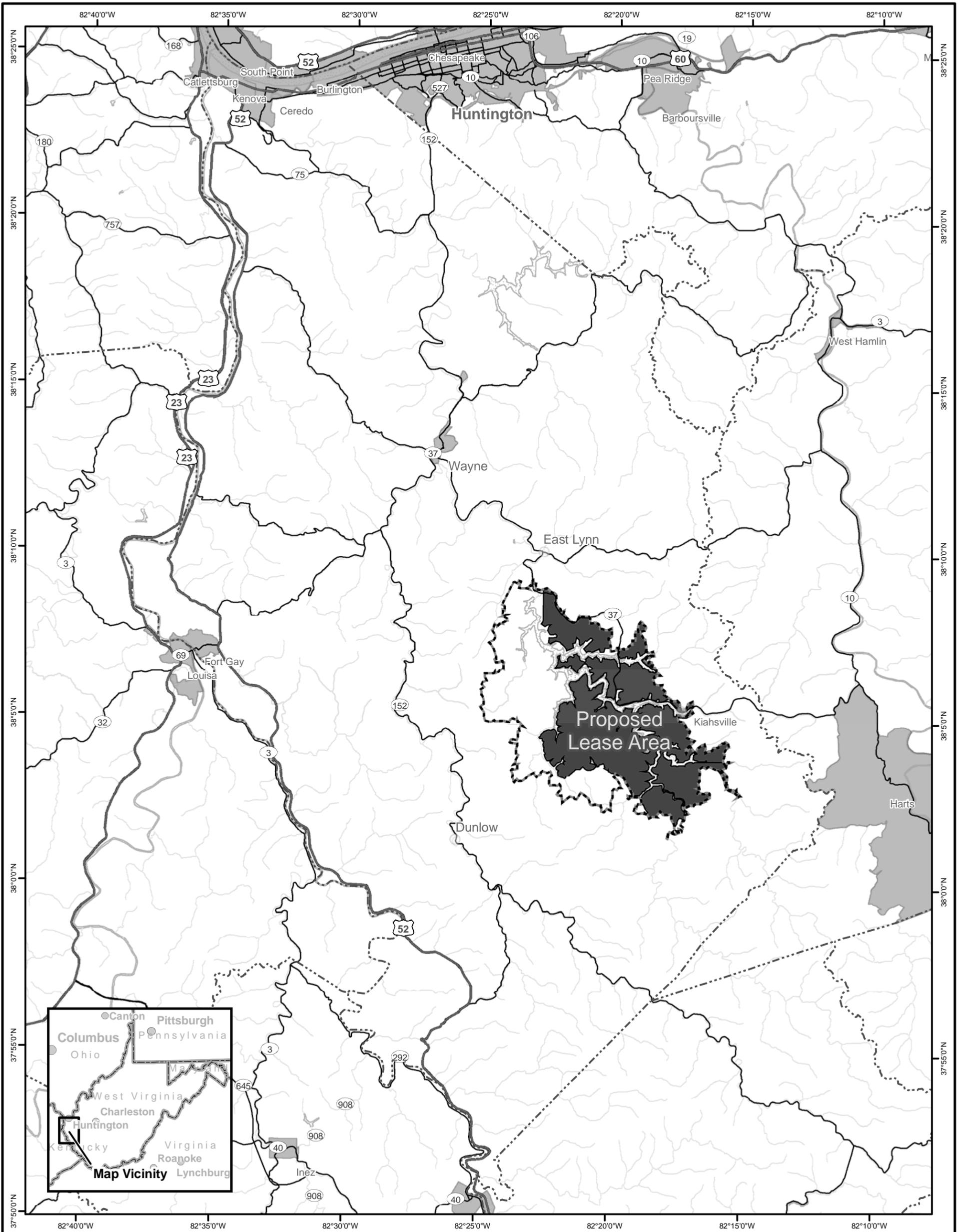


East Lynn Lake Coal Lease Draft Land Use Analysis
and Draft Environmental Impact Statement

FIGURES



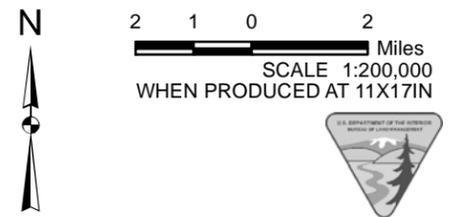
LEGEND

- Proposed Lease Area
- USACE East Lynn Lake Project Boundary
- County Boundary

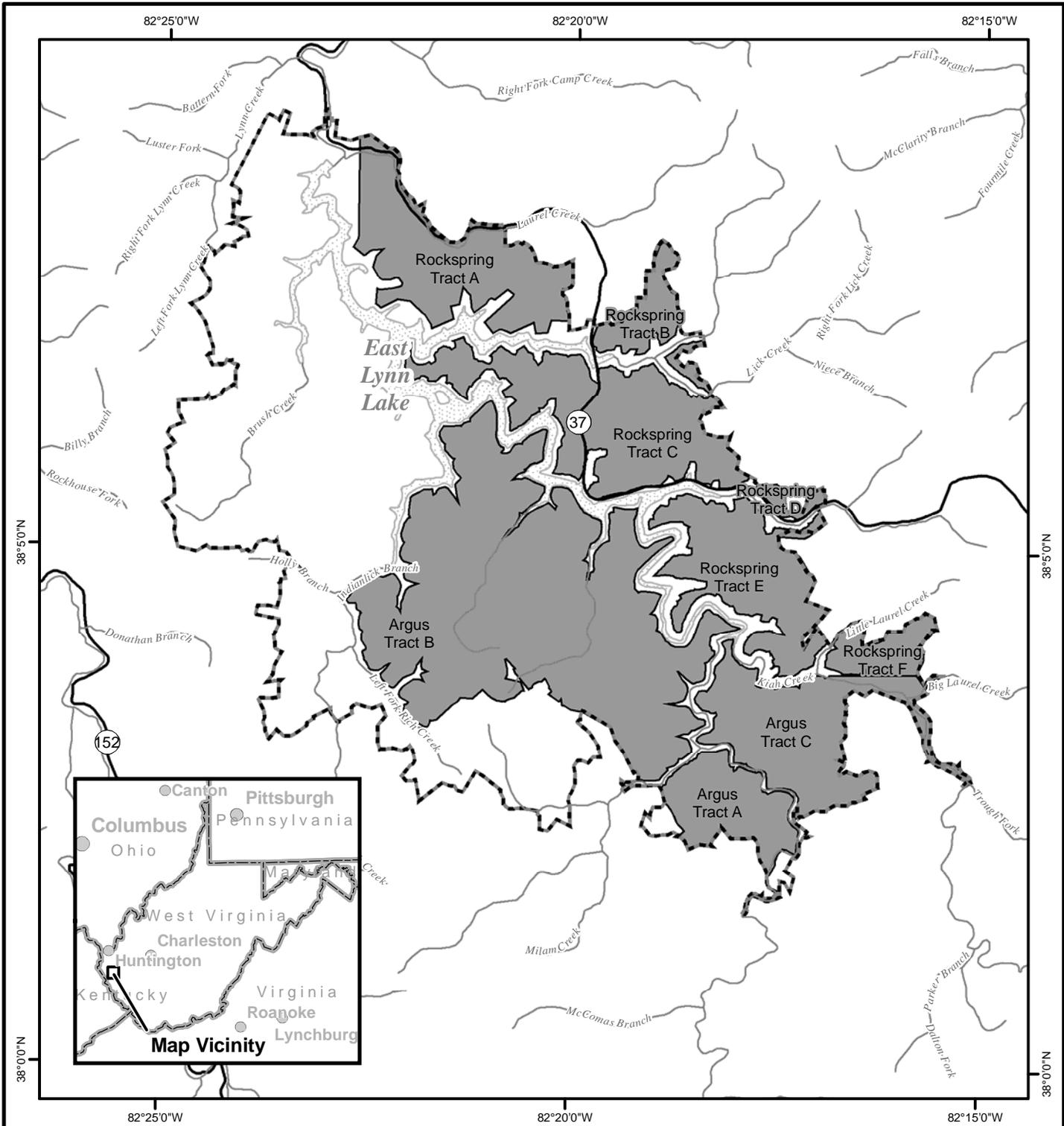
REFERENCES

Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Roads, streams, cities, county boundaries: ESRI (2006)
 Projection: State Plane NAD 83 West Virginia South (feet)

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BUREAU OF LAND MANAGEMENT EAST LYNN LAKE COAL LEASE DLUA/DEIS WAYNE COUNTY, WV	
PROPOSED LEASE AREA LOCATION MAP	
FILE 11x17_ELL_EIS_Location.mxd	FIGURE 1.1-1
DATE 11/01/2007	



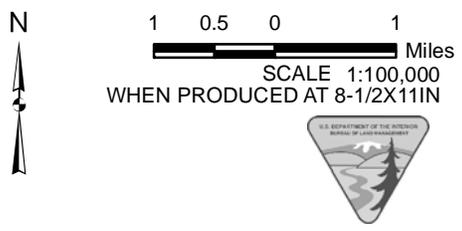
LEGEND

- Proposed Lease Area
- USACE East Lynn Lake Project Boundary
- Lake
- Stream
- Road

REFERENCES

Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Projection: State Plane NAD 83 West Virginia South (feet)

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BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

PROPOSED LEASE TRACT VICINITY MAP

FILE 8-5x11_ELL_EIS_ProjectSite.mxd
 DATE UH 11/01/2007 **FIGURE 1.1-2**

OVERSIGHT AGENCIES

Council on Environmental Quality (CEQ)



Created by the *National Environmental Policy Act* of 1969 (NEPA), the CEQ is responsible for environmental policy development and the oversight of federal agencies implementing NEPA.

Members of the CEQ are appointed by the President of the US.

Specific Responsibilities

- Issue regulations and other guidance for implementing NEPA.
- Resolve lead agency disputes.
- Mediate interagency disputes over environmental policy.
- Provide training and advice to federal agencies regarding NEPA compliance.

U.S. Environmental Protection Agency (USEPA)



In addition to its regulatory capacity, the USEPA has three important roles defined by the NEPA process: to review, to notify the public, and to act as a cooperating agency.

Specific Roles and Responsibilities

- Review
 - The USEPA files and reviews all EISs for document adequacy and environmental quality of the proposed action.
- Notify the Public
 - The USEPA receives all EISs and provides public notice in the *Federal Register*.
- Cooperating Agency
 - The USEPA cooperates with lead agencies concerning the implementation of USEPA environmental programs and regulations.

IMPLEMENTING AGENCIES

Lead Federal Agency

U.S. Department of the Interior Bureau of Land Management—Eastern States (BLM) Springfield, VA



Responsible Official: Mr. Juan Palma, Eastern States Director
Contact Person: Mr. Chris Carusona, Planning and Environmental Coordinator

Role

The *Water Resources Development Act of 1999* gives the BLM the responsibility of making coal leasing decisions for the USACE East Lynn Lake Project

Decisions to be Made

The BLM Milwaukee Field Office will determine

- Whether or not to lease the federal coal tracts
- What additional stipulations should be applied

Cooperating Agencies



U.S. Department of the Army Corps of Engineers (USACE) Huntington District Huntington, WV

Responsible Official:
Mr. William E. Bullen, Commander
Contact Person:
Mr. John Preston, Ecologist

The USACE is the Surface Management Agency for the East Lynn Project

Role

The USACE will, to the extent it determines, participate in internal scoping, alternatives analysis, study development and technical reviews.

The USACE will, to the extent it determines, provide information, data and comment, help collect data, participate in discussions about data assessment and technical reports, and provide technical expertise to assist in evaluating the effectiveness of all alternatives and the LUA/EIS.



U.S. Department of the Interior Office of Surface Mining (OSM) Lexington, KY

Responsible Official:
Mr. Brent Wahlquist, Regional Director
Contact Persons:
Mr. Gerald Waddle, Field Office Manager
Mr. Jeff Coker, Biological Scientist

Role

The OSM is responsible for providing recommendations to the Secretary of the Interior regarding approval, disapproval, or conditional approval of the mine plan on lands contained within the federal lease area.

The OSM will bring specialized knowledge to the review process as it applies to the pending action, specifically regarding: ground stability and subsidence, groundwater and hydrologic issues, and mine portal issues.



West Virginia Division of Natural Resources (WVDNR) Pt. Pleasant, WV

Responsible Official:
Mr. Frank Jezioro, Director
Contact Persons:
Mr. Tom Dotson, District Wildlife Biologist
Mr. Randy Kelley, Wildlife Biologist

In 1983, the USACE issued a 25-year license to the WVDNR to manage the East Lynn Lake Wildlife Management Area (WMA)

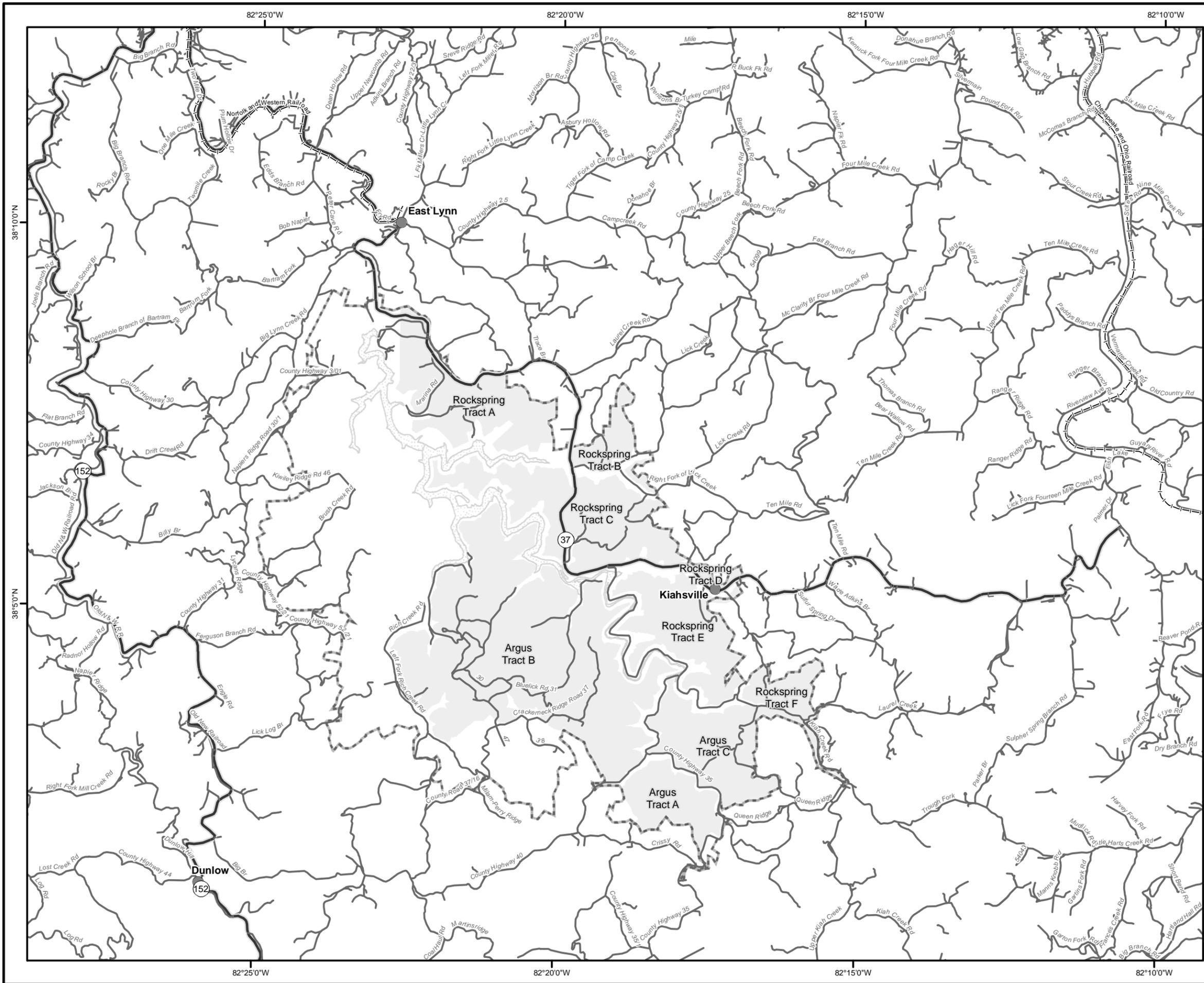
Role

The WVDNR will, to the extent it determines, provide information, data, and comments regarding those elements of the LUA/EIS and the data and analyses which it has special expertise.

