 | |
| Methane Characteristics: | | | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | | |
|--|------------|------------------------------|
| 1998 Production* (tons): | 0 | Preparation Plant: |
| 1999 Production* (tons): | 0 | Tipple: |
| Total Production through 1999* (tons): | 777,649 | Haulage: Shuttle cars |
| Jan-July 2000 Production (tons): | 165,417 | Equipment: Continuous miners |
| Production per Shift (tons): | 1,280 | |
| Shifts per Day: | 1 | |
| Remaining Reserves (tons): | 10 years + | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

SALES DATA

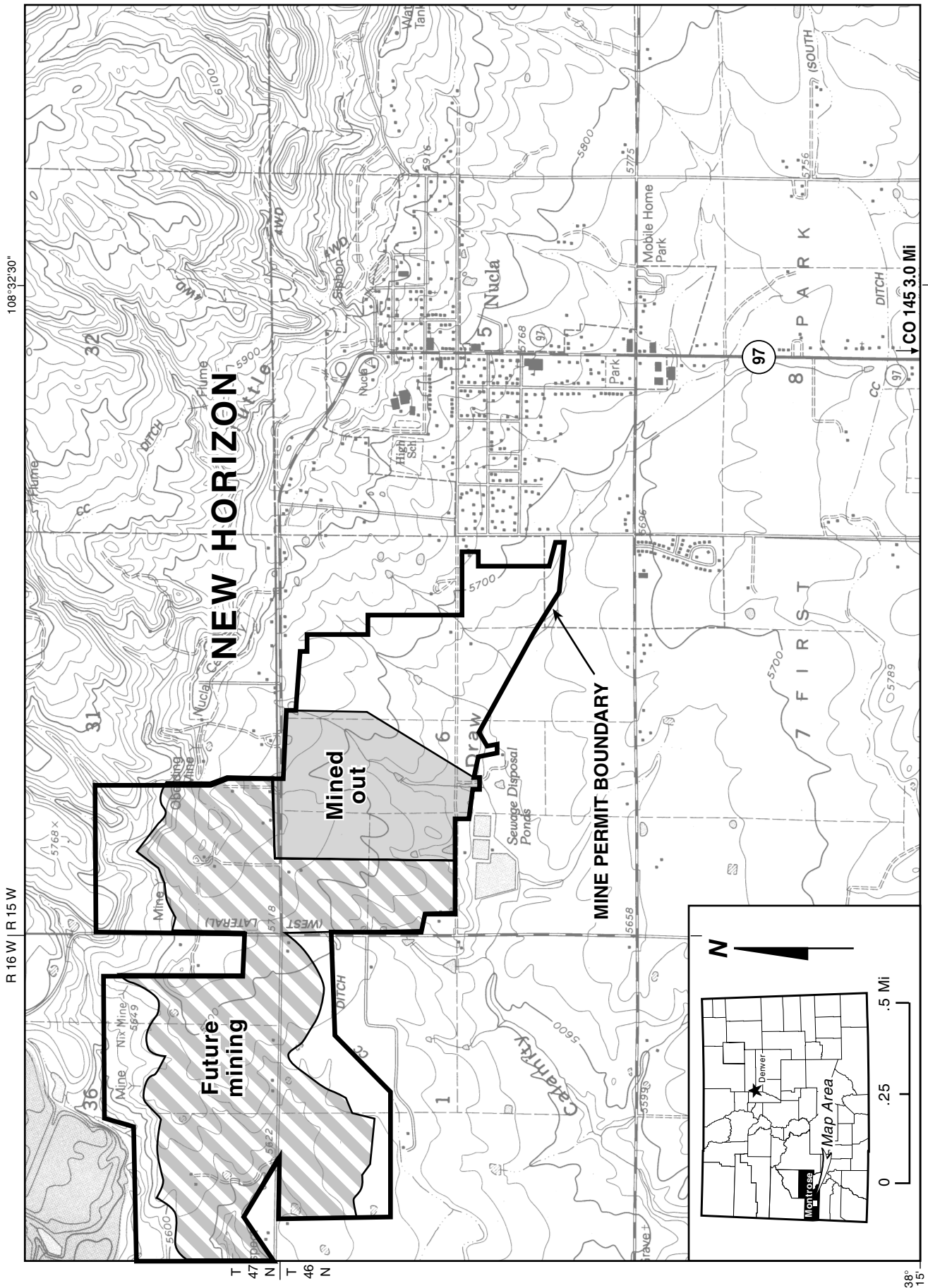
| |
|----------------------------------|
| Mode of Transportation: Truck |
|----------------------------------|

| | Sales | Use | Destination |
|---------------|-------|-------|-------------------|
| In-State: | 100% | Steam | Cameo Power Plant |
| Out-of-State: | | | |
| Foreign: | | | |

ADDITIONAL INFORMATION AND COMMENTS

**Mine originally in operation 1977-1991, mine was idle until February 2000. Local management: Grand Valley Coal Co., 3148 Hwy. 139, Loma, CO 81524, (970) 858-3960. However, mine information and mailings should be directed to Lodestar Energy - Mountain Operations in Utah.

NEW HORIZON MINE



NEW HORIZON MINE

M.L.R.D. Permit No. C-1981-008

LOCATION INFORMATION

Previous Mine Names:

Nucla and Nucla East (2)

County: Montrose

Coal Region: San Juan River

Field: Nucla-Naturita

Topographic Quadrangle(s): Nucla

Permit Location:

Mining: Sec. 6, T. 46 N., R. 15 W.; Sec. 31, T. 47 N., R. 15 W.

Reclaiming: Sec. 25, 36, T. 47 N., R. 16 W.; Sec. 31, T. 47 N., R. 15 W.

COMPANY INFORMATION

Parent Company:

Western Fuels Colorado, LLC
P.O. Box 3424, Denver, CO 80233
(303) 450-9976
Contact: Robert Norrgard

Mine Operator:

Western Fuels Colorado
P.O. Box 628, Nucla, CO 81424
(970) 864-2165
Contact: R. Lance Wade
Contact Geologist:

GENERAL INFORMATION

Mine Type: Surface

Mine Status: Producing

No. of Acres in Permit: 659

Surface: Private

Mineral: Private

Start-Up Date: 1993

Mining Method: Shovel, dozer

Union Affiliation: UMWA Local 1281

No. of Employees: 32

GEOLOGIC INFORMATION

Geologic Unit: Dakota Formation

Geologic Age: Cretaceous

Coal Zone(s) or Bed(s): 1, 2

Coal Thickness(es): 1: 0.75-1.25 ft; 2: 4.0-6.5 ft

Cleat Orientation and Spacing: 63° face, 308° butt, 0.08-3 ft spacing

Dip of Bedding: 1-2°SW **Strike of Bedding:** N25°W-N45°W

Thickness of Overburden: 0-100 ft

Thickness of Interburden: 6-10 ft

NEW HORIZON MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|----------|---------------|----------|
| Seam: | Dakota | | |
| Rank: | | | |
| Moisture (%): | 6.7 | | |
| Ash (%): | 15.1 | 18 | |
| Fixed Carbon (%): | 47.0 | | |
| Volatile Matter (%): | 30.7 | | |
| Sulfur (%): | 0.81 | | |
| Heating Value (Btu/lb): | 11,680 | 10,000-10,300 | |
| Free Swelling Index: | | | |
| Hardgrove Grindability: | | | |
| Ash-Softening Temperature (F°): | 2,750 | | |
| Methane Characteristics: | | | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | | |
|--|--|---|
| 1998 Production* (tons): | 321,755 | Preparation Plant: |
| 1999 Production* (tons): | 359,410 | Tipple: |
| Total Production through 1999* (tons): | 2,285,544 | Haulage: |
| Jan-July 2000 Production (tons): | 217,114 | Equipment: Shovels, dozers, trucks, overburden drill, front-end loader |
| Production per Shift (tons): | 850 | |
| Shifts per Day: | 2 coal production; 3 overburden stripping | |
| Remaining Reserves (tons): | 10-12 years | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

SALES DATA

| |
|---|
| Mode of Transportation: Truck |
|---|

| | Sales | Use | Destination |
|---------------|-------|-------|---|
| In-State: | 100% | Steam | Nucla Power Plant (fluidized bed combustion unit) |
| Out-of-State: | | | |
| Foreign: | | | |

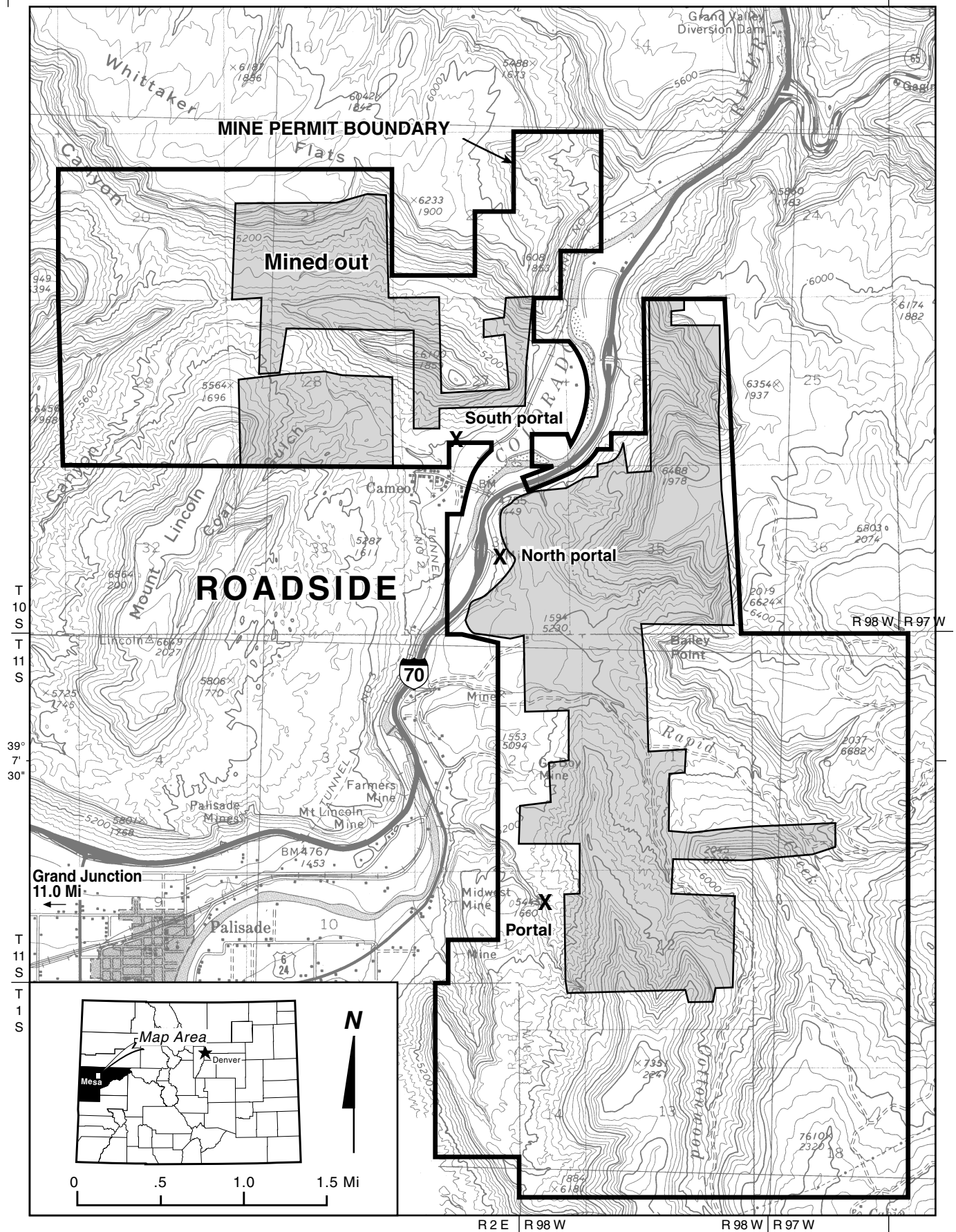
ADDITIONAL INFORMATION AND COMMENTS

Geologic Reference Map: Williams, P.L., 1964, Geology, structure and uranium deposits of the Moab quadrangle, Colorado and Utah: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-360, scale 1:250,000.