WVDNR helps to collect data to the extent possible, participates in discussions about data assessment and technical reports, and provides technical expertise to assist in evaluation of the effectiveness of the proposed alternatives and the LUA/EIS.

**Figure 1.1-3 NEPA Process Oversight and Agency Involvement
East Lynn Lake LUA/EIS**

BLM Milwaukee Field Office—Eastern States



LEGEND

- State Highway
- Other Road
- Railroad
- Proposed Lease Area
- USACE East Lynn Lake Project Boundary
- Lake

REFERENCES

Roads: USACE U.S. Census Bureau TIGER/Line (2000)
 Railroads: Bureau of Transportation Statistics (2001)
 Proposed lease boundaries: Argus Energy LLC (2006),
 Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Projection: State Plane NAD 83 West Virginia South (feet)

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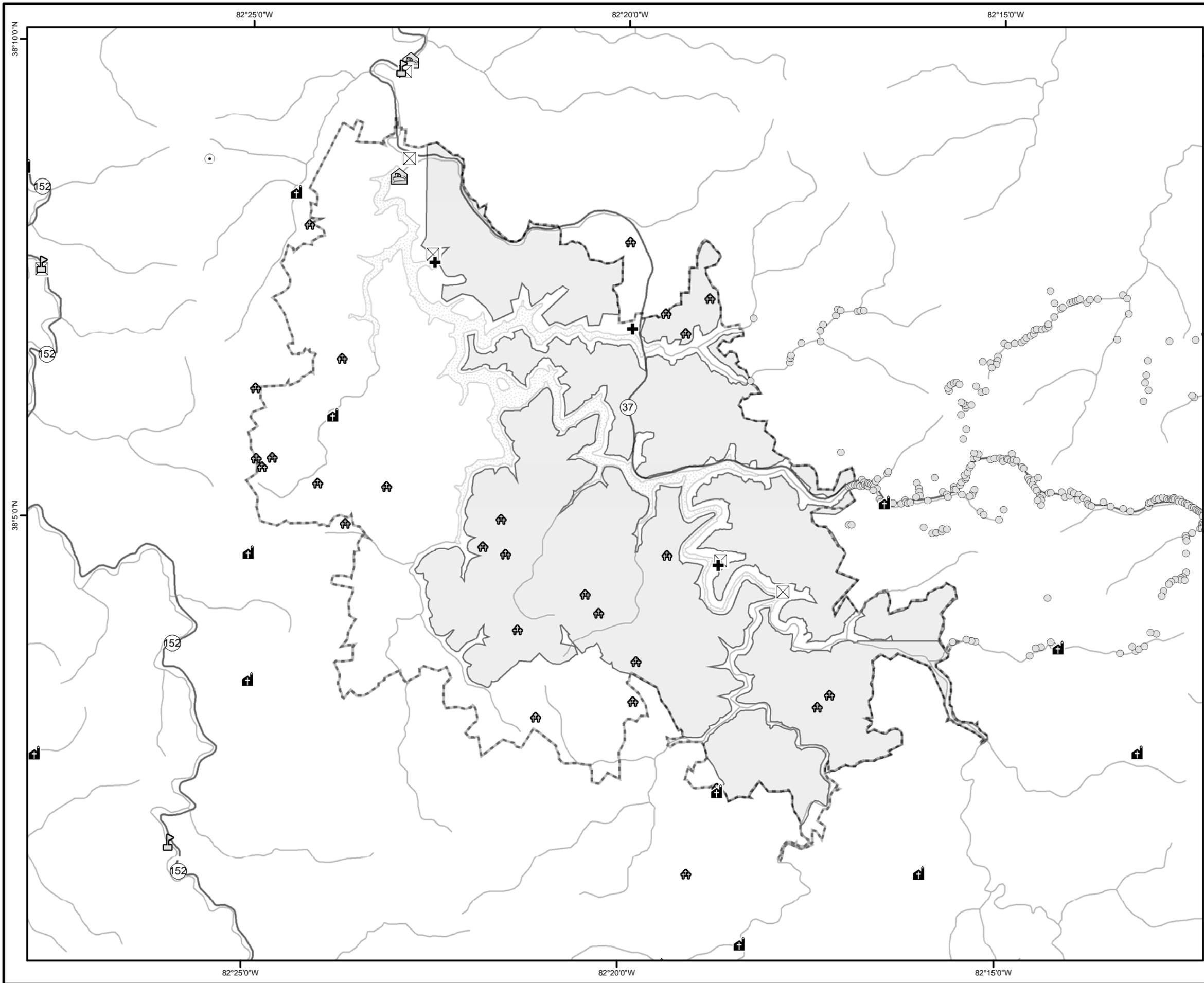


1 0.5 0 1 Miles
 SCALE 1:90,000
 WHEN PRODUCED AT 11X17IN



BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

**AREA TRANSPORTATION
 INFRASTRUCTURE**



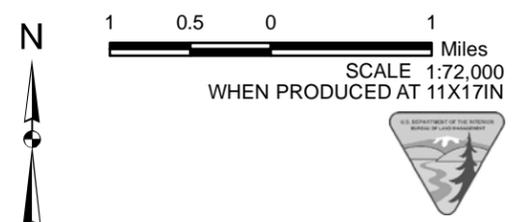
LEGEND

- ☒ Sewage Treatment Plant
- ⊕ Water Treatment Plant
- ⊙ Oil/Gas Processing Facility
- ⊞ Cemetery
- Ⓜ Church
- Ⓝ School
- 🚒 Fire Department
- House
- × Misellaneous. Building/Structure
- ▒ Proposed Lease Area
- ⊞ USACE East Lynn Lake Project Boundary
- Stream
- Road
- ⊞ Lake

REFERENCES

Sewage treatment plants: WV Dept. of Env. Protection (2002)
 Water treatment plants: USACE (2006)
 Oil and gas processing facilities: EPA Enviromapper (2007)
 Cemeteries: Anslinger and Others (2007), USACE ELL Recreation Map (USACE) (2007), Argus Energy LLC (2006)
 Churches: GNIS (1981)
 Schools: WV Army National Guard (2005)
 Fire Departments: WV Div. of Forestry (2002)
 House/building locations: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Projection: State Plane NAD 83 West Virginia South (feet)

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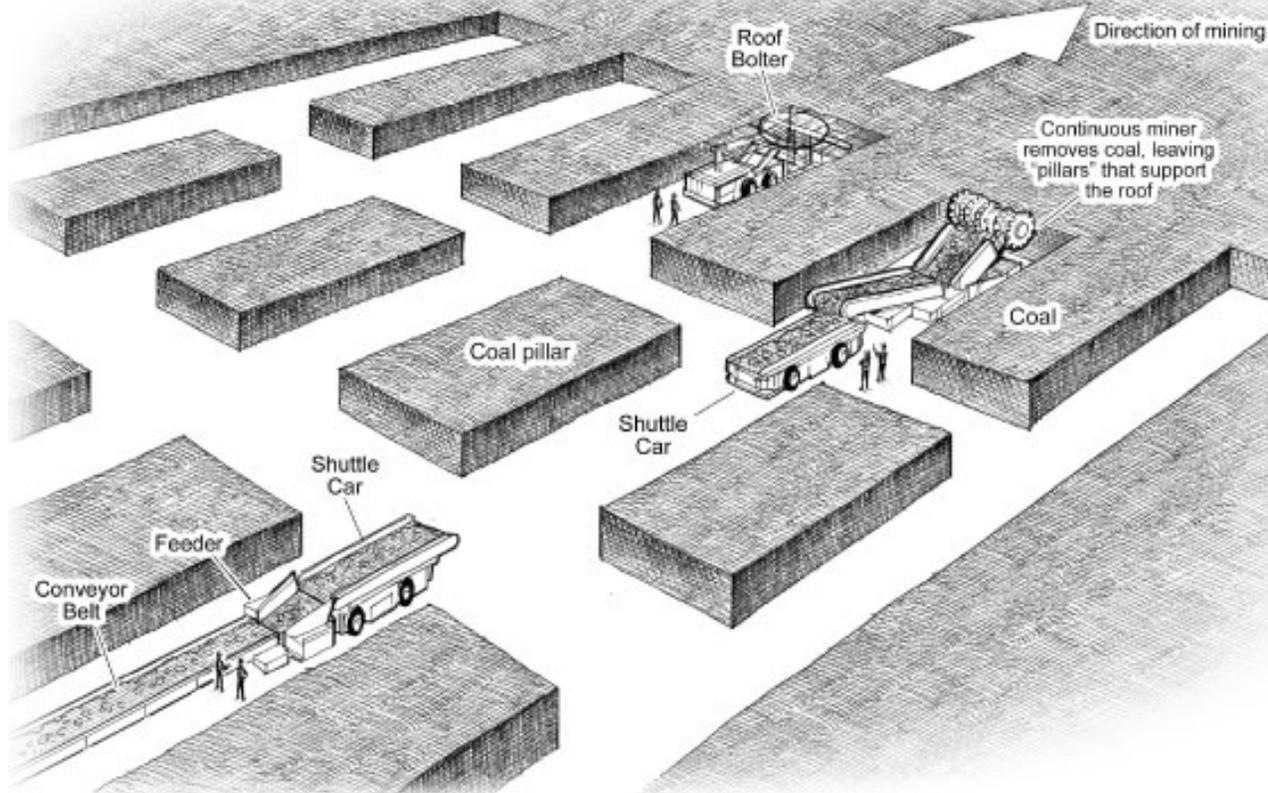


BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

FACILITIES AND INFRASTRUCTURE

REFERENCE

Arch Coal (2007)



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SCALE: N.T.S.



BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

ROOM-AND-PILLAR MINE SCHEMATIC

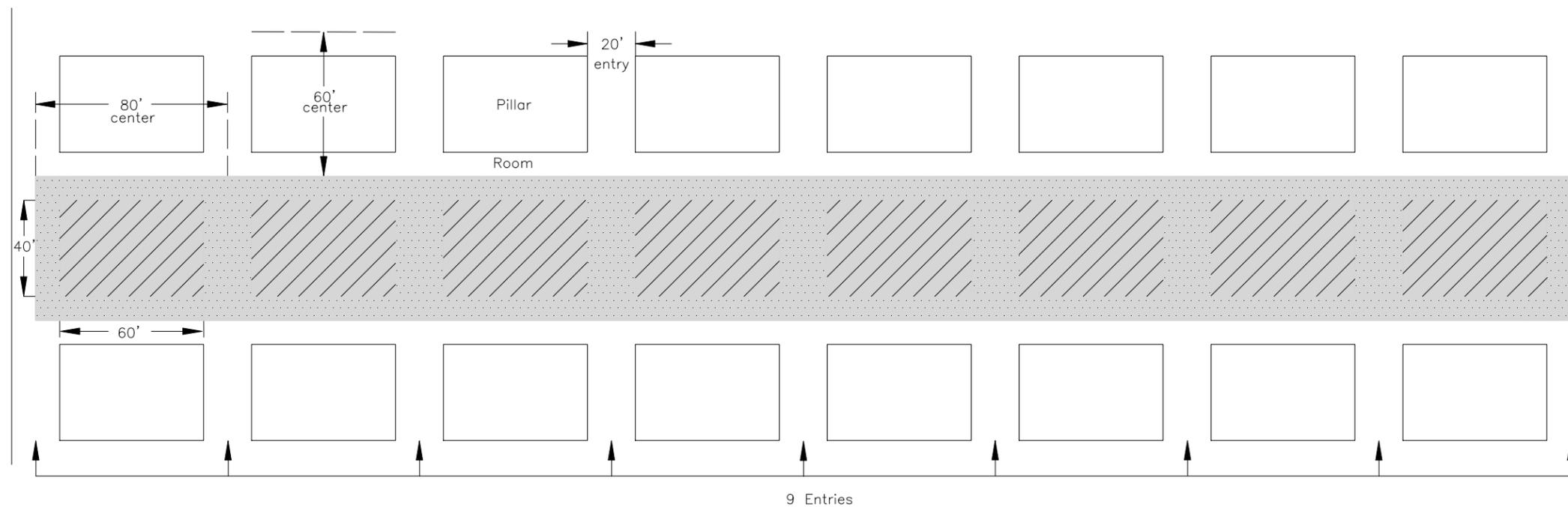
FILE 8-5x11_RoomPillarSchematic.mxd
DATE JH 11/05/2007

FIGURE 2.1-1

REFERENCES

BLM Reasonably Foreseeable Development Scenario (RFDS) (BLM 2007a)

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THESE ARE TYPICAL FACE PRINTS ONLY. ENTRY WIDTHS, ENTRY AND CROSSCUT CENTERS, CROSSCUT ANGLES, NUMBER OF ENTRIES AND OTHER MINING CONFIGURATION FACTORS MAY VARY FROM THAT SHOWN SO LONG AS THE MINIMUM PILLAR DIMENSION IS MAINTAINED.