ROADSIDE MINE

108°22'30"

R 98 W | R 97 W



ROADSIDE MINE

M.L.R.D. Permit No. C-1981-041

LOCATION INFORMATION

Previous Mine Names:

Roadside north and south portals; Cameo

County: Mesa

Coal Region: Uinta

Field: Grand Mesa

Topographic Quadrangle(s): Cameo, Palisade

Permit Location:

Sec. 20-23, 26-29, 34, 35, T. 10 S., R. 98 W.; Sec. 1, 2, 11-14, T. 11 S., R. 98 W.; Sec. 6, 7, 18, T. 11 S., R. 97 W.; Sec 1, T. 1 S., R. 2 E.

COMPANY INFORMATION

Parent Company:

Quaker Coal Co.

128 S. Lake Dr., Box 271, Prestonsburg, KY 41653

(606) 886-6300

Contact: John McNab

Mine Operator:

Powderhorn Coal Company, Inc.

P.O. Box 1430, Palisade, CO 81526

(970) 464-7951

Contact: Ralph S. Salaz

Contact Geologist:

GENERAL INFORMATION

Mine Type: Underground

Start-Up Date: 1977

Mine Status: Closed 12/99

Mining Method: Continuous miners

No. of Acres in Permit: 10,170

Union Affiliation: Non-Union

Surface: Federal/Private

No. of Employees: 0

Mineral: Federal/Private

GEOLOGIC INFORMATION

Geologic Unit: Mesaverde Group

Geologic Age: Cretaceous

Coal Zone(s) or Bed(s): Cameo B seam

Coal Thickness(es): 4.4 - 9.4 ft

Cleat Orientation and Spacing: 37° face, 307° butt, varied spacing, cleat dip 90°

Dip of Bedding: 5%

Strike of Bedding: N65°W

Thickness of Overburden: 0-2,000 ft

Thickness of Interburden: Cameo B seam lies 400-450 ft above the Palisade seam, which occurs at the base of the Williams Fork Formation and 35-90 ft below the Carbonera seam

ROADSIDE MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|-----------|-------------|----------|
| | Blend use | 100% washed | |
| Seam: | Cameo B | Cameo B | |
| Rank: | | | |
| Moisture (%): | 8.0 | 9.3 | |
| Ash (%): | 16.0 | 9.1 | |
| Fixed Carbon (%): | 43.4 | 47 | |
| Volatile Matter (%): | 32.6 | 35 | |
| Sulfur (%): | 0.5 | 0.5 | |
| Heating Value (Btu/lb): | 10,800 | 11,800 | |
| Free Swelling Index: | 1.5 | 0.5 | |
| Hardgrove Grindability: | 48 | | |
| Ash-Softening Temperature (F°): | | | |
| Methane Characteristics: | | | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | | | |
|--|------------|--------------------|--|
| 1998 Production* (tons): | 340,458 | Preparation Plant: | Heavy media |
| 1999 Production* (tons): | 350,812 | Tipple: | |
| Total Production through 1999* (tons): | 10,181,000 | Haulage: | Belt |
| Jan-July 2000 Production (tons): | | Equipment: | Continuous miners (remote with scrubbers) and shuttle cars |
| Production per Shift (tons): | | | |
| Shifts per Day: | 0 | | |
| Remaining Reserves (tons): | | | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

SALES DATA

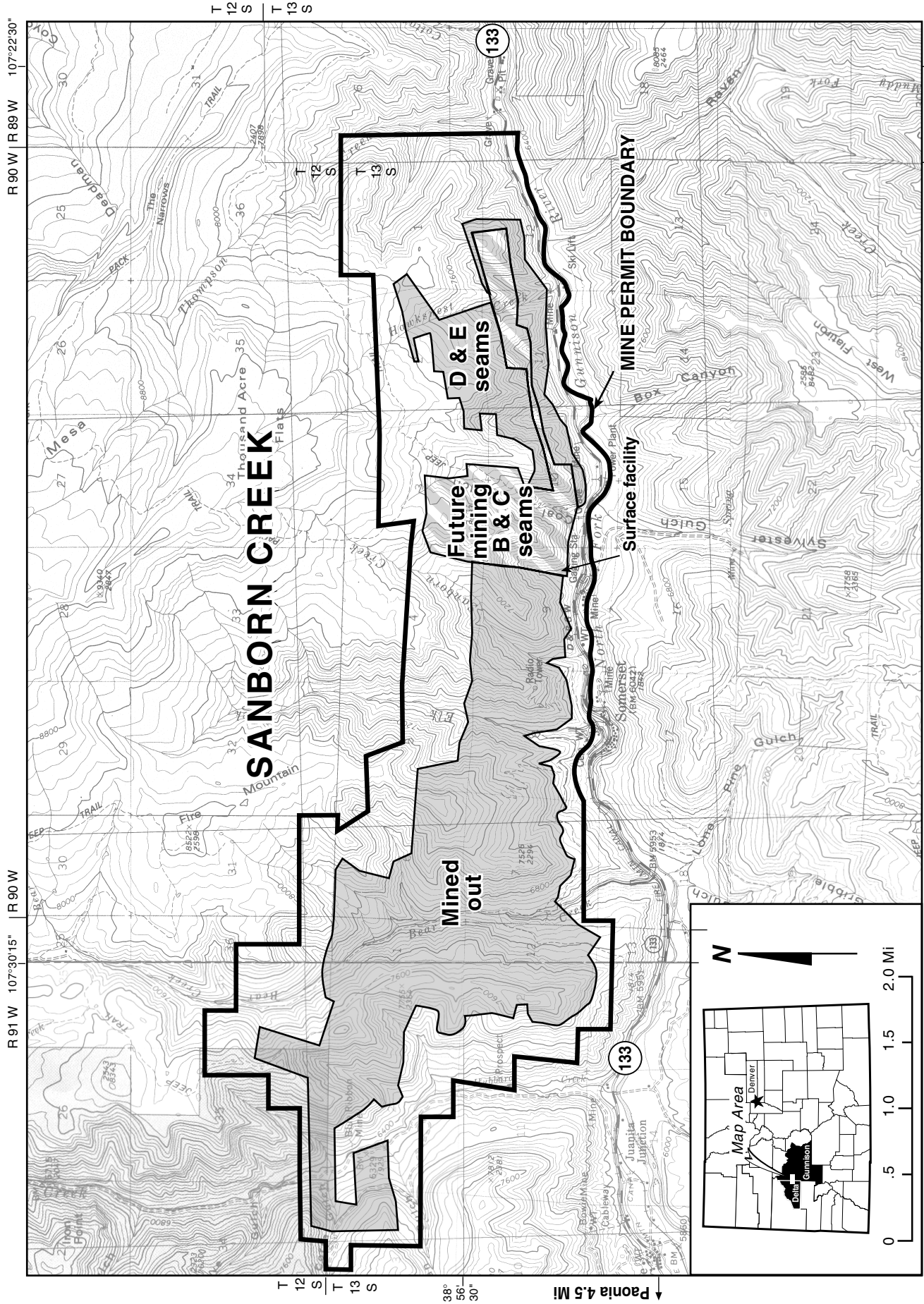
| |
|----------------------------------|
| Mode of Transportation: Truck |
|----------------------------------|

| | Sales | Use | Destination |
|---------------|-------|-------|-------------|
| In-State: | 100% | Steam | Palisade |
| Out-of-State: | | | |
| Foreign: | | | |

ADDITIONAL INFORMATION AND COMMENTS

*Mine status will probably change to permanent cessation in March 2000. Initiation of reclamation anticipated to begin in 2000. Washed quality and blended quality mixed per customer request. Only 80% of 1999 production was sold due to loss during washing. Cumulative production through 1999 estimated from DMG reports. Geologic Map Reference: Ellis, M.S. and Gabaldo V., 1989, Geologic map and cross sections of parts of the Grand Junction and Delta 30' x 60' quadrangles, west-central Colorado: U.S. Geological Survey Map C-124.

SANBORN CREEK MINE



SANBORN CREEK MINE

M.L.R.D. Permit No. C-1981-022

LOCATION INFORMATION

Previous Mine Names:

Somerset Mine

County: Gunnison

Coal Region: Uinta

Field: Somerset

Topographic Quadrangle(s): Somerset, Bowie

Permit Location:

Sec. 6, 7, T. 13 S., R. 89 W.; Sec. 31, T. 12 S., R. 90 W.; Sec. 34-36, T. 12 S., R. 91 W.; Sec. 1-12, T. 13 S., R. 90 W.; Sec. 1-3, 11-13, T. 13 S., R. 91 W.

COMPANY INFORMATION

Parent Company:

Oxbow Mining, Inc.

7901 S. Park Plaza, Suite 202, Littleton, CO 80120

(303) 795-0413

Contact: Paul Fritzler

Mine Operator:

Oxbow Mining, Inc.

P.O. Box 535, Somerset, CO 81434

(970) 929-5122

Contact: Walter Wright

Contact Geologist:

GENERAL INFORMATION

Mine Type: Underground

Mine Status: Producing

No. of Acres in Permit: 9,047

Surface: Federal/Private

Mineral: Federal/Private

Start-Up Date: 1991

Mining Method: Longwall

Union Affiliation: Non-Union

No. of Employees: 200

GEOLOGIC INFORMATION

Geologic Unit: Mesaverde

Geologic Age: Upper Cretaceous

Coal Zone(s) or Bed(s): B, C

Coal Thickness(es): B=18-25 ft, C=6-8 ft

Cleat Orientation and Spacing:

Dip of Bedding: 5 % **Strike of Bedding:** S27°E

Thickness of Overburden: 500-2,500 ft

Thickness of Interburden: 40-60 ft

SANBORN CREEK MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|----------|----------|----------|
| Seam: | B | | |
| Rank: | | | |
| Moisture (%): | 6.25 | | |
| Ash (%): | 8.59 | | |
| Fixed Carbon (%): | 47.25 | | |
| Volatile Matter (%): | 38 | | |
| Sulfur (%): | 0.55 | | |
| Heating Value (Btu/lb): | 12,375 | | |
| Free Swelling Index: | 2.5 | | |
| Hardgrove Grindability: | 48 | | |
| Ash-Softening Temperature (F°): | 2,470 | | |
| Methane Characteristics: | | | |
| Reflectance Data: | 0.74 | | |

COAL PRODUCTION

| | | |
|--|-----------------------|---------------------|
| 1998 Production* (tons): | 1,529,654 | Preparation Plant: |
| 1999 Production* (tons): | 1,125,441 | Tipple: |
| Total Production through 1999* (tons): | 9,075,266 | Haulage: Belt |
| Jan-July 2000 Production (tons): | 1,214,309 | Equipment: Longwall |
| Production per Shift (tons): | 4,200 | |
| Shifts per Day: | 3 (8 hours) | |
| Remaining Reserves (tons): | 7,500,000 (2.5 years) | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

SALES DATA

| |
|---|
| Mode of Transportation: Rail (Southern Pacific) |
|---|

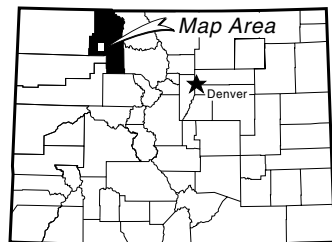
| | Sales | Use | Destination |
|---------------|-------|----------------------|--------------|
| In-State: | 5% | Portland Cement | Holnam, Inc. |
| Out-of-State: | 95% | Steam and metallurgy | Various |
| Foreign: | | | |

ADDITIONAL INFORMATION AND COMMENTS

61,539 tons to Holnan, Inc., all other coal shipped out of state. Geologic Reference Map: Dunrud, R.C., 1989, Geologic map and coal stratigraphic framework of the Paonia area, Delta and Gunnison Counties, Colorado: U.S. Geological Survey Map C-115, scale 1:50,000.

106°07'30"

40°
30'



0 .5 1.0 1.5 Mi

SENECA II MINE

M.L.R.D. Permit No. C-1980-005

LOCATION INFORMATION

Previous Mine Names:

County: Routt

Coal Region: Green River

Field: Yampa

Topographic Quadrangle(s): Milner, Mt. Harris

Permit Location:

Sec. 27, 34-36, T. 6 N., R. 87 W.; Sec. 1-3, 11-13, T. 5 N., R. 87 W.; Sec. 6, 7, T. 5 N., R. 86 W.

COMPANY INFORMATION

Parent Company:

Peabody Coal Company
701 Market St., Suite 765, St. Louis, MO 63101
(314) 342-3400
Contact: Douglas A. Wagner

Mine Operator:

Seneca Coal Company
P.O. Box 670, Hayden, CO 81639-0670
(970) 276-5103
Contact: G. Brad Brown
Contact Geologist:

GENERAL INFORMATION

Mine Type: Surface

Mine Status: Producing

No. of Acres in Permit: 3,457

Surface: State/Private

Mineral: Federal/State/Private

Start-Up Date: 1968

Mining Method: Dragline

Union Affiliation: UMWA

No. of Employees: 93**

GEOLOGIC INFORMATION

Geologic Unit: Lower Williams Fork Formation

Geologic Age: Late Cretaceous

Coal Zone(s) or Bed(s): Wolf Creek, Wadge

Coal Thickness(es): Wadge: 9-10 ft (avg. 9.8 ft); Wolf Creek: avg. 15 ft

Cleat Orientation and Spacing:

Dip of Bedding: 6-20° **Strike of Bedding:**

Thickness of Overburden: Wolf Creek: avg. 111.3 ft; Wadge: avg. 36.8 ft (range 0-120 ft)

Thickness of Interburden:

SENECA II MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|------------|----------|----------|
| Seam: | Wolf Creek | Wadge | |
| Rank: | | | |
| Moisture (%): | 12.0 | 12.0 | |
| Ash (%): | 10.79 | 7.74 | |
| Fixed Carbon (%): | | | |
| Volatile Matter (%): | | | |
| Sulfur (%): | 0.54 | 0.49 | |
| Heating Value (Btu/lb): | 12,137 | 12,581 | |
| Free Swelling Index: | | | |
| Hardgrove Grindability: | | | |
| Ash-Softening Temperature (F°): | | | |
| Methane Characteristics: | | | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | | |
|--|-------------|--|
| 1998 Production* (tons): | 23,413 | Preparation Plant: |
| 1999 Production* (tons): | 7,700 | Tipple: |
| Total Production through 1999* (tons): | 31,249,694 | Haulage: |
| Jan-July 2000 Production (tons): | | Equipment: Draglines, overburden drills, coal drills, loaders, haul trucks |
| Production per Shift (tons): | 3,000-3,500 | |
| Shifts per Day: | 2 (8 hours) | |
| Remaining Reserves (tons): | 0 | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

SALES DATA

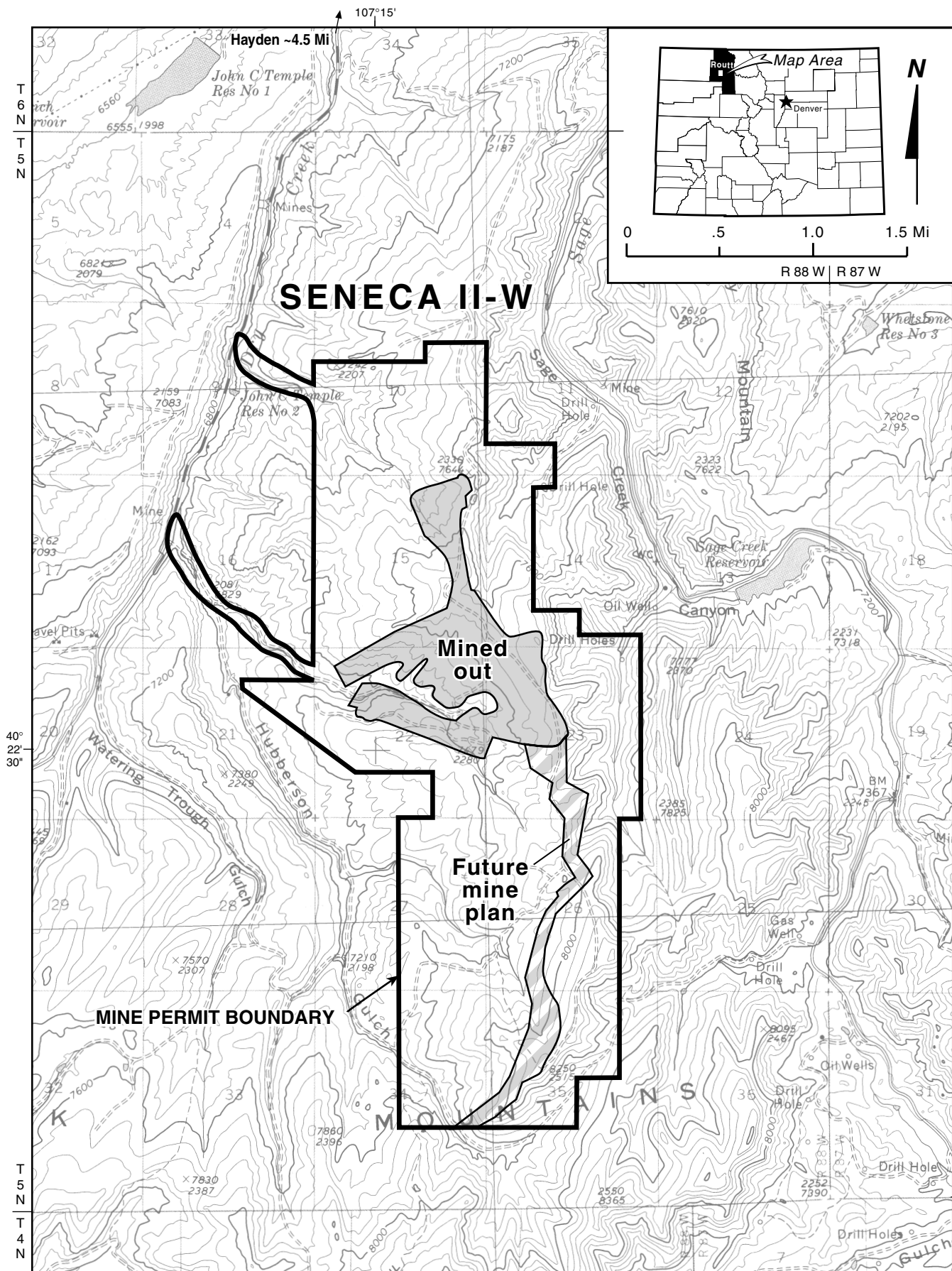
| |
|--|
| Mode of Transportation: Haulage trucks |
|--|

| | Sales | Use | Destination |
|---------------|-------|-------|--------------------|
| In-State: | 100% | Steam | Hayden Power Plant |
| Out-of-State: | | | |
| Foreign: | | | |

ADDITIONAL INFORMATION AND COMMENTS

**Total for Seneca Coal company - all mines. All coal produced in 1999 was from state leases. Geologic Map Reference: Tweto, Ogden, 1976, Geologic map of the Craig 1° x 2° quadrangle, northwestern Colorado: U.S. Geological Survey Miscellaneous Investigations Map I-972 scale 1:250,000.

SENECA II-W MINE



SENECA II-W MINE

M.L.R.D. Permit No. C-1982-057

LOCATION INFORMATION

Previous Mine Names:

Permit Location:

Sec. 9-11, 14-16, 21-23, 26, 27, 34, 35, T. 5 N., R. 88 W.

County: Routt

Coal Region: Green River

Field: Yampa

Topographic Quadrangle(s): Dunckley, Hayden, Hayden Gulch, Mt. Harris

COMPANY INFORMATION

Parent Company:

Peabody Coal Company
701 Market St., Suite 765, St. Louis, MO 63101
(314) 342-3400
Contact: Douglas A. Wagner

Mine Operator:

Seneca Coal Company
P.O. Box 670, Hayden, CO 81639-0670
(970) 276-5103
Contact: Greg Kitchen
Contact Geologist:

GENERAL INFORMATION

Mine Type: Surface

Start-Up Date: 1990

Mine Status: Producing

Mining Method: Dragline

No. of Acres in Permit: 4,093

Union Affiliation: UMWA

Surface: Federal/State/Private

No. of Employees: 93**

Mineral: Federal/State/Private

GEOLOGIC INFORMATION

Geologic Unit: Lower Williams Fork Formation

Geologic Age: Late Cretaceous

Coal Zone(s) or Bed(s): Wadge, Wolf Creek, Sage Creek

Coal Thickness(es): Wadge: 8.9-12.2 ft (avg. 11.7 ft); Wolf Cr: avg. 20.4 ft; Sage Cr: 3.4-5.4 ft (avg. 4.6 ft)

Cleat Orientation and Spacing:

Dip of Bedding: 8-14°

Strike of Bedding:

Thickness of Overburden: Range 0-100 ft. Wadge: avg. 60.8 ft; Wolf Cr: avg. 95.7 ft; Sage Cr: avg. 42.0 ft

Thickness of Interburden:

SENECA II-W MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|----------|------------|------------|
| Seam: | Wadge | Wolf Creek | Sage Creek |
| Rank: | | | |
| Moisture (%): | 13.63 | 13.33 | 13.94 |
| Ash (%): | 7.84 | 11.11 | 6.46 |
| Fixed Carbon (%): | | | |
| Volatile Matter (%): | | | |
| Sulfur (%): | 0.48 | 0.61 | 0.68 |
| Heating Value (Btu/lb): | 12,322 | 11,908 | 12,325 |
| Free Swelling Index: | | | |
| Hardgrove Grindability: | | | |
| Ash-Softening Temperature (F°): | | | |
| Methane Characteristics: | | | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | | |
|--|-------------|--|
| 1998 Production* (tons): | 673,863 | Preparation Plant: |
| 1999 Production* (tons): | 685,287 | Tipple: |
| Total Production through 1999* (tons): | 7,658,709 | Haulage: |
| Jan-July 2000 Production (tons): | 472,813 | Equipment: Draglines, overburden drills, coal drills, loaders, haul trucks |
| Production per Shift (tons): | 3,000-3,500 | |
| Shifts per Day: | 2 (8 hours) | |
| Remaining Reserves (tons): | 5 years | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