EXTRACTION RATE CALCULATIONS

-  AREA OF IN SITU COAL = 60'x80' = 4,800 SQ. FT.
-  AREA OF PILLARS = 60'x40' = 2,400 SQ. FT.
-  RECOVERY = $\frac{4,800 \text{ SQ. FT.} - 2,400 \text{ SQ. FT.}}{4,800 \text{ SQ. FT.}} = 50\%$

PILLAR LOADING

$$\text{RECOVERY} = S_v \frac{\text{AREA OF PILLARS}}{\text{AREA OF IN SITU COAL}} = S_v \frac{4800 \text{ SQ. FT.}}{2400 \text{ SQ. FT.}}$$

(S_v = VIRGIN OVERBURDEN)

SCALE: N.T.S.

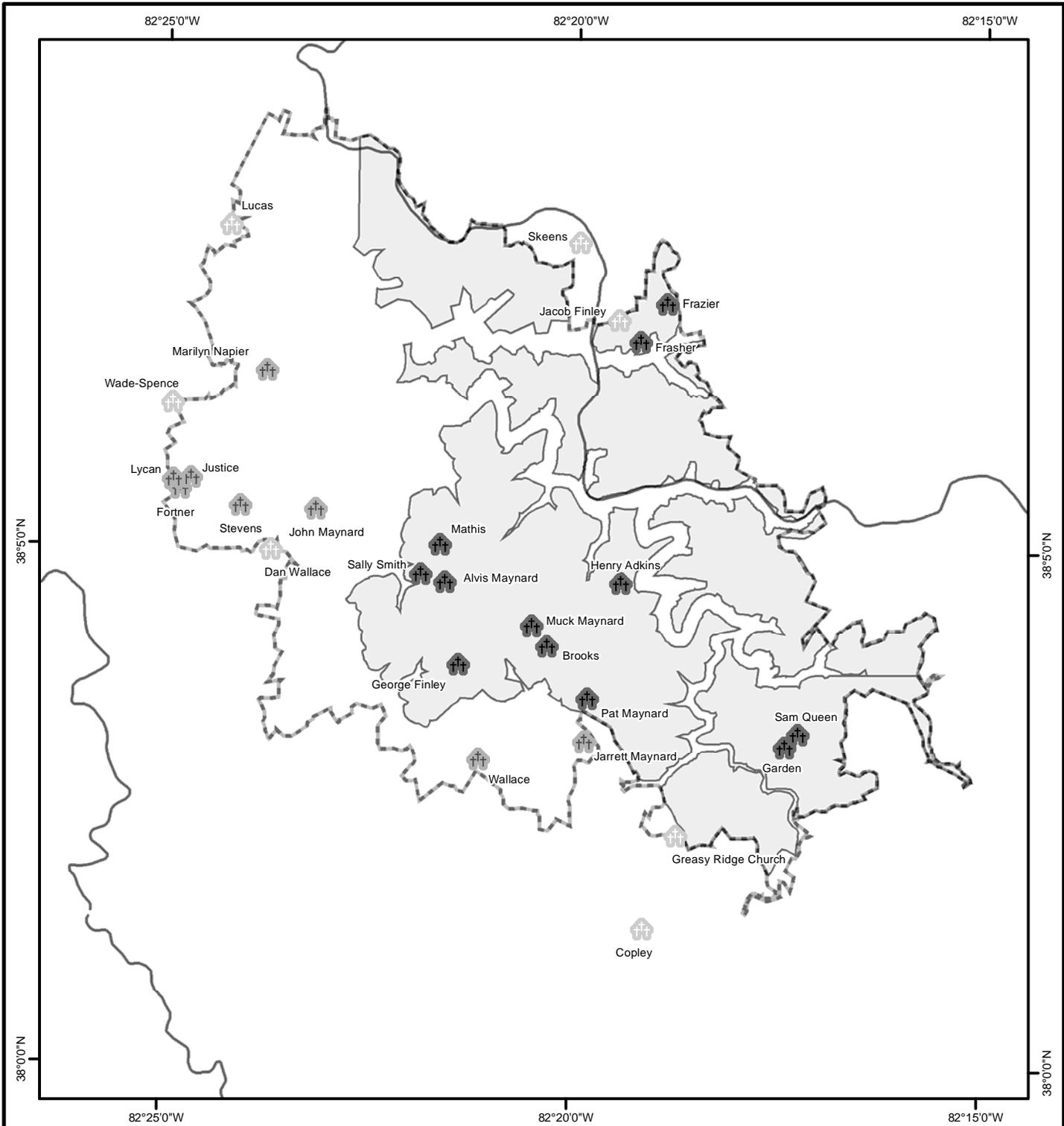


BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

**RFDS PROPOSED
ROOM-AND-PILLAR MINING**

FILE 11x17_ELL_RoomPillar.mxd
DATE UH 11/05/2007

FIGURE 2.1-2



LEGEND

- Cemetery Within Lease Tract
- Cemetery Within USACE Proj. Bound
- Cemetery Outside of USACE Proj. Bound
- Proposed Lease Area
- USACE East Lynn Lake Project Boundary
- Lake
- Stream
- Road

N

1 0.5 0 1 Miles

SCALE 1:100,000
WHEN PRODUCED AT 8-1/2X11IN

REFERENCES

Cemeteries: Anslinger and Others (2007), USACE ELL Recreation Map (USACE) (2007), Argus Energy LLC (2006)
 Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Projection: State Plane NAD 83 West Virginia South (feet)

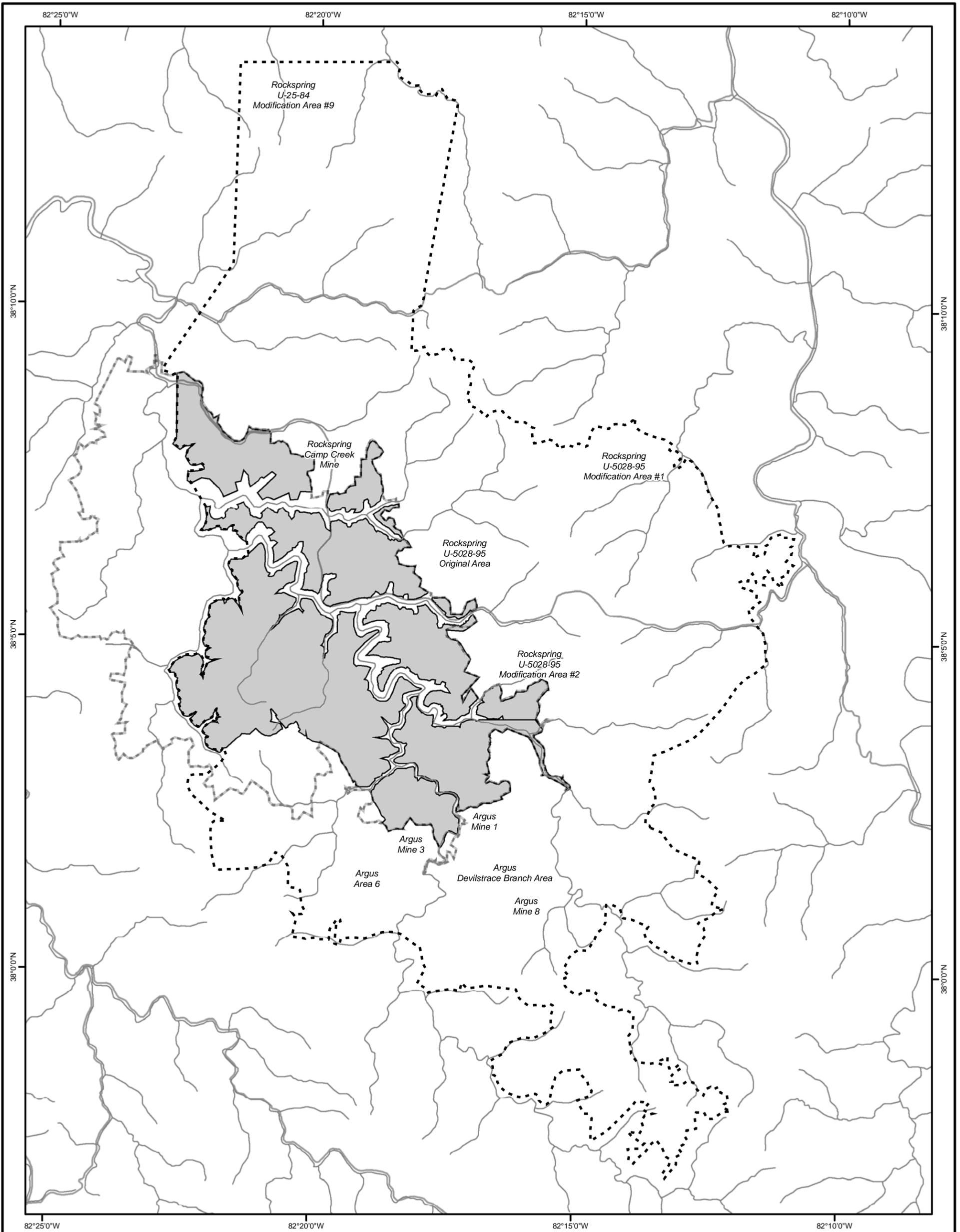
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

CEMETERIES

FILE 8-5x11_ELL_EIS_Cemeteries.mxd
 DATE JH 11/05/2007

FIGURE 3.10-1



LEGEND

- Existing and Proposed Mine Permit Area Boundary
- Proposed Lease Area (Geology and Mineral Resources Study Area)
- USACE East Lynn Lake Project Boundary
- Lake
- Stream
- Road

REFERENCES

Existing mine areas: Argus Energy LLC (2006), Rockspring Development (2006)
 Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Projection: State Plane NAD 83 West Virginia South (feet)