SALES DATA

| |
|---|
| Mode of Transportation: Haulage truck |
|---|

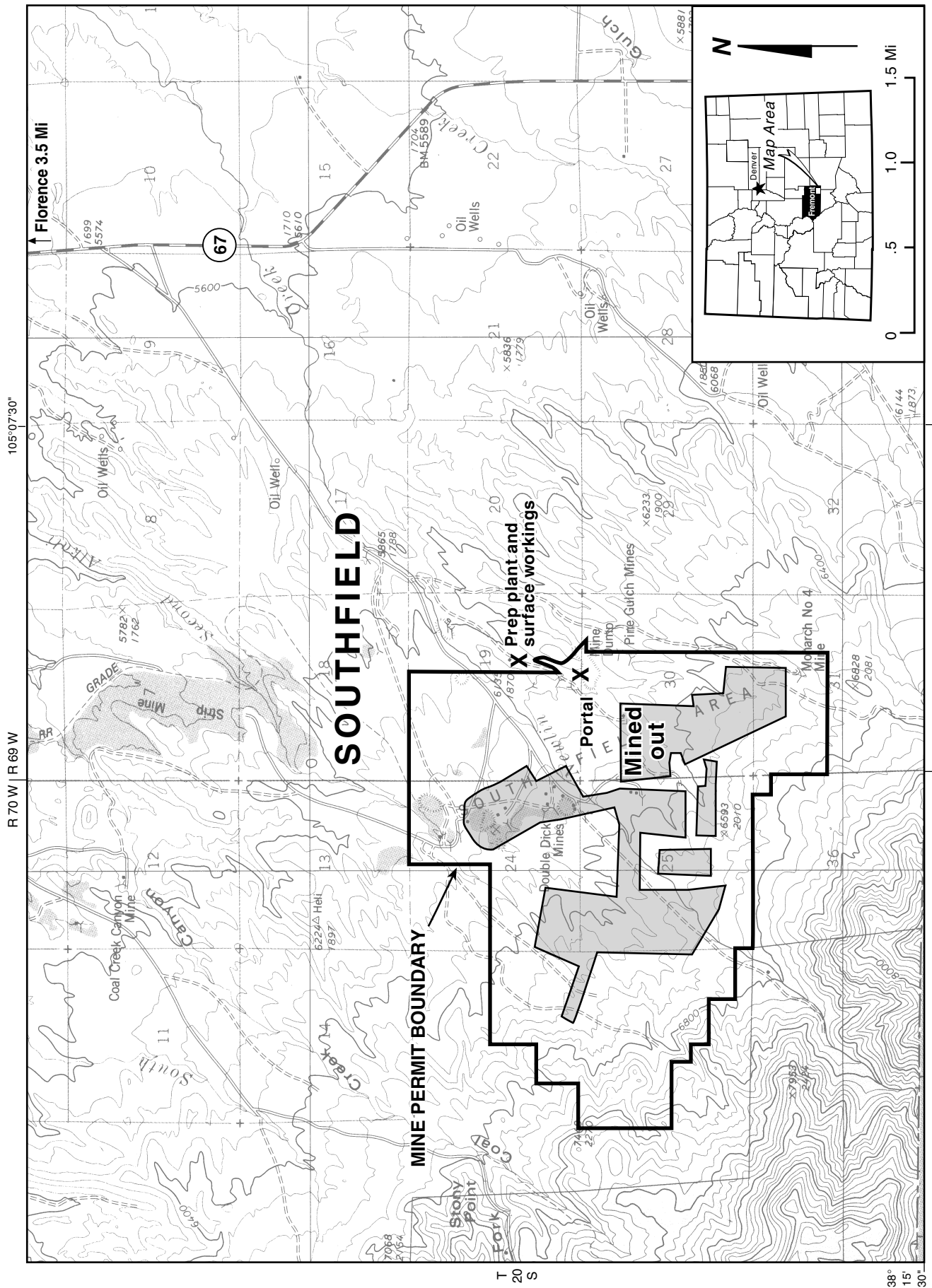
| | Sales | Use | Destination |
|---------------|-------|-------|--------------------|
| In-State: | 100% | Steam | Hayden Power Plant |
| Out-of-State: | | | |
| Foreign: | | | |

ADDITIONAL INFORMATION AND COMMENTS

**Total for Seneca Coal company - all mines. Coal ownership by tonnage produced: 662,698 tons federal, 22,589 tons private.

Geologic Map Reference: Tweto, Ogden, 1976, Geologic map of the Craig 1° x 2° quadrangle, northwestern Colorado: U.S. Geological Survey Miscellaneous Investigations Map I-972 scale 1:250,000.

SOUTHFIELD MINE



SOUTHFIELD MINE

M.L.R.D. Permit No. C-1981-014

LOCATION INFORMATION

Previous Mine Names:

Dorchester #1 (Dorchester Gas)

County: Fremont

Coal Region: Canon City

Field: Canon City

Topographic Quadrangle(s): Rockvale

Permit Location:

Secs. 19, 30, 31, T. 20 S., R. 69 W.; Secs 23-26, 36, T. 20 S., R. 70 W.

COMPANY INFORMATION

Parent Company:

Energy Fuels Coal, Inc.

385 Inverness Dr., #200 Englewood, CO 80112

(303) 893-6996

Contact: Rich A. Munson

Mine Operator:

Energy Fuels Coal, Inc.

P.O. Box 459, Florence, CO 81226

(719) 784-6395

Contact: George Patterson

Contact Geologist:

GENERAL INFORMATION

Mine Type: Underground

Mine Status: Producing

No. of Acres in Permit: 1,496

Surface: Private

Mineral: Private

Start-Up Date: March 1985

Mining Method: Continuous miners

Union Affiliation: Non-Union

No. of Employees: 40

GEOLOGIC INFORMATION

Geologic Unit: Vermejo Formation

Geologic Age: Cretaceous

Coal Zone(s) or Bed(s): Dirty Jack O' Lantern, Red Arrow

Coal Thickness(es): Dirty Jack O' Lantern, 1-6 ft; Red Arrow, 3-7 ft

Cleat Orientation and Spacing: In SESW Sec. 19, 20, S. 69 W. the face cleat strike is 285°

Dip of Bedding: 6° **Strike of Bedding:** N to N40°E

Thickness of Overburden: 0-1,300 ft

Thickness of Interburden: Dirty Jack O' Lantern - Red Arrow: 29 ft

SOUTHFIELD MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|------------|------------|----------|
| Seam: | Dirty Jack | Dirty Jack | |
| Rank: | Bituminous | Bituminous | |
| Moisture (%): | 10.0 | 11.0 | |
| Ash (%): | 10.0 | 9.0 | |
| Fixed Carbon (%): | 35.0 | 46.0 | |
| Volatile Matter (%): | 44.0 | 34.0 | |
| Sulfur (%): | 0.6 | 0.6 | |
| Heating Value (Btu/lb): | 11,000 | 11,100 | |
| Free Swelling Index: | 0.5 | | |
| Hardgrove Grindability: | 45 | | |
| Ash-Softening Temperature (F°): | 2,650 | | |
| Methane Characteristics: | Minimal | | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | | |
|--|-------------|--------------------------------|
| 1998 Production* (tons): | 232,948 | Preparation Plant: Wash |
| 1999 Production* (tons): | 230,362 | Tipple: |
| Total Production through 1999* (tons): | 6,160,625 | Haulage: Electric shuttle cars |
| Jan-July 2000 Production (tons): | 116,648 | Equipment: Continuous miners |
| Production per Shift (tons): | | |
| Shifts per Day: | 2 (8 hours) | |
| Remaining Reserves (tons): | 2 years | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

SALES DATA

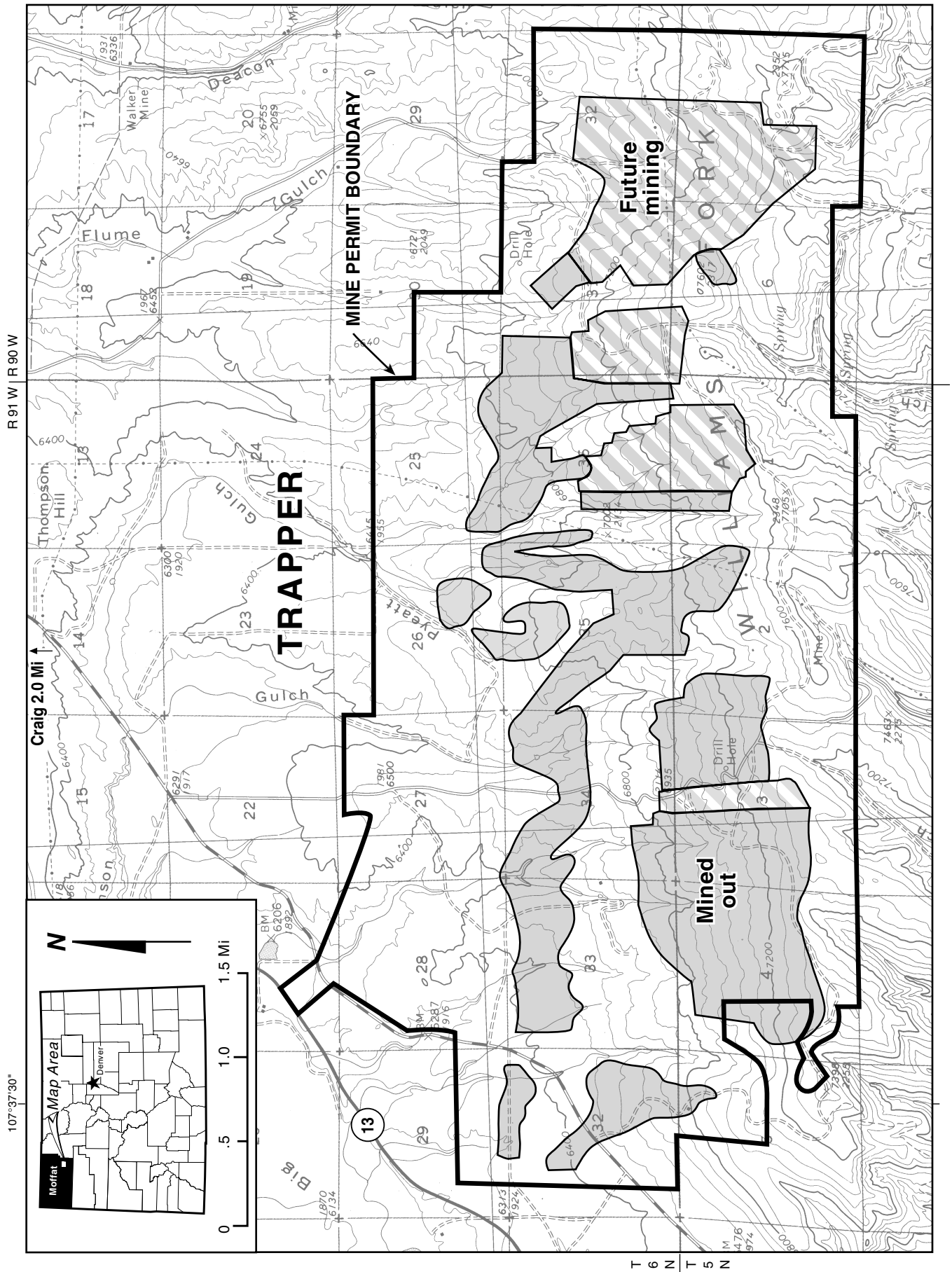
| |
|----------------------------------|
| Mode of Transportation: Truck |
|----------------------------------|

| | Sales | Use | Destination |
|---------------|-------|-------|----------------------|
| In-State: | 89% | Steam | Canon City, Florence |
| Out-of-State: | 11% | Steam | New Mexico |
| Foreign: | | | |

ADDITIONAL INFORMATION AND COMMENTS

Geologic Map Reference: Scott, G.R., 1974, Reconnaissance geologic map of the Rockvale quadrangle, Custer and Fremont Counties, Colorado: U.S. Geological Survey Map MF-562, scale 1:24,000.

TRAPPER MINE



TRAPPER MINE

M.L.R.D. Permit No. C- 1981-010

LOCATION INFORMATION

Previous Mine Names:

County: Moffat

Coal Region: Green River

Field: Yampa

Topographic Quadrangle(s): Castor Gulch

Permit Location:

Sec. 5, 6, T. 5 N., R. 90 W. Sec. 1-5, T. 5 N., R. 91 W.; Sec. 30-32, T. 6 N., R. 90 W.; Sec. 25-29, 32-36, T. 6 N., R. 91 W.

COMPANY INFORMATION

Parent Company:

Saltriver, Tri-State, and PRPA
P.O. Box 1149, Montrose, CO 81402
(303) 249-4501
Contact: W. Gordon Peters

Mine Operator:

Trapper Mining, Inc.
P.O. Box 187, Craig, CO 81626
(970) 824-4401
Contact: Alan Rowley
Contact Geologist: Greg Cortez

GENERAL INFORMATION

Mine Type: Surface

Mine Status: Producing

No. of Acres in Permit: 10,382

Surface: State (45%)/Private (55%)

Mineral: Federal (75%)/State (22%)/Private (3%)

Start-Up Date: 1977

Mining Method: Dragline

Union Affiliation: Operating Engineers

No. of Employees: 155

GEOLOGIC INFORMATION

Geologic Unit: Upper Williams Fork Formation

Geologic Age: Cretaceous

Coal Zone(s) or Bed(s): H, I, L, Q, R

Coal Thickness(es): H=6 ft, I= 5 ft, L=4 ft, Q=13 ft, R=4 ft

Cleat Orientation and Spacing: 327° face, 40° butt; primary 0.5-2 inch spacing

Dip of Bedding: 16% **Strike of Bedding:** SE

Thickness of Overburden: 30-140 ft

Thickness of Interburden: 2-50 ft

TRAPPER MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|-----------------------|----------|----------|
| Seam: | Run of mine - average | | |
| Rank: | Sub B | | |
| Moisture (%): | 16 | 17.5 | |
| Ash (%): | 8 | 7.5 | |
| Fixed Carbon (%): | 48 | 44.4 | |
| Volatile Matter (%): | 33 | 30.2 | |
| Sulfur (%): | 0.45 | 0.4 | |
| Heating Value (Btu/lb): | 9,800 | 9,900 | |
| Free Swelling Index: | | | |
| Hardgrove Grindability: | | | |
| Ash-Softening Temperature (F°): | 2,120 | 2,242 | |
| Methane Characteristics: | | | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | | | |
|--|--|--------------------|--|
| 1998 Production* (tons): | 2,210,894 | Preparation Plant: | None |
| 1999 Production* (tons): | 2,210,397 | Tipple: | |
| Total Production through 1999* (tons): | 44,840,098 | Haulage: | 5 haul trucks from pit to power plant |
| Jan-July 2000 Production (tons): | 1,134,917 | Equipment: | 3 draglines, 2 drills, 7 bulldozers, front-end loaders, 2 hydraulic excavators |
| Production per Shift (tons): | 10,500 | | |
| Shifts per Day: | 1 (4-10 hours) | | |
| Remaining Reserves (tons): | Surface - 32,000,000 tons; Underground - 200,000,000 tons | | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

SALES DATA

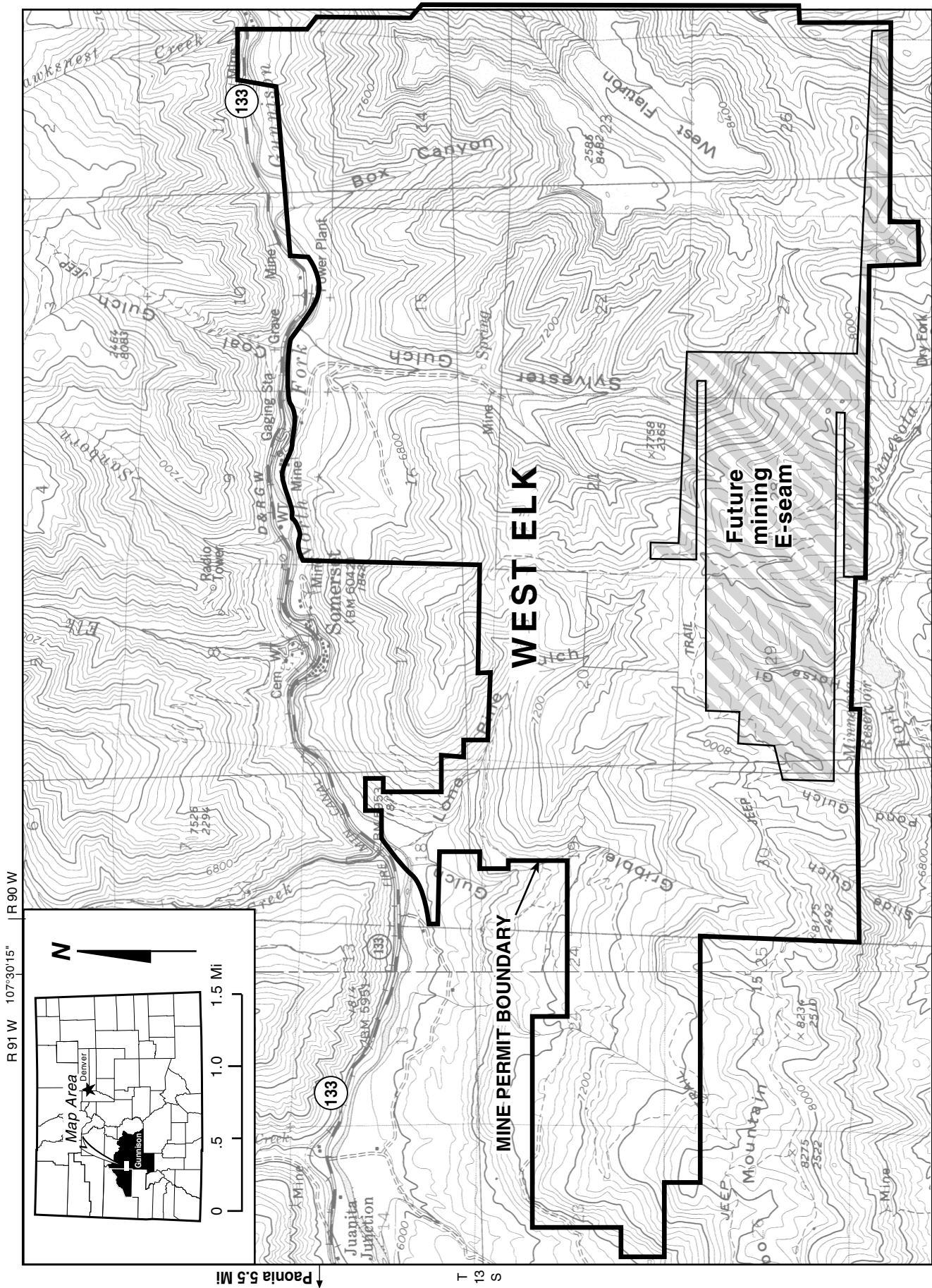
| |
|---|
| Mode of Transportation: Truck |
|---|

| | Sales | Use | Destination |
|---------------|-------|-------|--------------------------------------|
| In-State: | 100% | Steam | Colorado Tri-State G&T Craig Station |
| Out-of-State: | | | |
| Foreign: | | | |

ADDITIONAL INFORMATION AND COMMENTS

Geologic Map Reference: Tweto, Ogden, 1976, Geologic map of the Craig 1° x 2° quadrangle, northwestern Colorado: U.S. Geological Survey Miscellaneous Investigations Series I-972, scale 1:250,000.

WEST ELK MINE



WEST ELK MINE

M.L.R.D. Permit No. C-1980-007

LOCATION INFORMATION

Previous Mine Names:

Mt. Gunnison

County: Gunnison

Coal Region: Uinta

Field: Somerset

Topographic Quadrangle(s): Somerset, Minnesota Pass, Bowie

Permit Location:

Sec. 9, 10, 15, 16, 18-30, 34-36, T. 13 S., R. 90 W.; Sec. 23-26, T. 13 S. R. 91 W.

COMPANY INFORMATION

Parent Company:

Arch Coal Inc.
City Place One, Suite 300, St. Louis, MO 63141
(800) 238-7398
Contact: Dick Sloan

Mine Operator:

Mountain Coal Company, Inc.
P.O. Box 591, Somerset, CO 81434
(970) 929-2246
Contact: Dan Meadors
Contact Geologist: Wendell Koontz

GENERAL INFORMATION

Mine Type: Underground

Mine Status: Producing

No. of Acres in Permit: 14,590

Surface: Federal/Private

Mineral: Federal/Private

Start-Up Date: March 1980

Mining Method: Continuous miners, longwall

Union Affiliation: Non-Union

No. of Employees: 275

GEOLOGIC INFORMATION

Geologic Unit: Mesaverde Group

Geologic Age: Cretaceous

Coal Zone(s) or Bed(s): B seam (1994-present), E seam (unmined), F seam (mined 1982-1991)

Coal Thickness(es): B: 14 ft

Cleat Orientation and Spacing: N65°E - N70°E

Dip of Bedding: 3-5° SW- **Strike of Bedding:**

Thickness of Overburden: B: 0-2300 ft, avg. 1200 ft; E: 0-1700 ft, avg. 800 ft; F: 0-1500 ft, avg. 700 ft

Thickness of Interburden: B-E: 170-300 ft; E-F: 60-190 ft; avg. 120-130 ft

WEST ELK MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|------------|------------|----------|
| | | As shipped | |
| Seam: | E | B | |
| Rank: | Bituminous | Bituminous | |
| Moisture (%): | 11.0 | 9.1 | |
| Ash (%): | 6.5 | 9.4 | |
| Fixed Carbon (%): | | 46.5 | |
| Volatile Matter (%): | | 35.0 | |
| Sulfur (%): | 0.4 | 0.46 | |
| Heating Value (Btu/lb): | 11,600 | 11,700 | |
| Free Swelling Index: | | | |
| Hardgrove Grindability: | | 41-49 | |
| Ash-Softening Temperature (F°): | | 2,500 | |
| Methane Characteristics: | | | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | | | |
|--|------------------------|--------------------|---|
| 1998 Production* (tons): | 5,900,000 | Preparation Plant: | Sizing only |
| 1999 Production* (tons): | 7,300,000 | Tipple: | Silos, batch weigh |
| Total Production through 1999* (tons): | 34,000,000 | Haulage: | Belt haulage out of mine |
| Jan-July 2000 Production (tons): | 712,824 | Equipment: | Longwall, continuous miners, diesel mobile equipment |
| Production per Shift (tons): | | | |
| Shifts per Day: | 3 | | |
| Remaining Reserves (tons): | 157,300,000 (20 years) | | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

SALES DATA

| |
|--|
| Mode of Transportation: Rail (Union Pacific) |
|--|

| | Sales | Use | Destination |
|---------------|-------|-------|----------------------|
| In-State: | 20% | Steam | |
| Out-of-State: | 70% | Steam | IL, IA, TN, TX, NV |
| Foreign: | 10% | Steam | Japan, Korea, Europe |