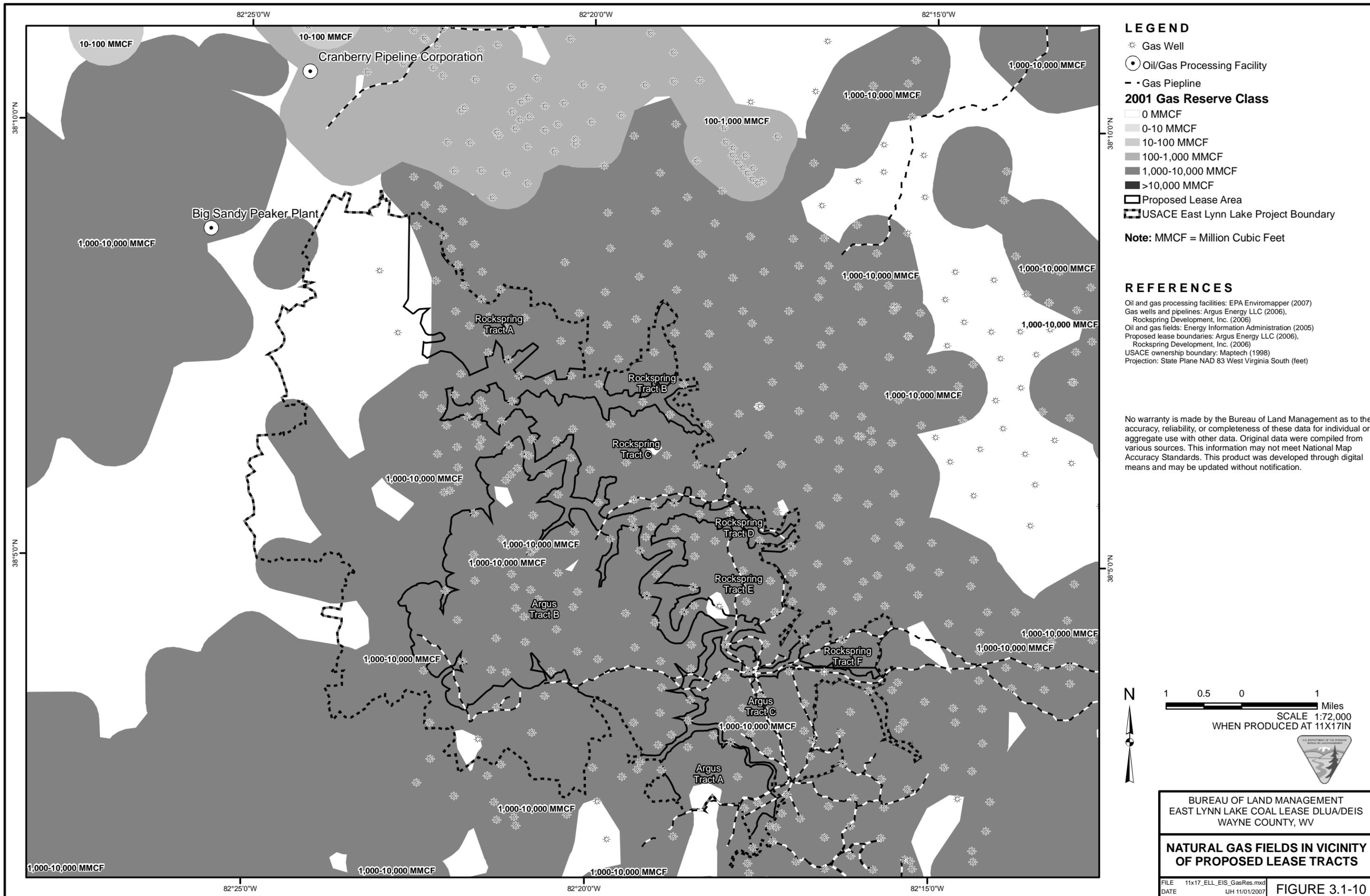
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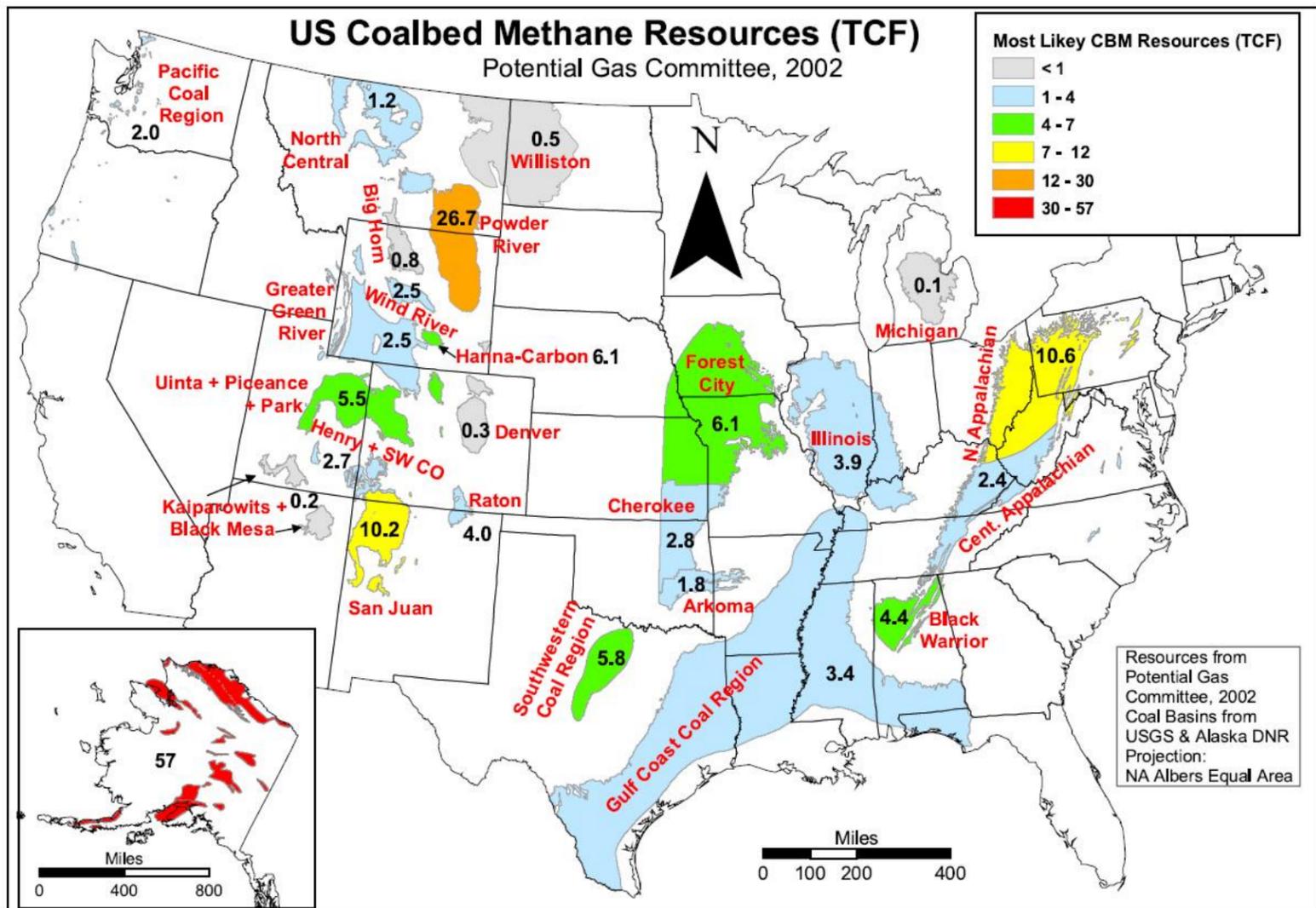
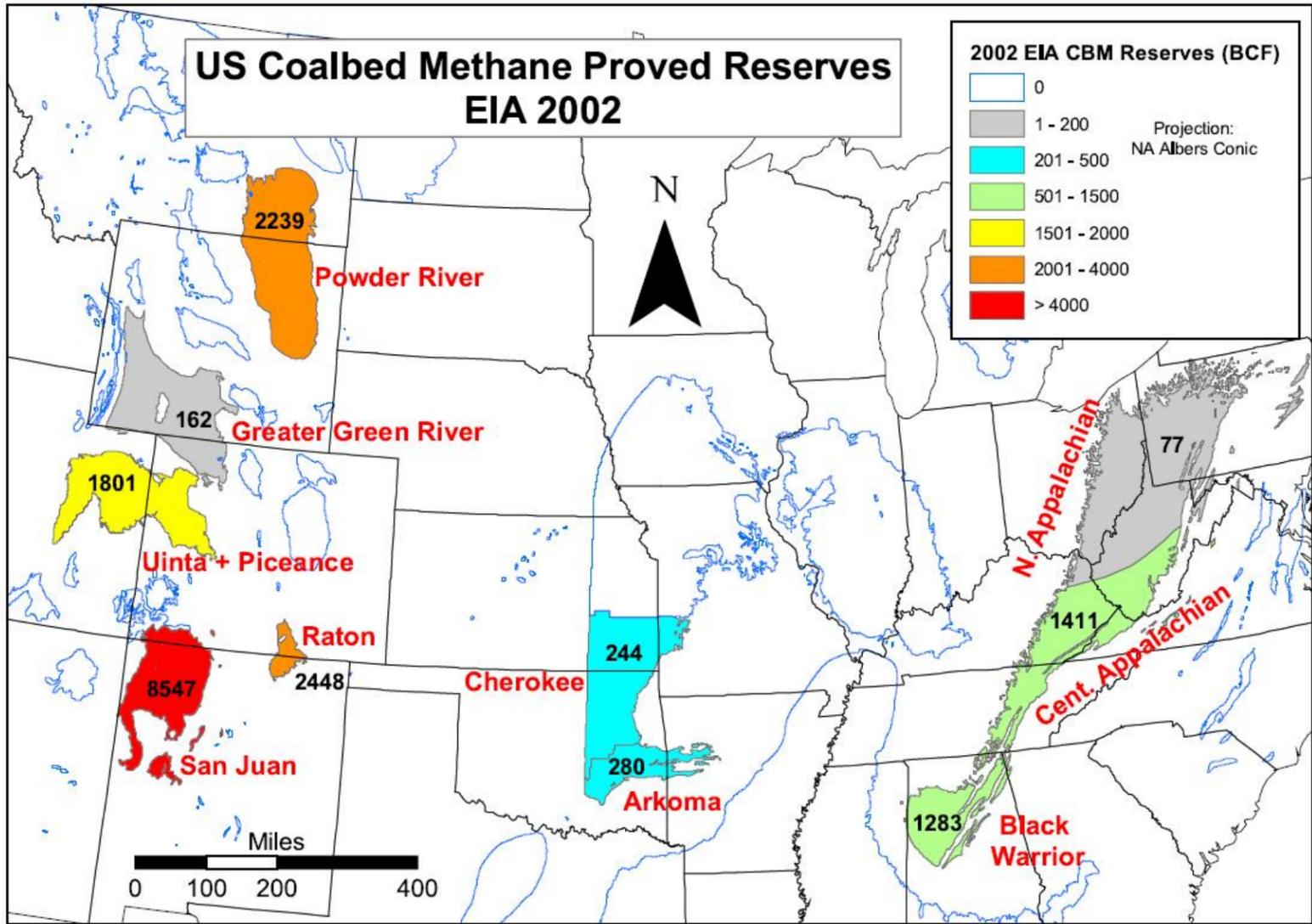


1 0.5 0 1 Miles
 SCALE 1:100,000
 WHEN PRODUCED AT 11X17IN



BUREAU OF LAND MANAGEMENT EAST LYNN LAKE COAL LEASE DLUA/DEIS WAYNE COUNTY, WV	
GEOLOGY AND MINERAL RESOURCE STUDY AREA AND EXISTING AND PROPOSED MINING ACTIVITY	
FILE 11x17_ELL_GeoStudyArea.mxd	DATE 11/05/2007
FIGURE 3.1-1	





NOTES

BCF = billion cubic feet
TCF = trillion cubic feet

REFERENCE

Limerick 2004

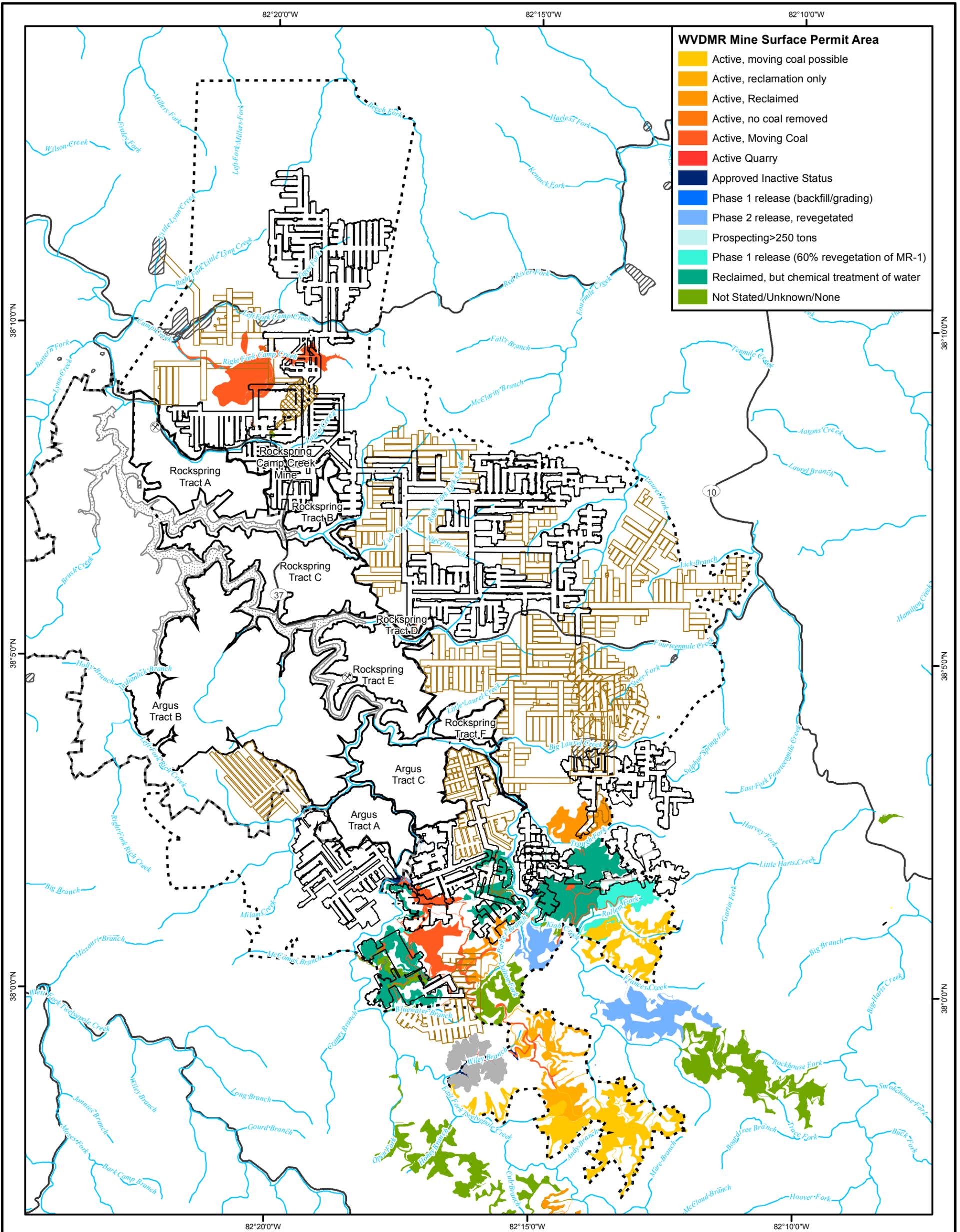


BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

Coalbed Methane in the U.S.

FILE 11x17_ELL_EIS_CBM
DATE LJH 09/11/2007

FIGURE 3.1-11



WVDNR Mine Surface Permit Area

- Active, moving coal possible
- Active, reclamation only
- Active, Reclaimed
- Active, no coal removed
- Active, Moving Coal
- Active Quarry
- Approved Inactive Status
- Phase 1 release (backfill/grading)
- Phase 2 release, revegetated
- Prospecting >250 tons
- Phase 1 release (60% revegetation of MR-1)
- Reclaimed, but chemical treatment of water
- Not Stated/Unknown/None

LEGEND

- Punch Mine
- Abandoned Mine Lands
- Existing and Proposed Mine Permit Area Boundary
- USACE East Lynn Lake Project Boundary
- Permitted Facility, Not Yet Mined
- Proposed Coal Refuse Pile and Slurry Impoundment Facility
- Underground Mine
- Lake
- Stream
- Road
- Surface Mine

REFERENCES
 Punch mines: USACE (2007)
 Existing, permitted, and Proposed mine areas: Argus Energy LLC (2006), Rockspring Development (2006)
 Abandoned mine lands: WVAMLR (1996)
 Surface permit areas: WVDNR (2007)
 Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Projection: State Plane NAD 83 West Virginia South (feet)

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N

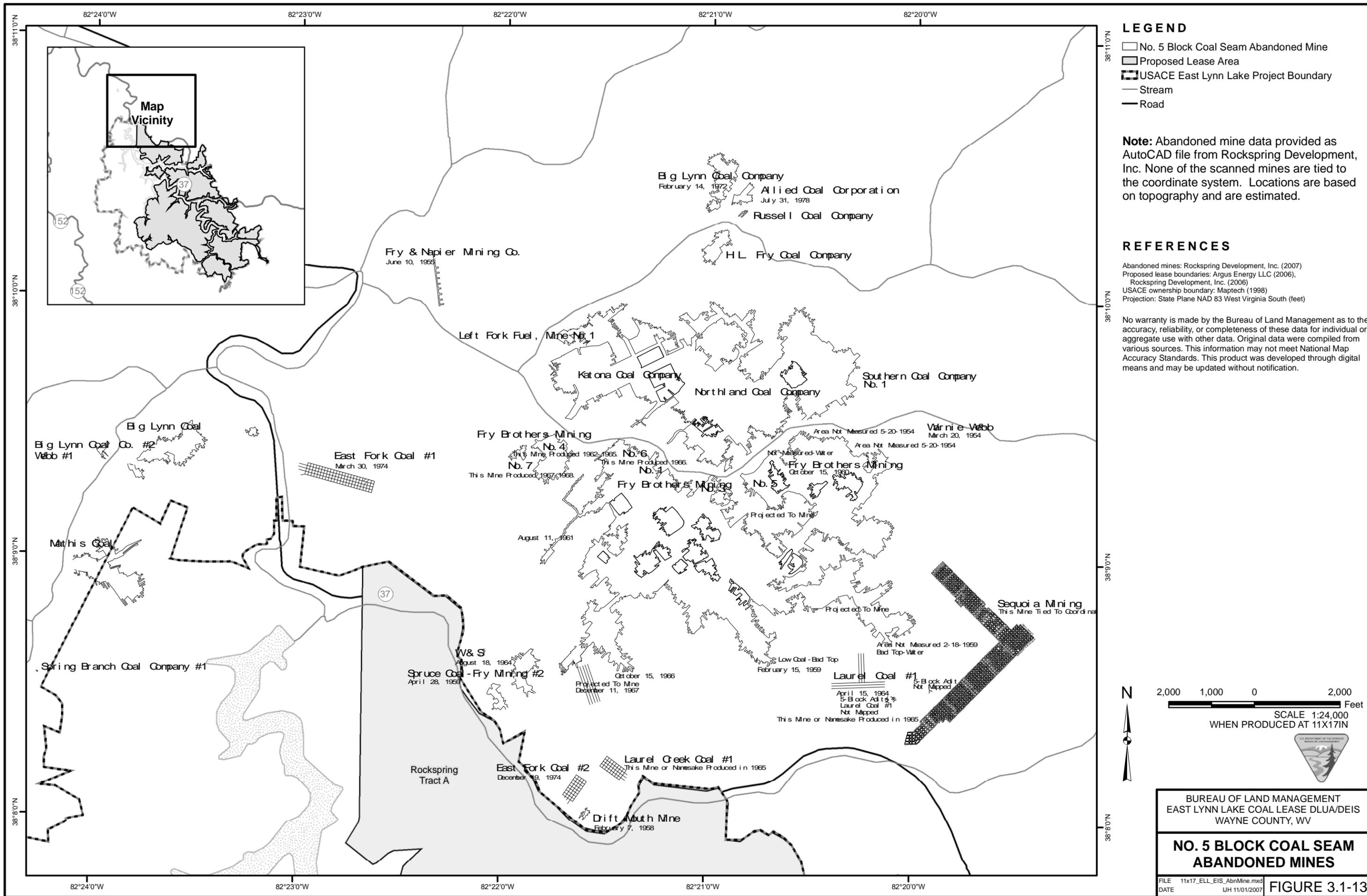
1 0.5 0 1 Miles

SCALE 1:100,000
WHEN PRODUCED AT 11X17IN

BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

**COMMERCIAL ABANDONED MINE LANDS,
 INACTIVE, ACTIVE AND PROPOSED
 SURFACE AND UNDERGROUND MINES**

FILE 11x17_ELL_EIS_ExistingMines.mxd
 DATE AR 02/22/2008 **FIGURE 3.1-12**



LEGEND

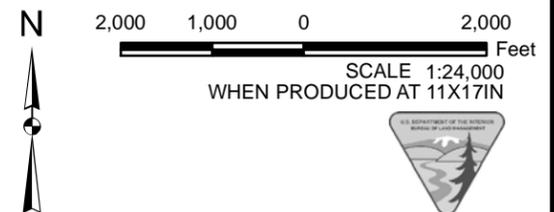
- No. 5 Block Coal Seam Abandoned Mine
- Proposed Lease Area
- USACE East Lynn Lake Project Boundary
- Stream
- Road

Note: Abandoned mine data provided as AutoCAD file from Rockspring Development, Inc. None of the scanned mines are tied to the coordinate system. Locations are based on topography and are estimated.