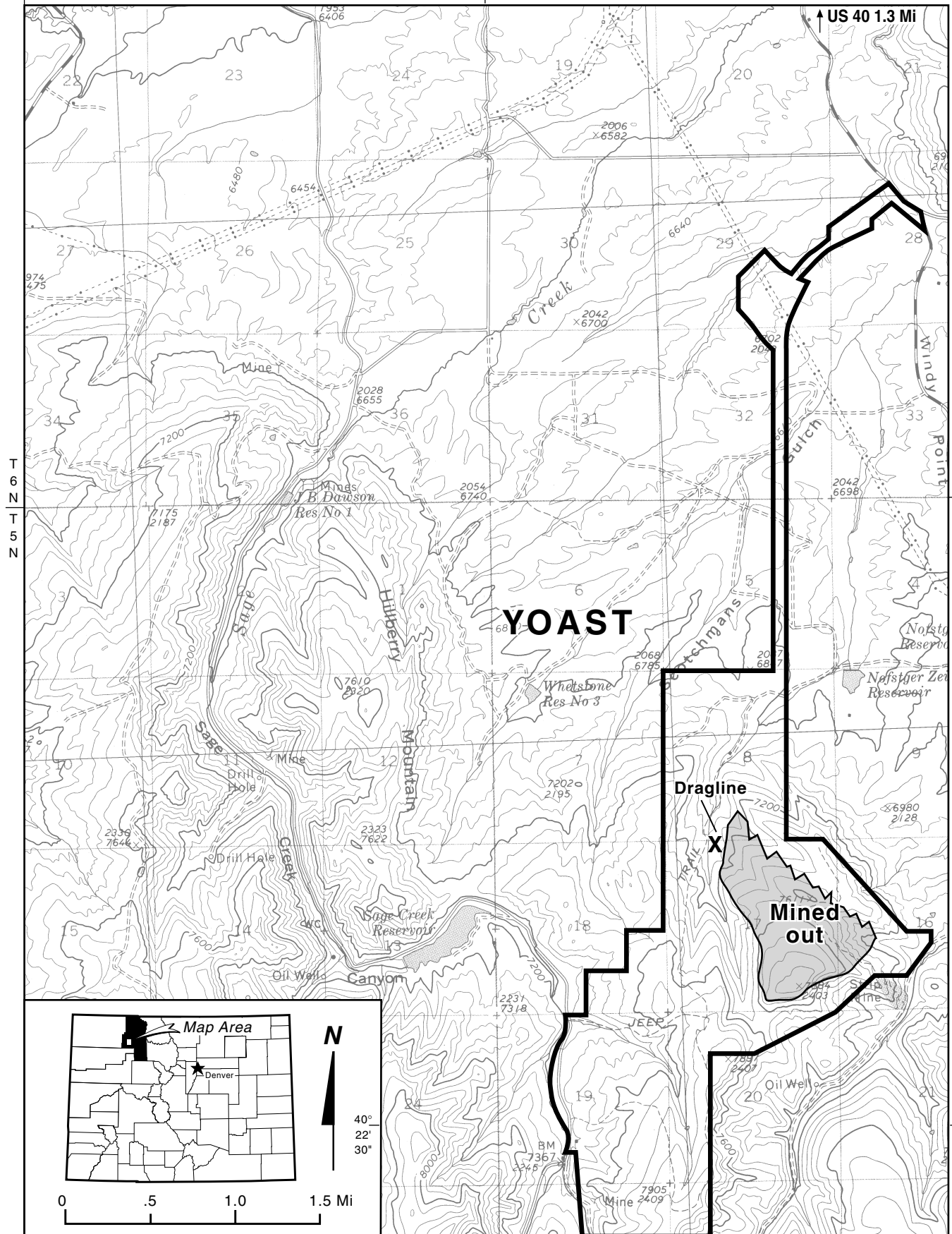
ADDITIONAL INFORMATION AND COMMENTS

Geologic Reference Map: Dunrud, R.C., 1989, Geologic map and coal stratigraphic framework of the Paonia area, Delta and Gunnison Counties, Colorado: U.S. Geological Survey Map C-115, scale 1:50,000

YOAST MINE

107°15'

R 88 W | R 87 W



YOAST MINE

M.L.R.D. Permit No. C-1994-082

LOCATION INFORMATION

Previous Mine Names:

Permit Location:

Sec. 5, 8, 16-20, 29, 30, T. 5 N., R. 87 W.; Sec. 28, 29, 32, T. 6 N., R. 87 W.

County: Routt

Coal Region: Green River

Field: Yampa

Topographic Quadrangle(s): Dunckley, Mt. Harris

COMPANY INFORMATION

Parent Company:

Peabody Coal Company
701 Market St., Suite 765, St. Louis, MO 63101
(314) 342-3400
Contact: Douglas A. Wagner

Mine Operator:

Seneca Coal Company
P.O. Box 670, Hayden, CO 81639-0670
(970) 276-5103
Contact: G. Brad Brown
Contact Geologist:

GENERAL INFORMATION

Mine Type: Surface

Start-Up Date: 1996

Mine Status: Producing

Mining Method: Dragline

No. of Acres in Permit: 2,318

Union Affiliation: UMWA

Surface: Federal/State/Private

No. of Employees: 93**

Mineral: Federal/State/Private

GEOLOGIC INFORMATION

Geologic Unit: Lower Williams Fork Formation

Geologic Age: Late Cretaceous

Coal Zone(s) or Bed(s): Wadge, Wolf Creek

Coal Thickness(es): Wadge: 0.39-14.2 ft (avg. 12.2 ft); Wolf Creek: 15.8-16.7 ft (avg. 16.0 ft)

Cleat Orientation and Spacing:

Dip of Bedding: 8-20° **Strike of Bedding:**

Thickness of Overburden: Range 0-120 ft. Wadge: avg. 55.0 ft; Wolf Creek: avg. 76.0 ft

Thickness of Interburden:

YOAST MINE

COAL QUALITY

| | Sample 1 | Sample 2 | Sample 3 |
|---------------------------------|----------|------------|----------|
| Seam: | Wadge | Wolf Creek | |
| Rank: | | | |
| Moisture (%): | 12.66 | 12.42 | |
| Ash (%): | 7.62 | 13.21 | |
| Fixed Carbon (%): | | | |
| Volatile Matter (%): | | | |
| Sulfur (%): | 0.5 | 0.54 | |
| Heating Value (Btu/lb): | 12,426 | 11,645 | |
| Free Swelling Index: | | | |
| Hardgrove Grindability: | | | |
| Ash-Softening Temperature (F°): | | | |
| Methane Characteristics: | | | |
| Reflectance Data: | | | |

COAL PRODUCTION

| | | |
|--|-------------|--|
| 1998 Production* (tons): | 892,221 | Preparation Plant: |
| 1999 Production* (tons): | 670,476 | Tipple: |
| Total Production through 1999* (tons): | 24,639,136 | Haulage: |
| Jan-July 2000 Production (tons): | 472,813 | Equipment: Draglines, overburden drills, coal drills, loaders, haul trucks |
| Production per Shift (tons): | 3,000-3,500 | |
| Shifts per Day: | 2 (8 hours) | |
| Remaining Reserves (tons): | 5 years | |

* Totals as reported directly by mine. May differ from Division of Minerals and Geology values due to stock-piling or wa

SALES DATA

| |
|---|
| Mode of Transportation: Haulage truck |
|---|

| | Sales | Use | Destination |
|---------------|-------|-------|--------------------|
| In-State: | 100% | Steam | Hayden Power Plant |
| Out-of-State: | | | |
| Foreign: | | | |

ADDITIONAL INFORMATION AND COMMENTS

**Total for Seneca Coal company - all mines. All coal produced in 1999 was from federal leases. Geologic Map Reference: Tweto, Ogden, 1976, Geologic map of the Craig 1° x 2° quadrangle, northwestern Colorado: U.S. Geological Survey Miscellaneous Investigations Map I-972, scale 1:250,000.

ELECTRIC GENERATION

In 1999, Colorado's net electrical generation (table 2), exceeded 35.6 billion kilowatt hours (kWh). Of this, nearly 30 billion kWh were produced by coal-fired power plants (table 3), more than 4 billion kWh by natural gas-fired or natural gas and fuel oil-fired plants (table 4), and more than 2 billion kWh by hydro-electric plants (table 5). Wind-generated electricity has only recently begun to be available to the public and is responsible for only 0.01 percent of the 1999 net electric generation in

Colorado. Numerous small, city-owned generation facilities operate on a stand-by basis for emergency use only and are not included herein.

Coal is the predominant fuel burned in steam electric generation plants. A total of 17,605,473 tons of coal were consumed by these plants in 1999, thus accounting for more than 81 percent of the total Colorado electric generation. About 55 percent of the coal was mined in Colorado, whereas 45 percent was obtained from mines in Wyoming.

Table 2. Summary of 1999 electric generation in Colorado. Coal-fired power plants may also burn natural gas and oil to augment power supply, for start-up and maintenance operations, and for back-up or emergency use.

| Power Source | Nameplate Rating (mW) | Electric Generation (kWh x 1000) | Fuel Consumed | | |
|-----------------|-----------------------|----------------------------------|-------------------|-------------------|---------------|
| | | | Coal (tons) | Gas (mcf) | Oil (bbls) |
| Coal | 4,977 | 29,044,311 | 17,605,473 | 3,320,422 | 17,039 |
| Natural gas/oil | 1,503 | 4,273,935 | 0 | 17,515,278 | 42,407 |
| Hydro | 1,123 | 2,355,012 | 0 | — | — |
| Total | 7,603 | 35,673,258 | 17,605,473 | 20,835,700 | 59,446 |

Table 3. Net electric generation and fuel consumption at major coal-fired power plants in Colorado. Coal-fired power plants may also burn natural gas and oil to augment power supply, for start-up and maintenance operations, and for back-up or emergency use.

| Owner/Plant | Nameplate Rating (mW) | Electric Generation (kWh x 1000) | Fuel Consumed | | |
|--|-----------------------------|--|-------------------|------------------|---------------|
| | | | Coal (tons) | Gas (mcf) | Oil (bbls) |
| City of Colorado Springs | | | | | |
| Martin Drake | 237 | 1,484,262 | 769,313 | 468,244 | 0 |
| Ray D. Nixon | 200 | 1,131,690 | 537,838 | 291,394 | 13,952 |
| Subtotal | 437 | 2,615,952 | 1,307,151 | 759,638 | 13,952 |
| Platte River Power Authority | | | | | |
| Rawhide | 270 | 2,119,444 | 1,263,554 | 0 | 1,288 |
| Xcel Energy (Public Service Co. of Colorado) | | | | | |
| Arapahoe Station | 246 | 1,222,388 | 841,265 | 833,912 | 0 |
| Cameo Station | 73 | 470,478 | 267,480 | 34,091 | 0 |
| Cherokee Station | 717 | 2,262,939 | 2,087,808 | 1,045,602 | 0 |
| Comanche Station | 660 | 4,563,838 | 2,797,928 | 80,529 | 0 |
| Hayden | 446 | 1,621,480 | 1,477,286 | 38,525 | 1,797 |
| Pawnee | 495 | 3,982,368 | 2,504,916 | 57,166 | 0 |
| Valmont | 231 | 734,884 | 326,730 | 328,363 | 2 |
| Subtotal | 2,868 | 14,858,375 | 10,303,413 | 2,418,188 | 1,799 |
| Tri-State Generation & Transmission Association | | | | | |
| Craig | 1,264 | 8,635,673 | 4,351,764 | 142,596 | 0 |
| Nucla | 100 | 586,445 | 249,013 | 0 | 0 |
| Subtotal | 1,364 | 9,222,118 | 4,600,777 | 142,596 | 0 |
| UtiliCorp United, Inc. | | | | | |
| W.N. Clark | 38 | 228,422 | 130,578 | 0 | 0 |
| Subtotal | 38 | 228,422 | 130,578 | 0 | 0 |
| Total | 4,977 | 29,044,311 | 17,605,473 | 3,320,422 | 17,039 |

Table 4. Net electric generation and fuel consumption at major gas-fired power plants in Colorado.

| Owner/Plant | Electric Nameplate Rating (mW) | Generation (kWh x 1000) | Fuel Consumed | |
|--|--------------------------------------|----------------------------|---------------|--------------|
| | | | Gas (mcf) | Oil (bbl) |
| Colorado Energy Management | | | | |
| Brush Cogeneration | 200 | 450,000 | 6,000 | 0 |
| American Atlas #1 | 85 | 150,000 | 2,000 | 0 |
| Subtotal | 285 | 600,000 | 8,000 | 0 |
| City of Colorado Springs | | | | |
| George Birdsall | 40 | 21,400 | 332,000 | 0 |
| City of Delta | | | | |
| | 5 | 425 | 5,011 | 0 |
| City of Lamar | | | | |
| | 25 | 78,998 | 1,081,492 | 0 |
| Xcel Energy (Public Service Co. of Colorado) | | | | |
| Alamosa Turbine | 33 | 4,274 | 90,044 | 251 |
| Fort Lupton Turbine | 78 | 14,448 | 214,327 | 300 |
| Fort St. Vrain | 485 | 1,919,175 | 13,282,171 | 0 |
| Fruita Turbine | 19 | 1,967 | 37,537 | 70 |
| Zuni | 107 | 17,345 | 348,498 | 986 |
| Subtotal | 722 | 1,957,209 | 13,972,577 | 1,607 |
| Tri-State Generation & Transmission Association | | | | |
| Burlington | 93 | 19,181 | 0 | 40,800 |
| ThermoCogeneration Partnership | | | | |
| Fort Lupton | 272 | 1,401,590 | 41,575 | 0 |
| Greeley | 32 | 180,022 | 2,047,247 | 0 |
| Subtotal | 304 | 1,581,612 | 2,088,822 | 0 |
| UtiliCorp United, Inc | | | | |
| Pueblo | 29 | 15,110 | 27,376 | 0 |
| Total | 1,503 | 4,273,935 | 17,515,278 | 42,407 |

Table 5. Net electric generation at hydroelectric power plants in Colorado.