REFERENCES

Abandoned mines: Rockspring Development, Inc. (2007)
 Proposed lease boundaries: Argus Energy LLC (2006),
 Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Projection: State Plane NAD 83 West Virginia South (feet)

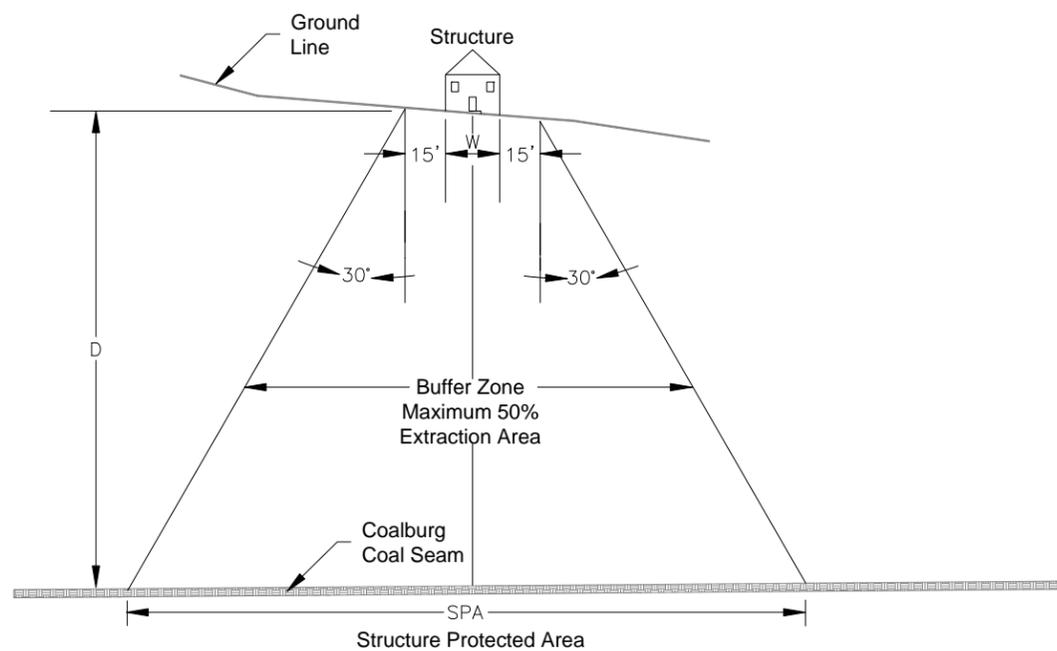
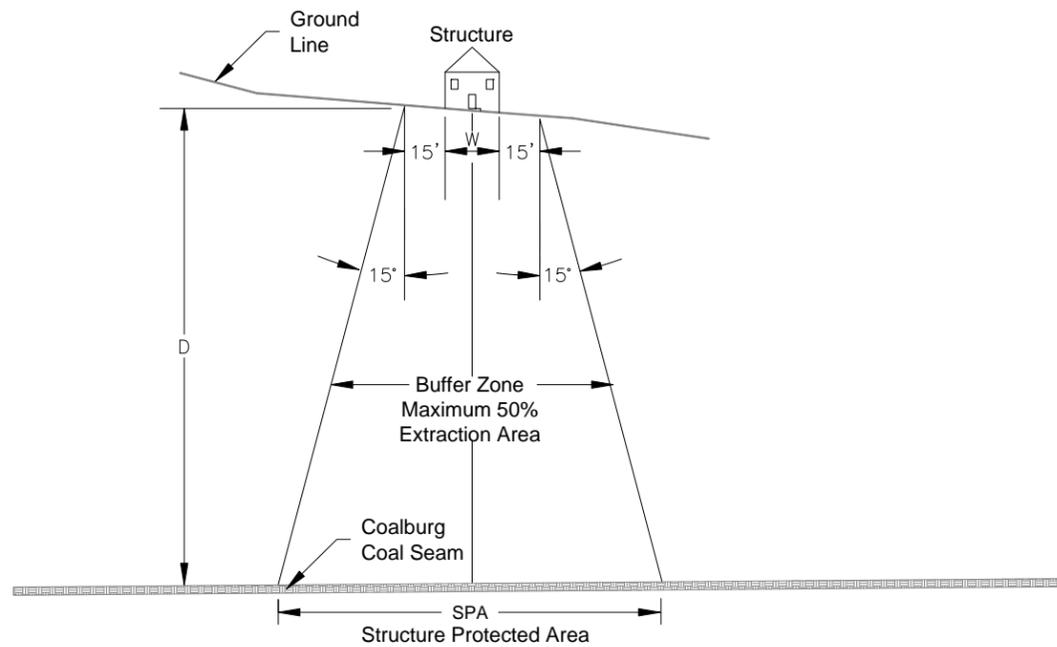
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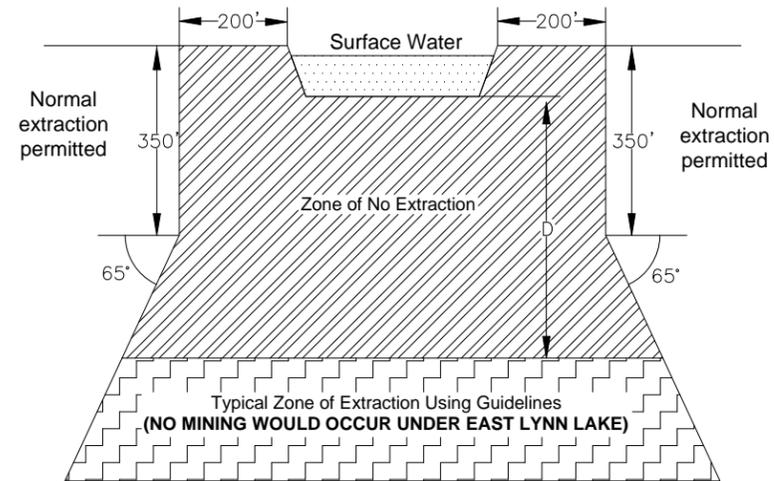
BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

**NO. 5 BLOCK COAL SEAM
 ABANDONED MINES**

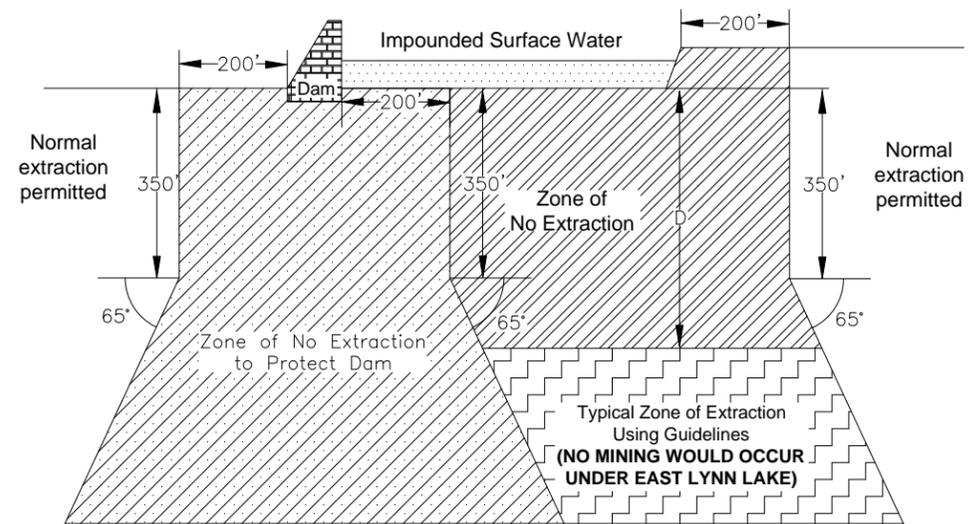
**Typical Structure Protection Area Design
Currently Used at Existing Mines in the
Vicinity of Proposed Lease Tracts,
Proposed For Use Under Reasonably
Foreseeable Development Scenario**



**Typical Surface Water (Lake) Protection Area Design
Proposed for Use Under Reasonably Foreseeable
Development Scenario
(Babcock and Hooker, 1977)**



**Typical Dam Protection Area Design
(Babcock and Hooker, 1977)**



REFERENCES

Babcock and Hooker, 1977.
BLM 2007a
MM&A nd, 1995, 2001
Peng, 1992
P&A, 1999

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SCALE: N.T.S.

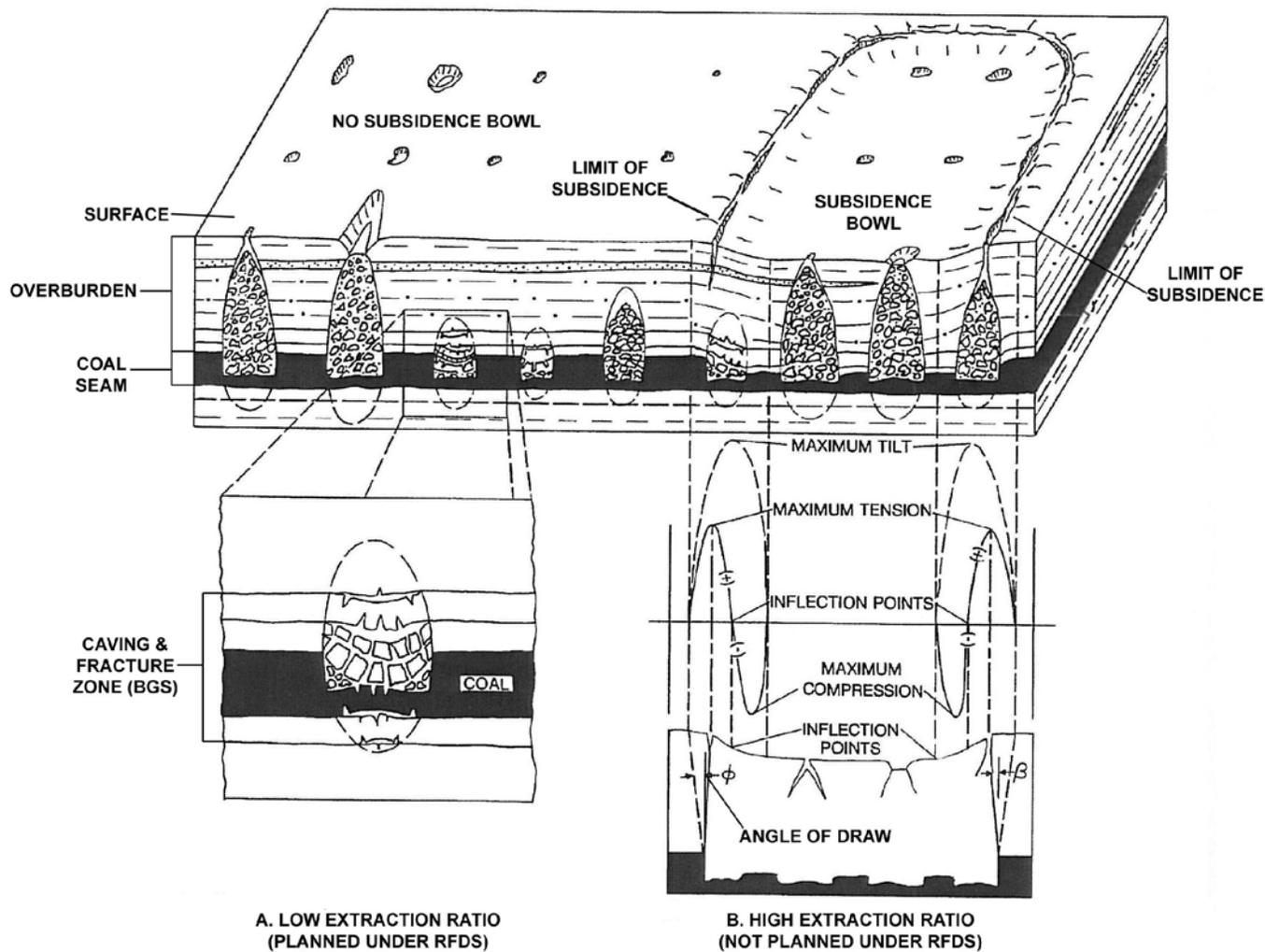


BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

**EXISTING AND PROPOSED
TYPICAL PROTECTIVE AREA
DESIGNS**

FILE 11x17_ELL_ProtectiveBarrier.mxd
DATE UH 11/05/2007

FIGURE 3.1-14



REFERENCE

Donrud Osterward (1980)

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SCALE: N.T.S.