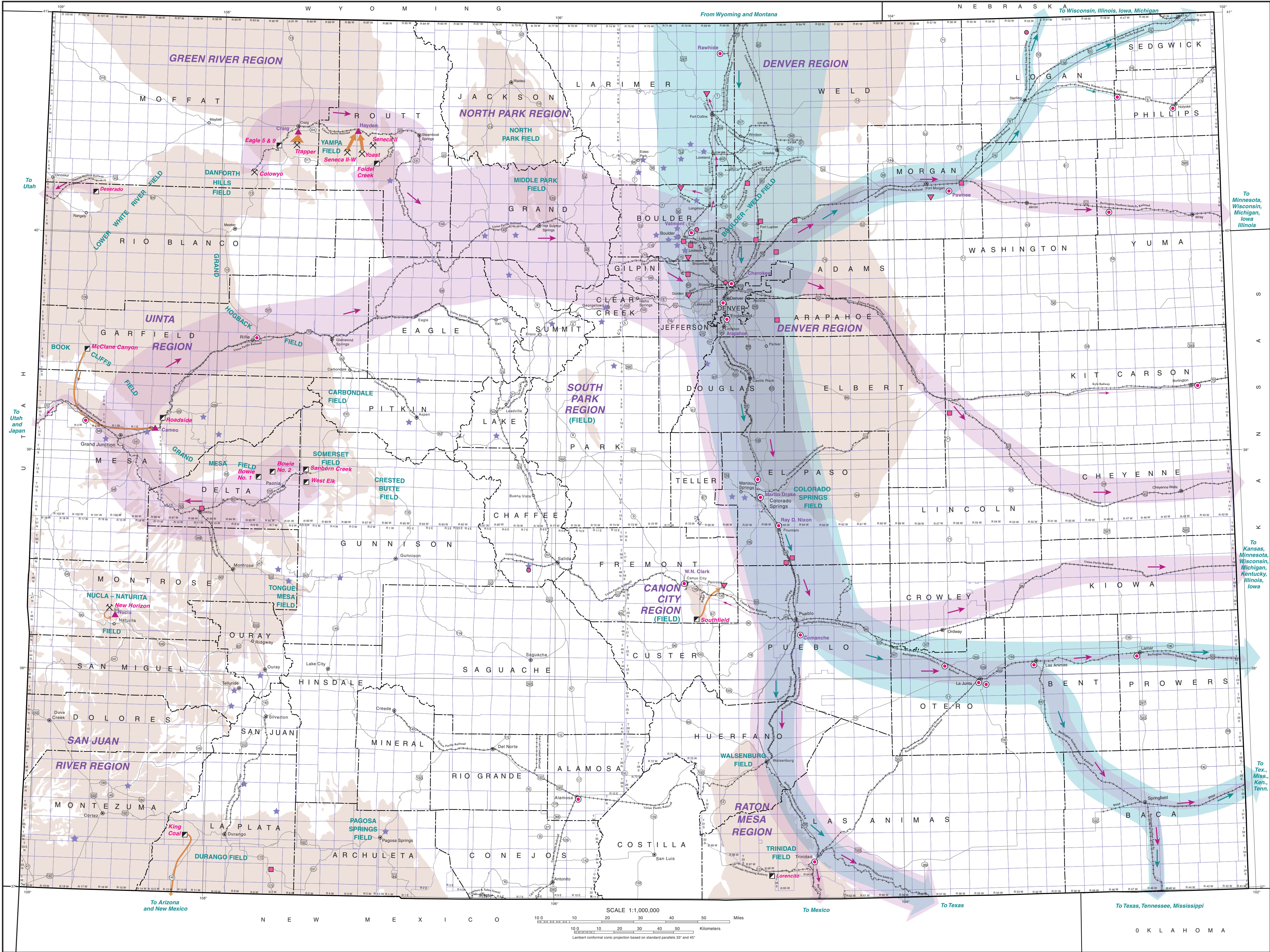
| Owner/Plant | Nameplate Rating (mW) | Electric Generation (kWh x 1000) | Owner/Plant | Nameplate Rating (mW) | Electric Generation (kWh x 1000) |
|---------------------------------|-----------------------|----------------------------------|---|-----------------------|----------------------------------|
| City of Aspen | | | City of Denver (con't.) | | |
| Maroon Creek | 0.45 | 2,120 | Strontia Springs | 1.1 | 7,264 |
| Ruedi Reservoir | 5 | 18,865 | Williams Fork..... | 3.2 | 8,287 |
| Subtotal..... | 5.45..... | 20,985 | Subtotal..... | 17.3..... | 49,814 |
| City of Boulder | | | Eric Jacobson | | |
| Betasso..... | 2.9..... | 8,691 | Bridal Veil Falls | 0.5..... | 1,200 |
| Kohler..... | 0.15..... | 1,040 | Ouray | 0.4..... | 5,000 |
| Maxwell..... | 0.07..... | 589 | Subtotal..... | 0.9..... | 6,200 |
| Orodell | 0.18..... | 512 | City of Longmont | | |
| Silver Lake* | 2 | 0 | Longmont..... | 0.5..... | 2,244 |
| Sunshine..... | 0.8..... | 4,880 | City of Loveland | | |
| Subtotal..... | 4.1 | 15,711 | Idylwilde | 0.9..... | 2,000 |
| Bureau of Reclamation | | | Ptarmigan Res. and Energy, Inc. | | |
| Big Thompson..... | 4.5..... | 8,856 | Vallecito..... | 5..... | 24,000 |
| Blue Mesa | 60..... | 269,308 | Public Service Co. of Colorado | | |
| Crystal..... | 28..... | 163,701 | Ames Hydro..... | 3.6..... | 18,580 |
| Estes..... | 45..... | 70,661 | Boulder Hydro** | 20..... | 12,713 |
| Flatiron..... | 95..... | 189,318 | Cabin Creek Hydro..... | 324..... | 254,457 |
| Green Mountain..... | 22..... | 69,202 | Georgetown Hydro | 2..... | 5,889 |
| Lower Molina..... | 4.9..... | 24,129 | Palisade..... | 3..... | 18,474 |
| Upper Molina..... | 8.6..... | 30,102 | Salida | 1..... | 6,117 |
| Mary's Lake | 8.1..... | 26,081 | Shoshone Hydro..... | 15..... | 101,915 |
| McPhee..... | 1.3..... | 4,425 | Tacoma | 8.1..... | 28,185 |
| Morrow Point..... | 120..... | 323,887 | Subtotal | 377..... | 446,330 |
| Mount Elbert..... | 200..... | 267,353 | Redlands Water and Power Co. | | |
| Pole Hill..... | 33..... | 147,054 | Redlands..... | 1.4..... | 8,669 |
| Towaoc..... | 12..... | 18,444 | Regents of CU—Boulder | | |
| Subtotal | 641..... | 1,612,521 | Boulder | 33..... | 82,000 |
| City of Colorado Springs | | | STS Hydropower, Ltd. | | |
| Manitou | 5..... | 18,948 | Sugarloaf | 2.6..... | 6,500 |
| Ruxton..... | 1..... | 866 | Upper Yampa Water Cons. Dist. | | |
| Tesla..... | 25..... | 52,587 | Stagecoach..... | 0.8..... | 5,639 |
| Subtotal..... | 31..... | 72,401 | Total | | |
| City of Denver | | | 1,123.....2,355,012 | | |
| Dillon | 1.9..... | 11,165 | * Facility under construction in 1999. Proposed start-up date May 2000. | | |
| Foothills..... | 3.1..... | 5,952 | **Pumped storage | | |
| Hillcrest..... | 2..... | 7,935 | | | |
| Roberts Tunnel..... | 6..... | 9,210 | | | |

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COAL PRODUCTION AND DISTRIBUTION MAP OF COLORADO, 2000

By Christopher J. Carroll and Beth L. Widmann



Coal Resources

Nearly one-third of Colorado contains coal-bearing geologic strata. More than 129 billion tons of coal are estimated within 3,000 feet of the earth's surface. Colorado ranks second in the nation in defined bituminous coal resources. The demonstrated reserve base of Colorado coal as of December 1, 1999 is estimated at about 19 billion tons (Department of Energy—Energy Information Administration and recent Colorado Geological Survey calculations). Colorado's coal resources are three-quarters bituminous and nearly one-quarter sub-bituminous, with lesser amounts of lignite and anthracite. Recoverable reserves at active mines in 1998 were 540 million tons.

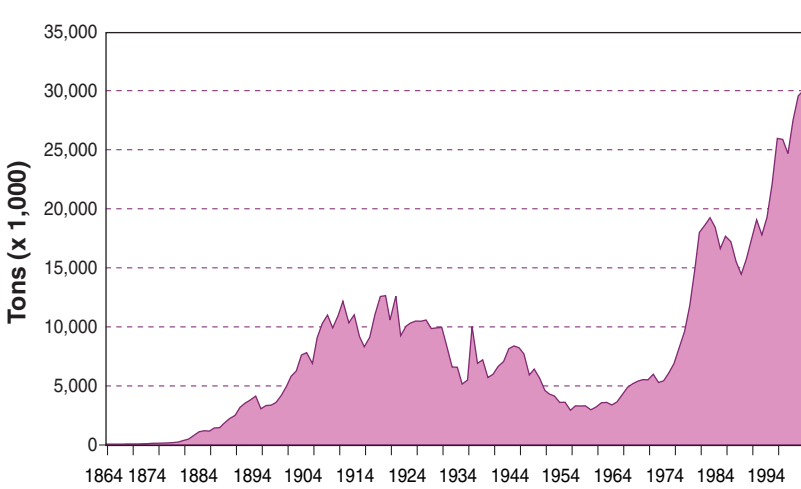
Despite low coal prices nationally, coal producers in Colorado extracted a record 29.9 million tons in 1999. Most of the coal produced in Colorado today is used as steam coal for electric power generation (95%). Colorado coal is classified as environmental "compliance" coal as it is generally low in sulfur and trace elements. This coal is used primarily for steam electric power and much of it is blended with lower quality coal for environmental compliance at power plants in the Midwest and South. In 1999, nearly 9.8 million tons of Colorado coal were burned at power plants within the state and about 17.3 million tons were shipped to eighteen different states and two foreign countries. An additional 7.86 million tons of Wyoming coal were burned at Colorado power plants as well. Colorado is one of the top-ten coal producing states. No coal fired power plants have been built in Colorado since 1981.

1999 Coal Production and Distribution Statistics

| County | Mine* | In-State | Out-of-State | Out-of-Country | Total |
|-------------|-------------|---------------|--------------|----------------|--------|
| Delta | Bo | 2,175 | 1,573 | 0 | 1,748 |
| Fremont | Southfield | ** 216 | 27 | 0 | 242 |
| Gunnison | Sanborn | 0 | 962 | 0 | 962 |
| W | est Elk | 1,419 | 4,966 | 709 | 7,095 |
| La Plata | King Coal | 25 | 194 | 27 | 246 |
| Mesa | Roadside | ** 285 | 0 | 0 | 285 |
| Moffat | Colo | wyo 3,620 | 1,949 | 0 | 5,569 |
| T | rappier | 2,219 | 0 | 0 | 2,219 |
| Montrose | Ne | w Horizon 359 | 0 | 0 | 359 |
| Rio Blanco | Deser | ado 0 | 1,337 | 0 | 1,337 |
| Roout | Seneca II | 8 | 0 | 0 | 8 |
| Seneca II-W | | 685 | 0 | 0 | 685 |
| Y | oadst 670 | 0 | 0 | 0 | 670 |
| F | oidel Creek | 2,995 | 4,278 | 1,283 | 8,556 |
| Total | | 12,675 | 15,287 | 2,020 | 29,981 |

*The following mines are listed in the directory but did not produce coal in 1999: Bowtie No. 1—closed in 1998; Eagle 5 & 8—active but idle since 1995; Lorenzo—opening delayed; McClane Canyon—re-opened in March 2000.
**Roadside Mine closed in January 2000, and Southfield Mine will close in January 2001.
†Rounded to nearest 1,000
Source: Estimated from distribution percentages reported by mines

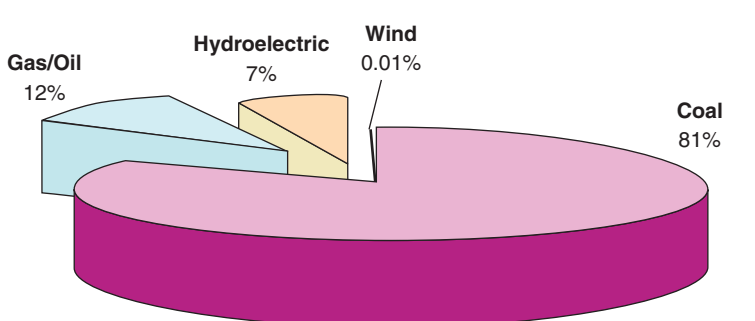
Historic Coal Production in Colorado, 1864–1999



Coal Consumption at Electric Utility Power Plants in Colorado, 1999

| State | Tons |
|-------------|------------------|
| ado | 9,748,824 |
| ted Wyoming | 7,856,649 |
| T | total 17,605,473 |

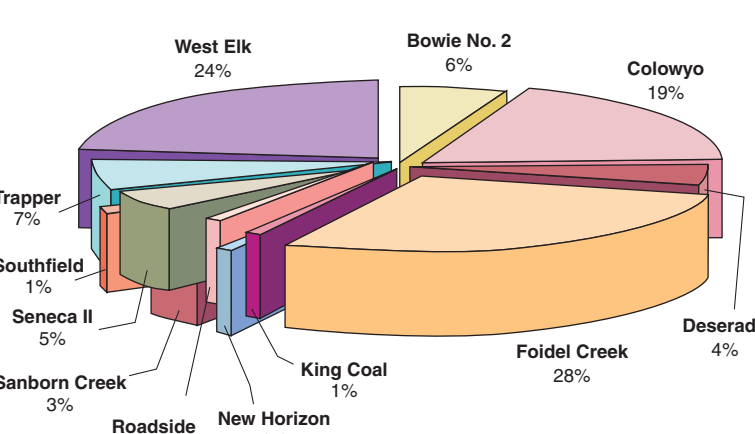
Electrical Output by Energy Source, 1999



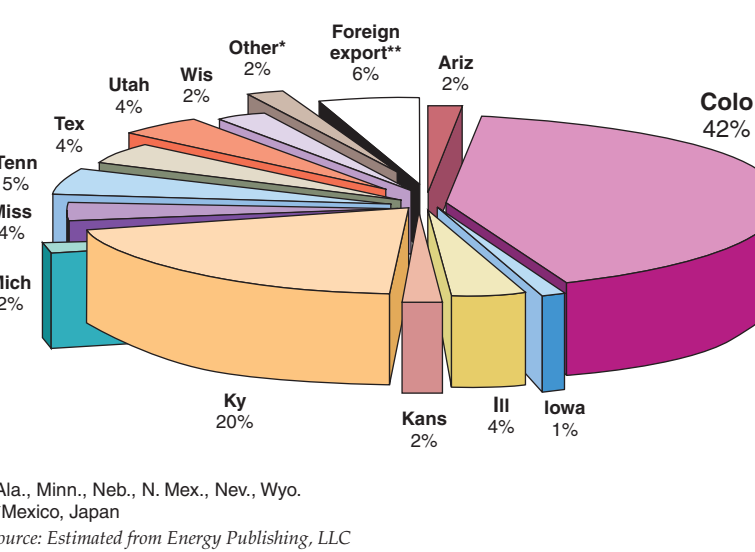
Industrial Coal Consumption in Colorado, 1999

| Owner/Plant | Coal (tons) | Sour | ce of Coal |
|-----------------------------------|-------------|-------------|-----------------------------------|
| HOLNAM, INC. | | | |
| Fort Collins Plant 61,539 | | Sanborn | n Creek Mine, Colo. |
| Portland Plant (Florence) 193,165 | | Southfield | Colo. |
| Subtotal 254,704 | | | |
| SOUTHDOWN, INC. | | | |
| Lyons Plant 88,839 | | Bo | wie No. 2 & West Elk Mines, Colo. |
| TXI | | | |
| Boulder Plant 21,000 | | Xcel Energy | —Cherokee Station |
| TRI-GEN (COORS BREWING CO.) | | | |
| Golden Plant 350,000 | | Bo | wie No. 2 Mine, Colo. |
| WESTERN SUGAR COMPANY | | | |
| Fort Morgan Plant 56,000 | | N. | Peabody Mine, Wyo. |
| Grand Total 770,543 | | | |

Production of Colorado Coal, 1999



Destination of Colorado Coal, 1998



Major Coal-Fired Power Plants, Electric Generation, and Fuel Consumption, 1999

| Electric Nameplate Owner/Plant | Rating (mW) | Generation (kWh x 1000) | Fuel Consumed Coal (tons) | Gas (mcf) | Oil (bb) | I) Coal Sour | ce |
|---|-------------|-------------------------|---------------------------|-----------|----------|--|--|
| CITY OF COLORADO SPRINGS | | | | | | | |
| Martin Drake 237 | | 1,484,262 | 769,313 | 468,244 | 0 | Colo | wyo, Foidel Creek Mines, Colo. |
| Ray D. Nixon 200 | | 1,131,690 | 537,838 | 291,394 | 13,952 | Foidel Creek Mine, Colo.; N. Antelope, Antelope, and Black Thunder Mines | , Wyo. |
| Subtotal 437 | | 2,615,952 | 1,307,151 | 759,638 | 13,952 | | |
| PLATTE RIVER POWER AUTHORITY | | | | | | | |
| Rawhide 270 | | 2,119,444 | 1,263,554 | 0 | 1,288 | Antelope Mine | , Wyo. |
| XCEL ENERGY (PUBLIC SERVICE CO. OF COLORADO) | | | | | | | |
| Arapahoe 246 | | 1,222,388 | 841,265 | 833,912 | 0 | Antelope | , Black Thunder Mines, Wyo.; West Elk Mine, Colo. |
| Cameo 73 | | 470,478 | 267,480 | 34,091 | 0 | P | owderhorn, Wyo. |
| Cherokee 717 | | 2,262,939 | 2,087,080 | 1,045,602 | 0 | F | oidel Creek, Colowyo, West Elk, Sanborn Creek Mines, Colo. |
| Comanche 660 | | 4,563,838 | 2,797,928 | 80,529 | 0 | Belle A | yr, Eagle Butte Mines, Wyo.; West Elk Mine, Colo. |
| Hayden 446 | | 1,621,480 | 1,477,286 | 38,525 | 1,797 | Seneca Mine | , Colo. |
| Pawnee 495 | | 3,982,368 | 2,504,916 | 57,166 | 0 | Belle A | yr, Eagle Butte Mines, Wyo. |
| Valmont 231 | | 734,884 | 326,730 | 328,363 | 2 | F | oidel Creek, Colowyo Mines, Colo. |
| Subtotal 2,868 | | 14,658,375 | 10,303,413 | 2,418,188 | 1,799 | | |
| TRI-STATE GENERATION AND TRANSMISSION ASSOCIATION | | | | | | | |
| Craig 1,264 | | 8,635,673 | 4,351,764 | 142,596 | 0 | T | rappier, Colowyo, Foidel Creek Mines, Colo. |
| Nucia 100 | | 586,445 | 249,013 | 0 | 0 | Ne | w Horizon Mine, Colo. |
| Subtotal | | 1,364,922,118 | 4,600,777 | 142,596 | 0 | | |
| UTILICORP UNITED, INC. | | | | | | | |
| W.N. Clark 38 | | 228,422 | 130,578 | 0 | 0 | F | oidel Creek Mine, Colo. |
| Grand Total 4,977 | | 29,044,311 | 17,605,473 | 3,320,422 | 17,039 | | |

Acknowledgments

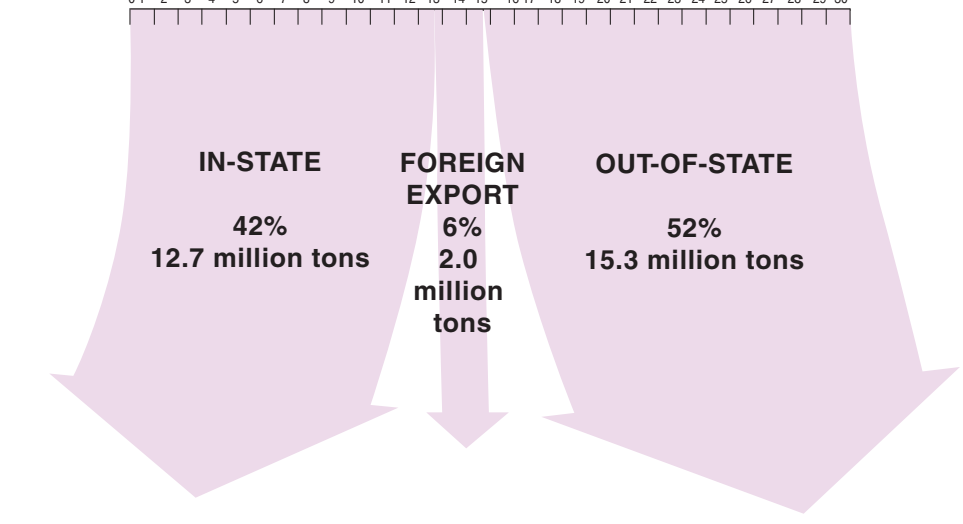
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Explanation

| | | |
|---------------------|----------|---|
| C | oundar | y |
| Denver Region | name | |
| Trinidad Field | name | |
| Sutro | Trapper | ace mine and name |
| Unco | West Elk | round mine and name |
| Railroad line and o | | wner name |
| T | | ransport direction of Colorado coal transported by truck (see graph at right) |
| T | | ransport direction of Colorado coal transported by rail (see graph at right) |
| Co | Cherokee | oil/gas fired power plant (major ones labeled) |
| Coal | West Elk | —mine power plant and name |
| Hydro | ectr | ic power plant |
| Recent | as po | wer plant |
| Industr | | ial plant (coal-fired only) |
| Alter | | native energy power plant (wind or biogas) |

Colorado Coal Destination in Millions of Tons



Scale: 1/8 in. = 1 million tons of coal