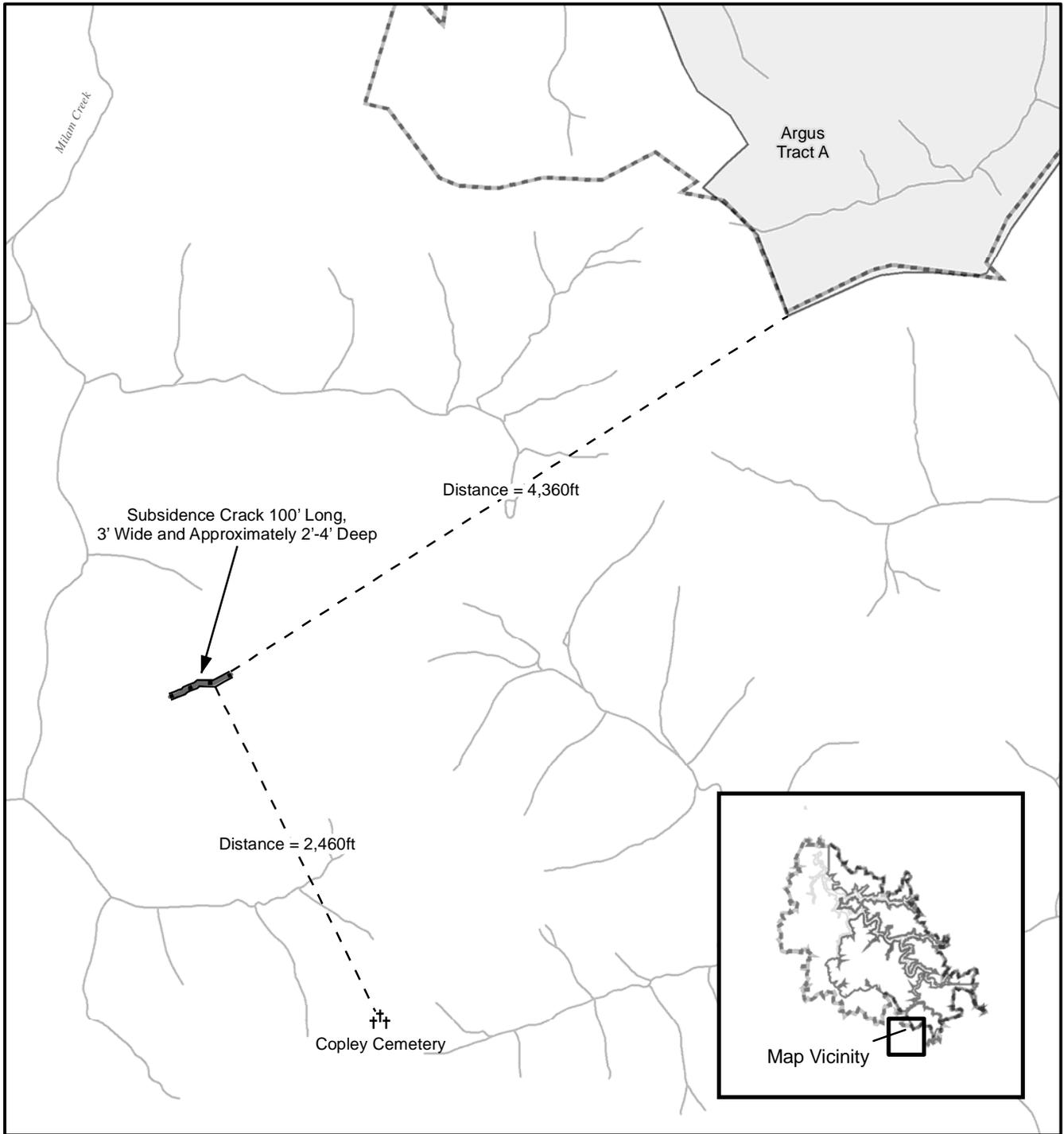


BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

CONCEPTUAL SUBSIDENCE DIAGRAM

FILE8-5x11_ELL_EIS_Subsidence.mxd
DATE JH 11/05/2007

FIGURE 3.1-15



LEGEND

- Subsidence Crack Location
- Copley Cemetery
- Stream
- Proposed Lease Area
- USACE East Lynn Lake Project Boundary

REFERENCES

Subsidence crack location: Argus Energy LLC (2007)
 Cemetery: Argus Energy LLC (2007)
 Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Streams: USGS (2007a)
 Projection: State Plane NAD 83 West Virginia South (feet)

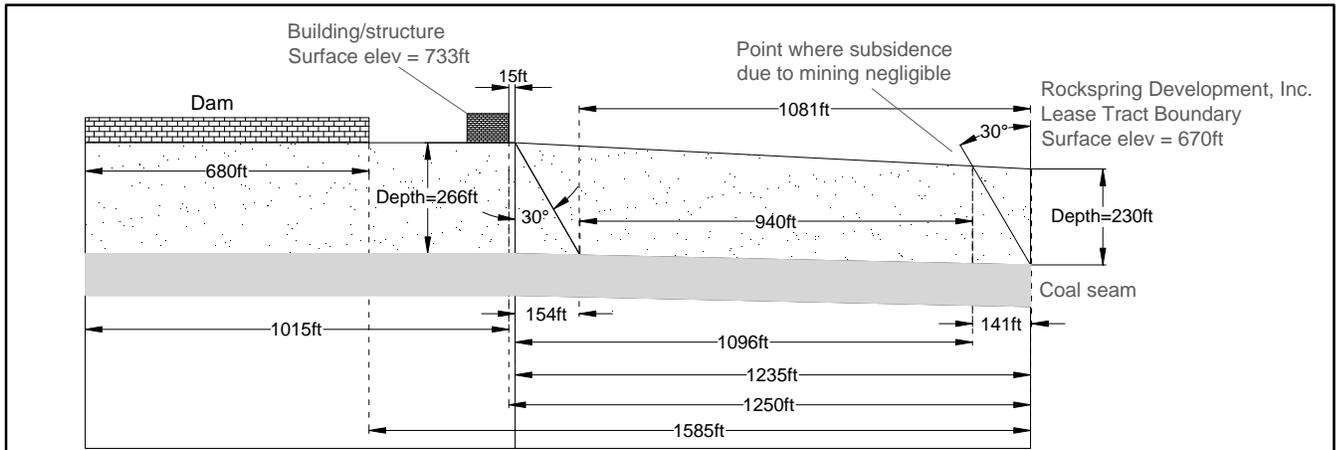
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BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

**SUBSIDENCE CRACK
 LOCATION**

FILE 8-5x11_ELL_EIS_SubCrack.mxd
 DATE JH 11/02/2007 **FIGURE 3.1-16**



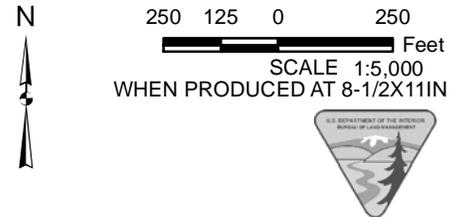
NOTE: See Figure 3.1-14 for protective barrier design criteria.

Scale: N.T.S.



LEGEND

-  East Lynn Lake Dam
-  Proposed Lease Area
-  USACE East Lynn Lake Project Boundary



REFERENCES

Dam: WV Department of Environmental Protection
 Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development (2006)
 USACE ownership boundary: Maptech (1998)
 Orthophotography: WV Statewide Addressing and Mapping Board, 2003
 Projection: State Plane NAD 83 West Virginia South (feet)

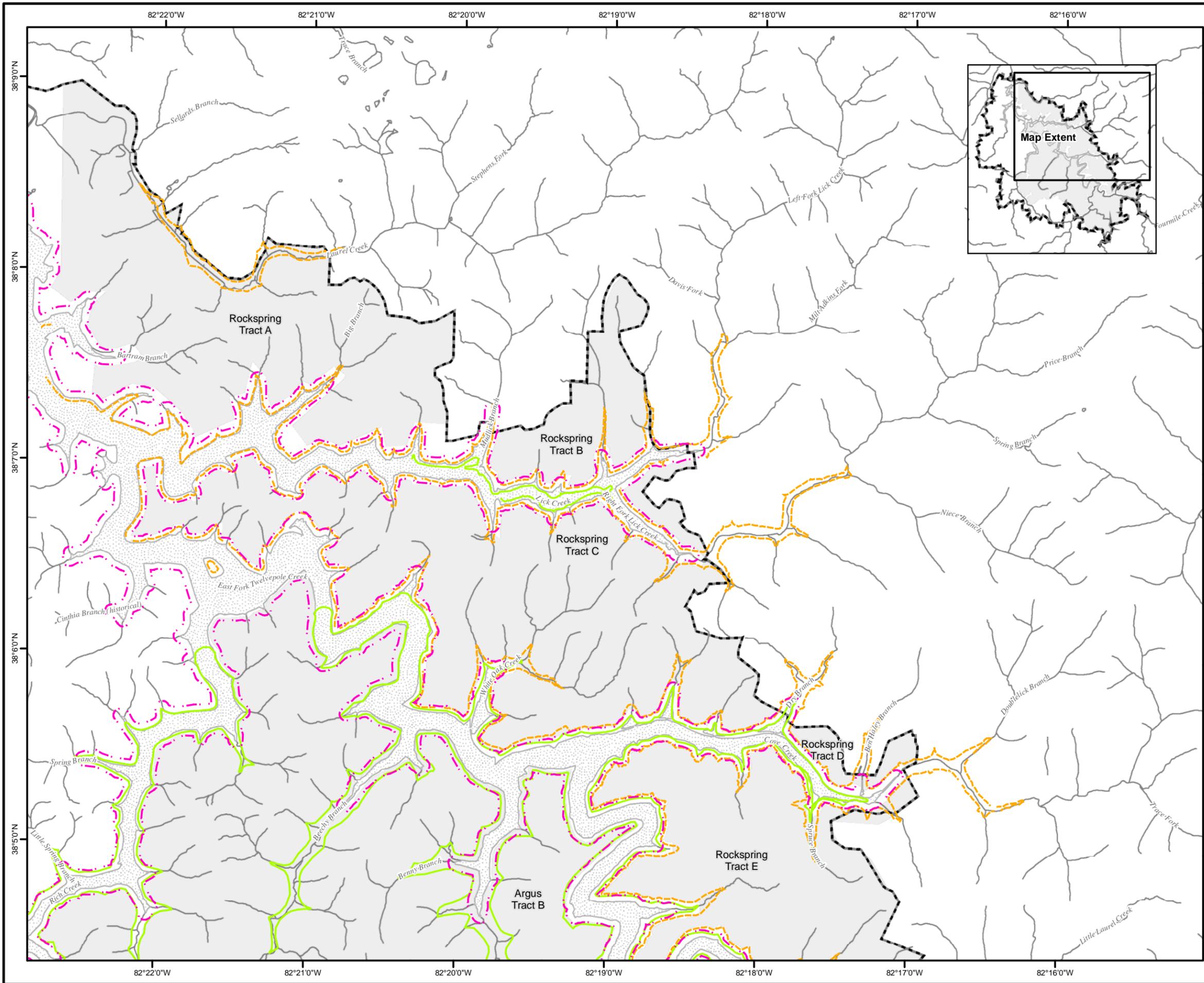
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BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

**EAST LYNN LAKE
 DAM CALCULATION
 ANGLE OF DRAW**

FILE 8-5x11_ELL_EIS_Dam.mxd
 DATE JH 11/05/2007

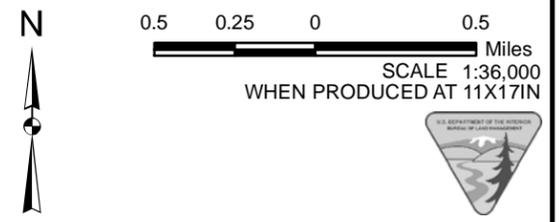
FIGURE 3.1-17



- LEGEND**
- Coalburg/Winifrede Seam Outcrop
 - - - Coalburg/Winifrede Seam 100-ft Overburden Thickness
 - Proposed Lease Area
 - USACE East Lynn Lake Project Boundary
 - Stream
 - Lake (maximum pool elevation of 701 feet)
 - · - · - Proposed 200ft Protective Coal Barrier (from maximum pool elevation of 701 feet)

- REFERENCES**
- Geologic Features: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 - Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 - Lake: 701ft max pool level and 200ft lakeshore barrier derived from high water elevation from 2003 WV State Addressing and Mapping Board DEM
 - Streams: USGS (2007a)
 - USACE ownership boundary: Maptech (1998)
 - Projection: State Plane NAD 83 West Virginia South (feet)

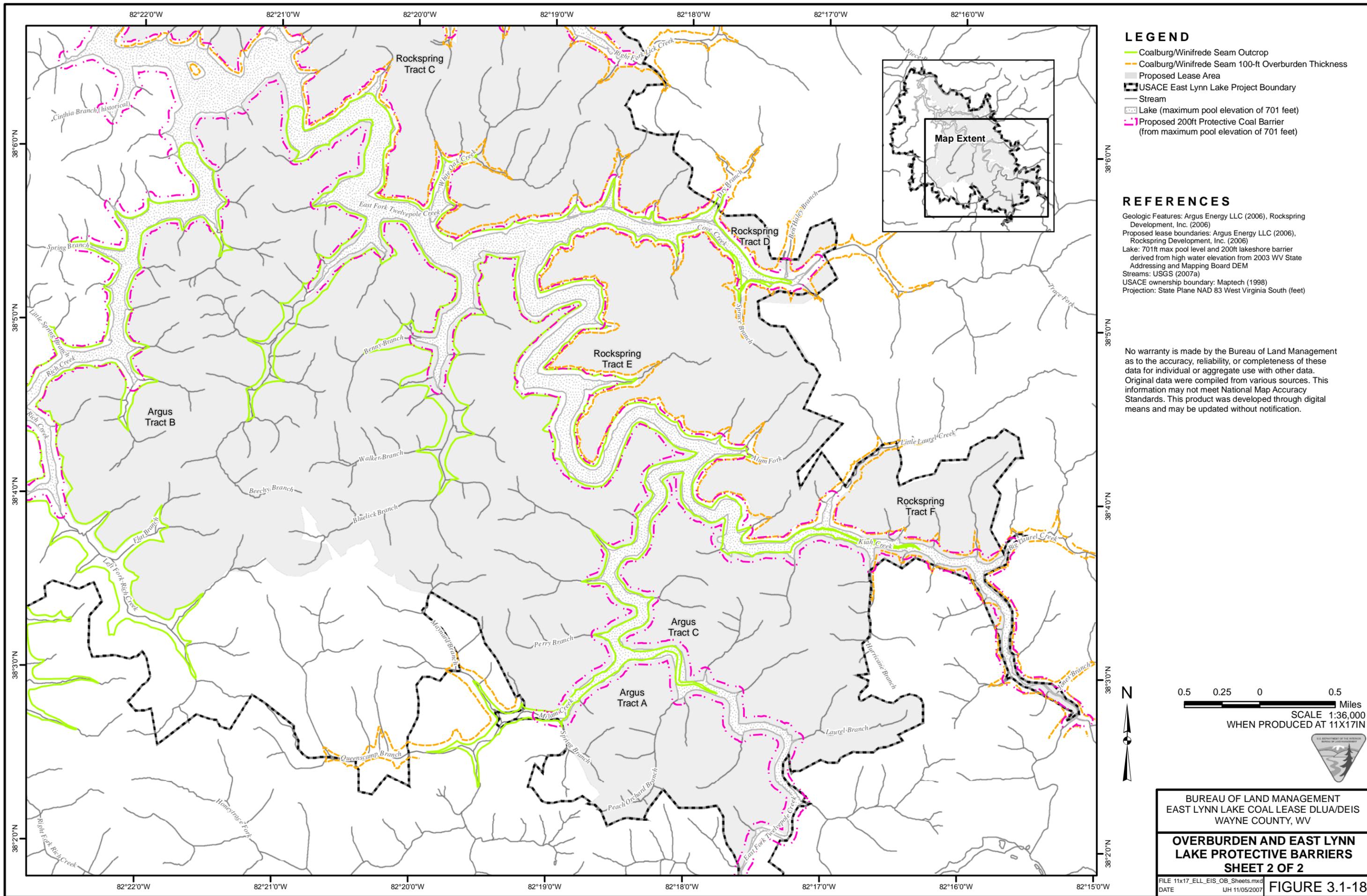
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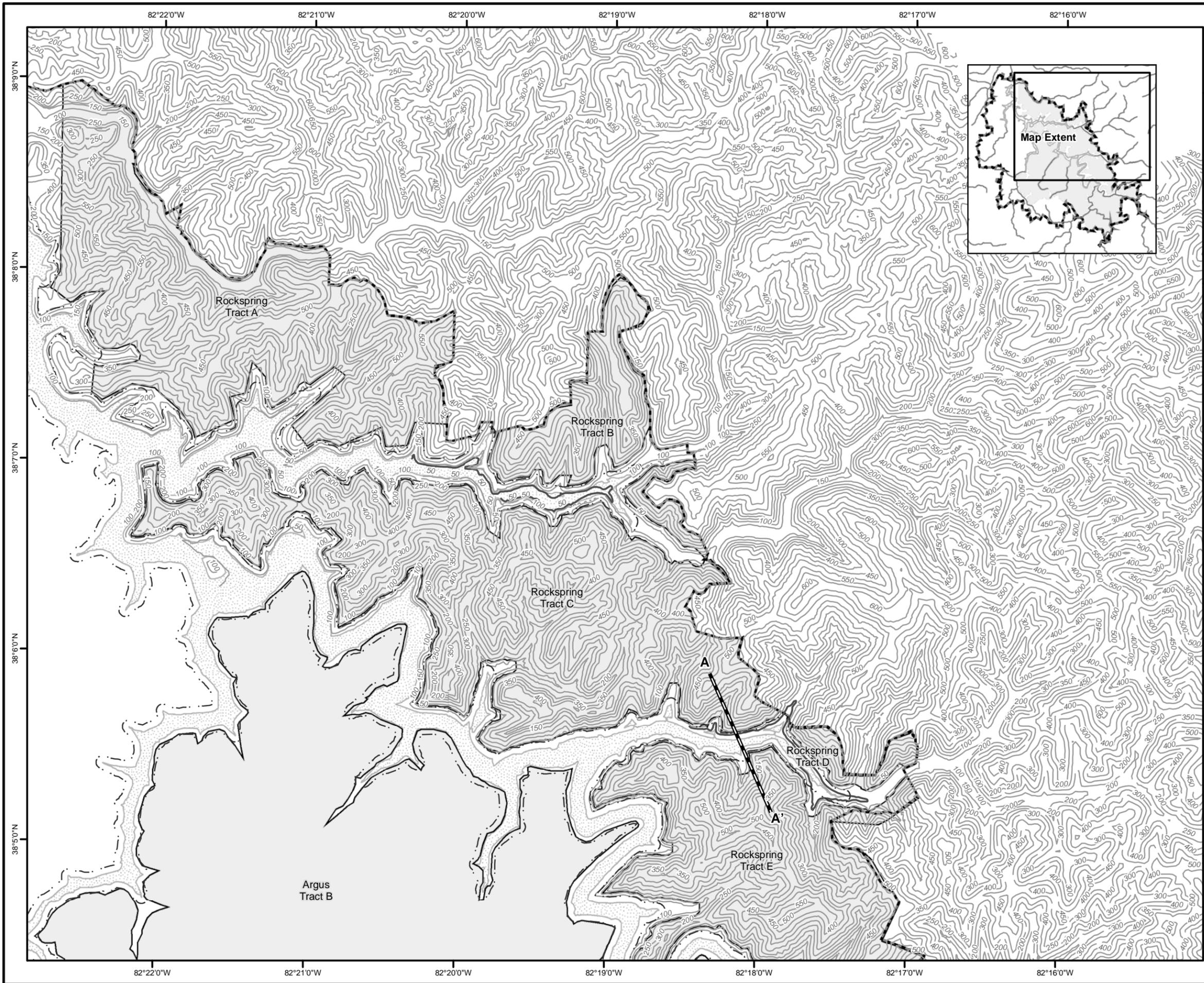


BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

OVERBURDEN AND EAST LYNN LAKE PROTECTIVE BARRIERS
SHEET 1 OF 2

FILE 11x17_ELL_EIS_OB_Sheets.mxd
DATE UH 11/05/2007





LEGEND

- Cross-Section Location
- Overburden Thickness Contour Line (Contour Interval = 50ft)
- Coalburg/Winifrede Seam Outcrop
- ▭ Proposed Lease Area
- ▭ USACE East Lynn Lake Project Boundary
- ▨ Lake (maximum pool elevation of 701 feet)
- - - Proposed 200ft Protective Coal Barrier (from maximum pool elevation of 701 feet)

Note: Cross Section A-A' shown on figure 3.1-21.

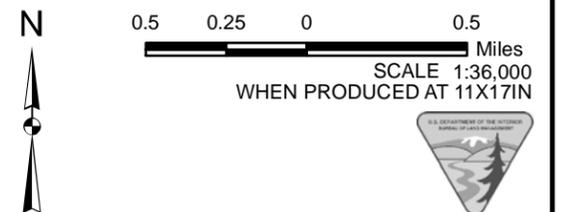
REFERENCES

Geologic Features: Rockspring Development, Inc. (2006)
 Surface Elevations: WV Statewide Addressing and Mapping Board, WVSAMB (2003)
 Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Lake: 701ft max pool level and 200ft lakeshore barrier derived from high water elevation from 2003 WV State Addressing and Mapping Board DEM
 Projection: State Plane NAD 83 West Virginia South (feet)

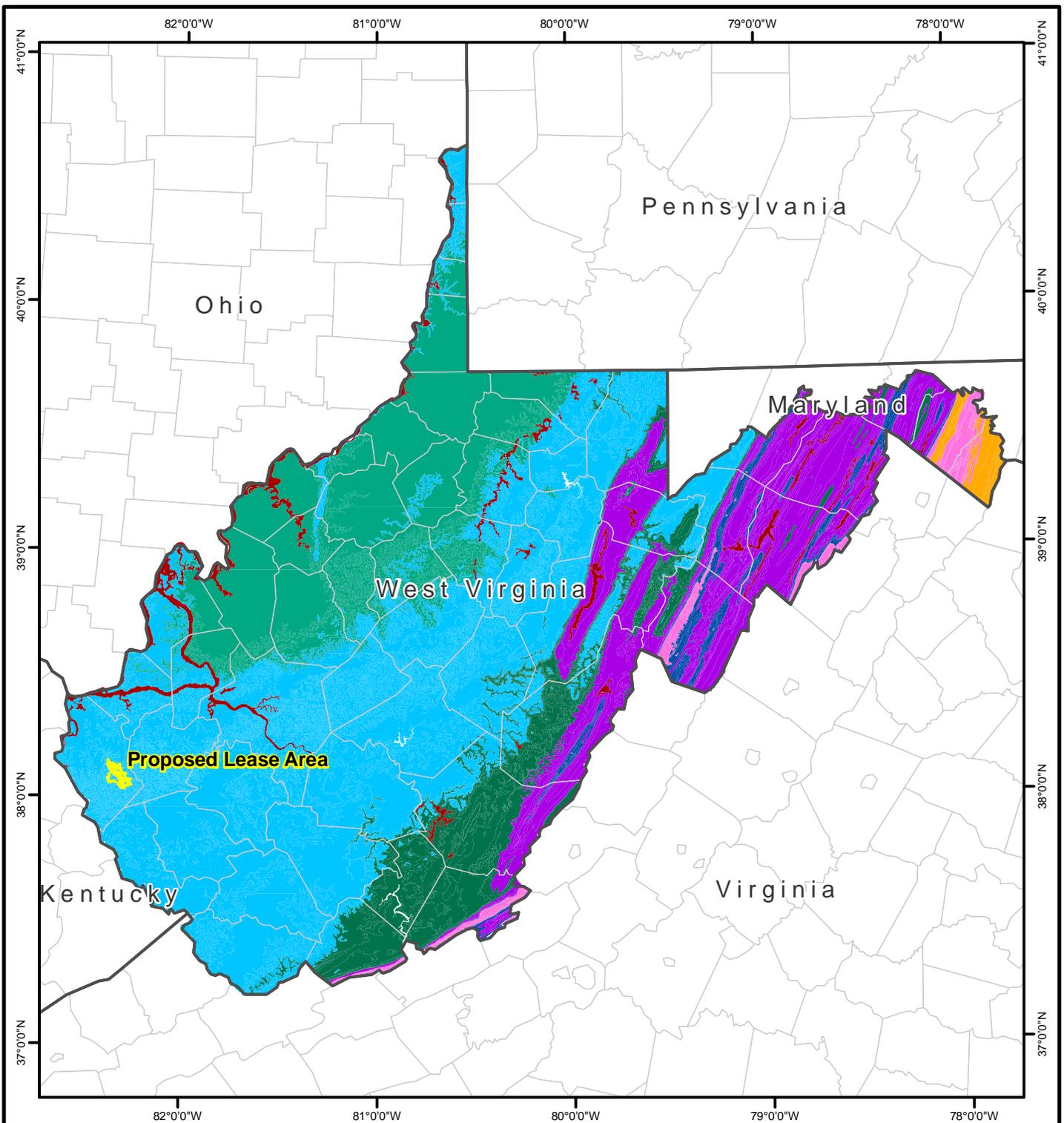
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DRAFT

ALL LOCATIONS ARE APPROXIMATE



BUREAU OF LAND MANAGEMENT EAST LYNN LAKE COAL LEASE LUAE/IS WAYNE COUNTY, WV	
COALBURG/WINIFREDE COAL SEAM OVERBURDEN THICKNESS ROCKSPRING DEVELOPMENT, INC.	
FILE: ELL_EIS_Seam_Rockspring.mxd	DATE: UH 11/05/2007
FIGURE 3.1-19	



LEGEND

- Permian or Pennsylvanian, 230+ mya
- Pennsylvanian, 280-310 mya
- Mississippian, 310-345 mya
- Devonian, 345-405 mya
- Silurian, 405-425 mya
- Ordovician, 425-500 mya
- Cambrian, 500-600 mya
- Quaternary
- Proposed Lease Area

REFERENCES

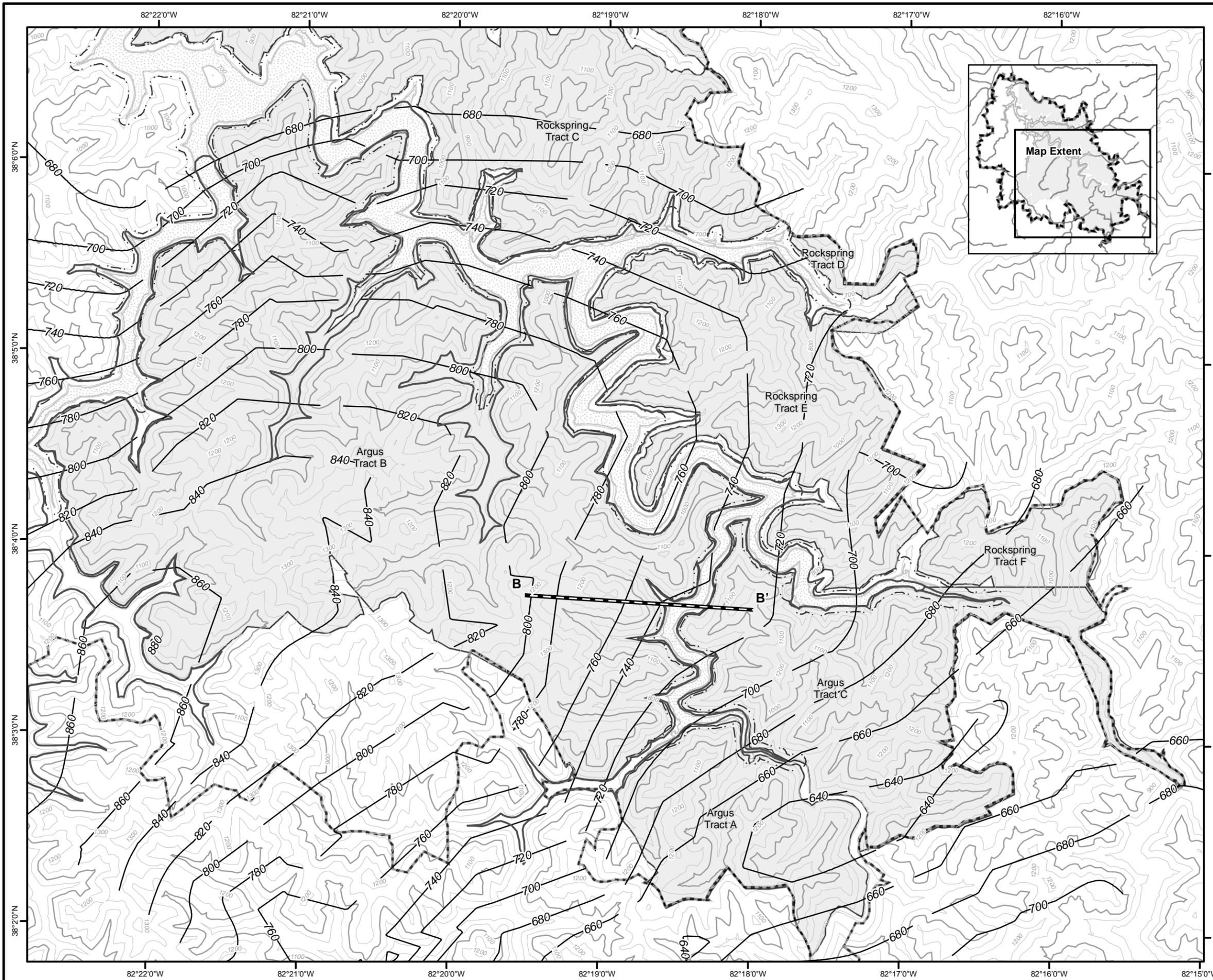
Geology: WVGES 1968
 Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.



BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

**GENERAL WEST VIRGINIA
 GEOLOGY & STRATIGRAPHY**

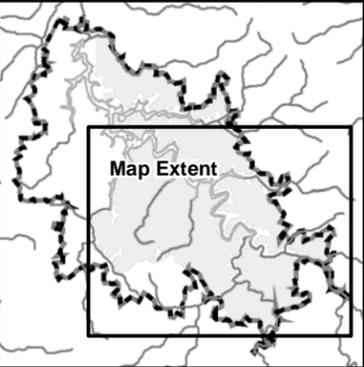
FILE	8-5x11_ELL_WVGeo.mxd	FIGURE 3.1-2
DATE	IJH 11/01/2007	



LEGEND

- Cross-Section Location
- Coalburg/Winfrede Seam Structure Contour Line (Contour Interval = 20ft)
- Coalburg/Winfrede Seam Outcrop
- 100-ft Surface Contour
- 500-ft Surface Contour
- Proposed Lease Area
- USACE East Lynn Lake Project Boundary
- Lake (maximum pool elevation of 701 feet)
- Proposed 200ft Protective Coal Barrier (from maximum pool elevation of 701 feet)

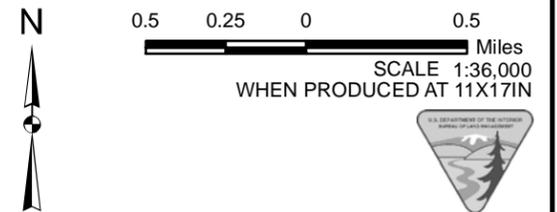
Note: Cross Section B-B' shown on Figure 3.1-22.



REFERENCES

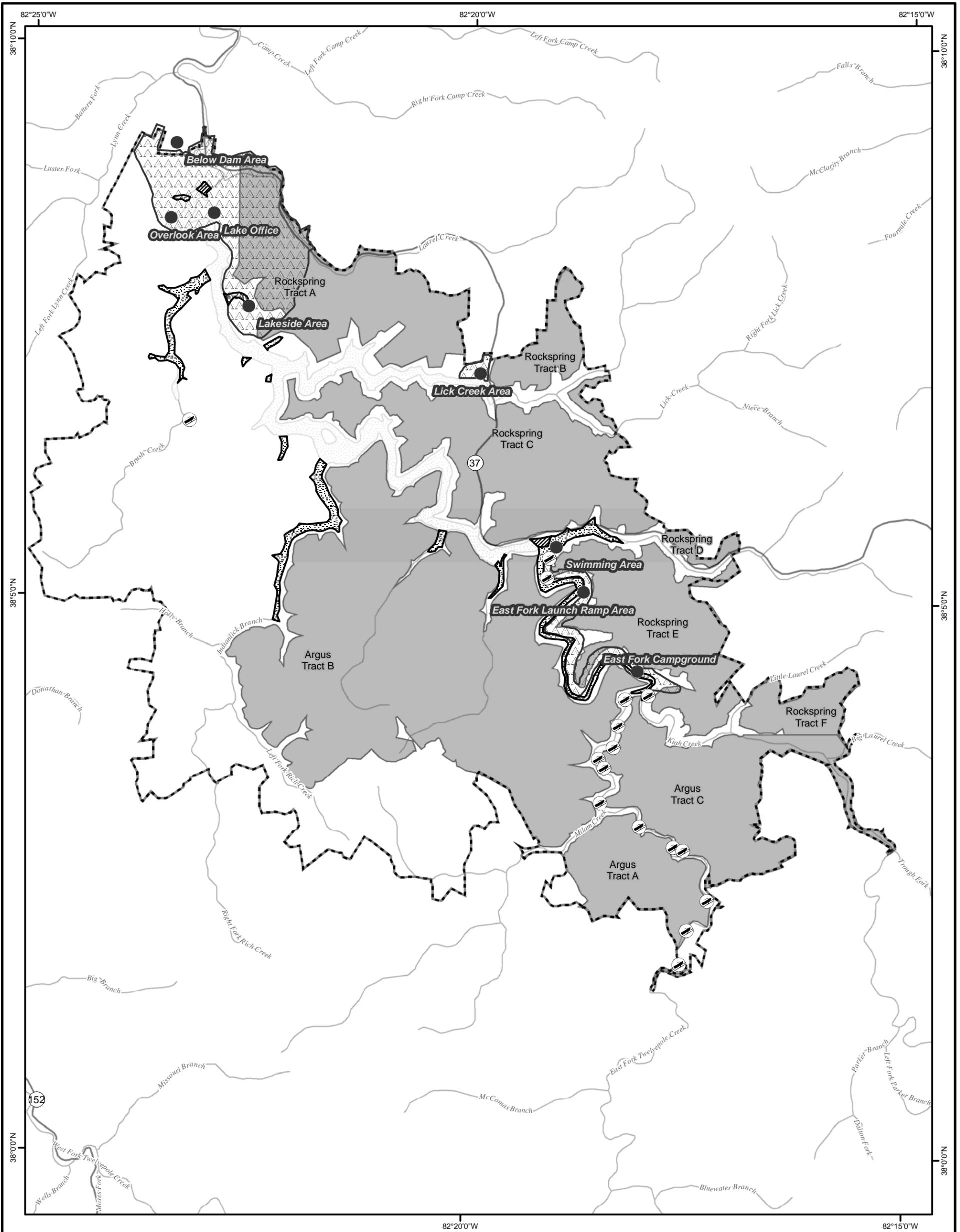
Geologic Features: Argus Energy LLC (2006)
 Surface Elevations: WV Statewide Addressing and Mapping Board, WVSAMB (2003)
 Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptch (1998)
 Lake: 701ft max pool level and 200ft lakeshore barrier derived from high water elevation from 2003 WV State Addressing and Mapping Board DEM
 Projection: State Plane NAD 83 West Virginia South (feet)

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BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

**COALBURG/WINFREDE COAL SEAM STRUCTURE MAP
 ARGUS ENERGY WV, LLC**



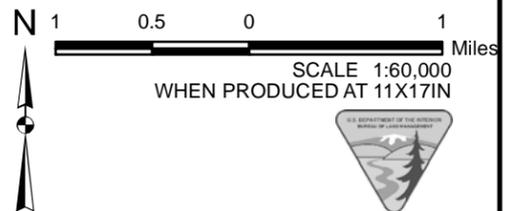
LEGEND

- Recreation Facility
- Small Craft Access
- Stream
- Ⓟ Road
- ▭ Recreation Area
- ▨ Boat Exclusion Area
- ▩ Controlled Area
- ▧ Proposed Lease Area
- ▤ USACE East Lynn Lake Project Boundary
- Lake

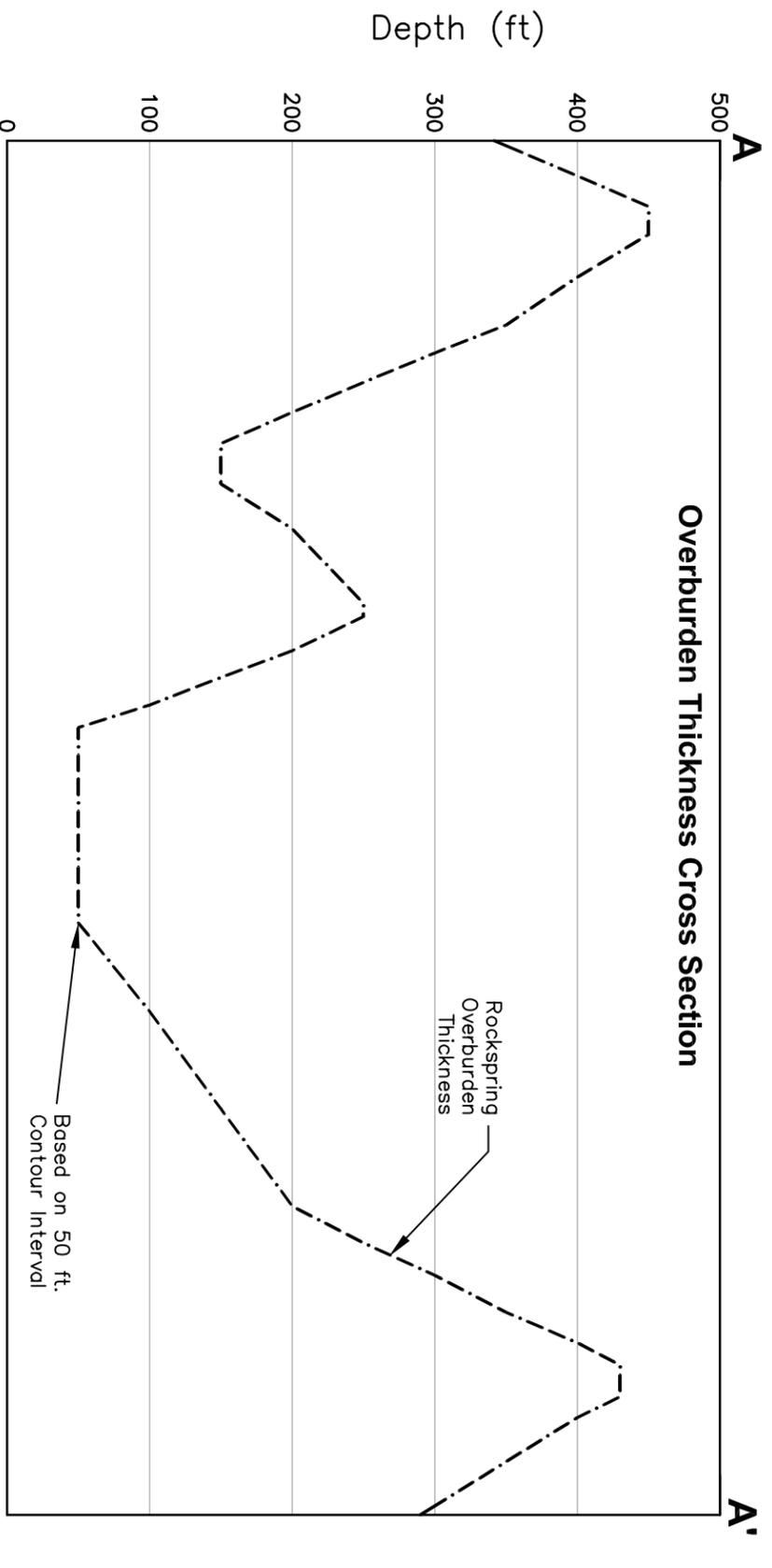
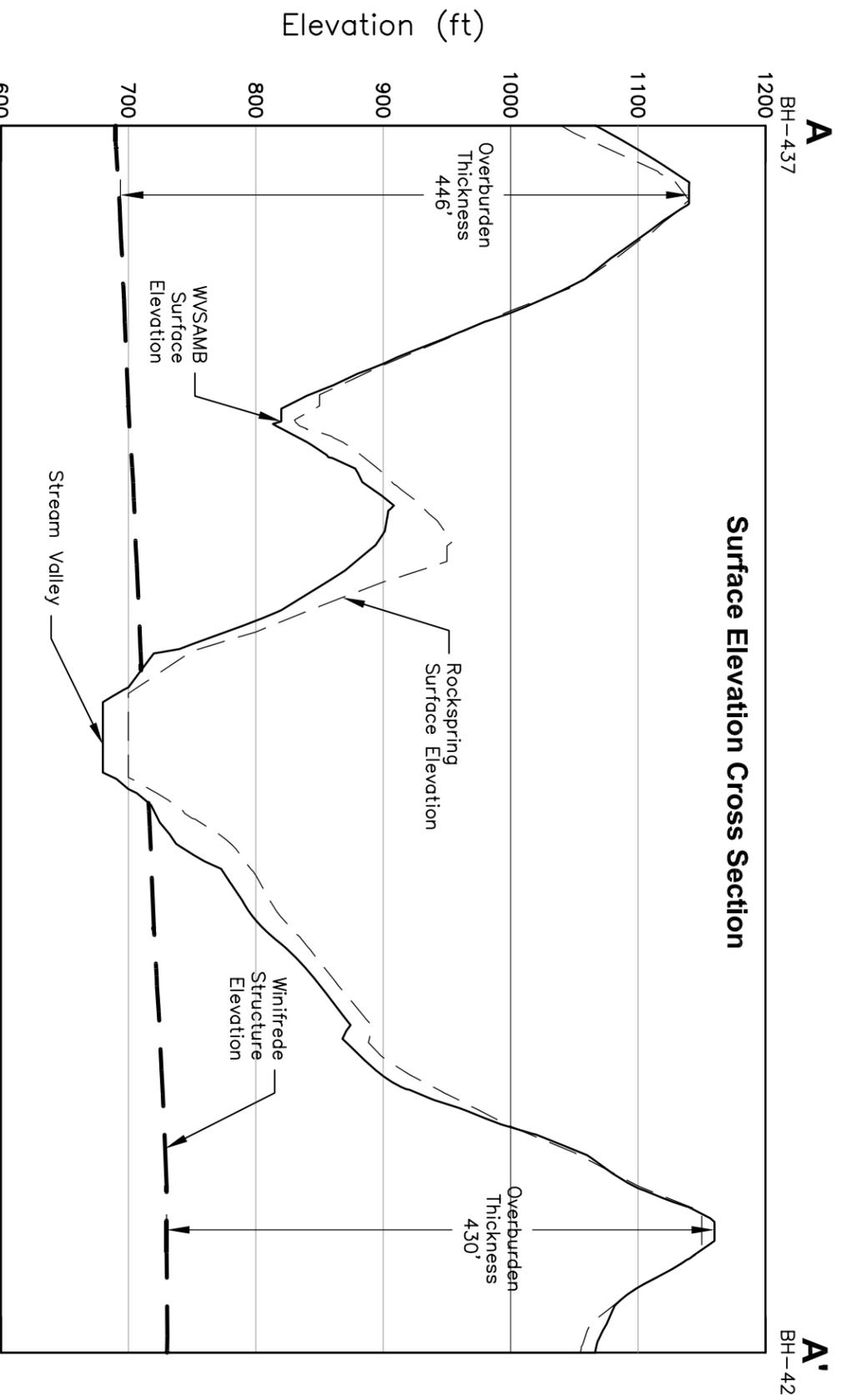
REFERENCES

Recreation facilities: USACE ELL Recreation Map (USACE, 2007)
 Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Roads: Digitized from 2003 WB SAMB orthophotography
 Streams: USGS (2007a)
 Projection: State Plane NAD 83 West Virginia South (feet)

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BUREAU OF LAND MANAGEMENT EAST LYNN LAKE COAL LEASE DLUA/DEIS WAYNE COUNTY, WV	
RECREATION FACILITIES AND RECREATION AREAS	
FILE 11x17_ELL_EIS_Recreation.mxd DATE UH 11/01/2007	FIGURE 3.12-1



LEGEND

- Rockspring Surface Elevation
- WV State Addressing and Mapping Board Surface Elevation
- Rockspring Coal Seam Structure Elevation
- - - - - Rockspring Overburden Thickness

REFERENCES

- Rockspring 2006
- WVSAMB 2003

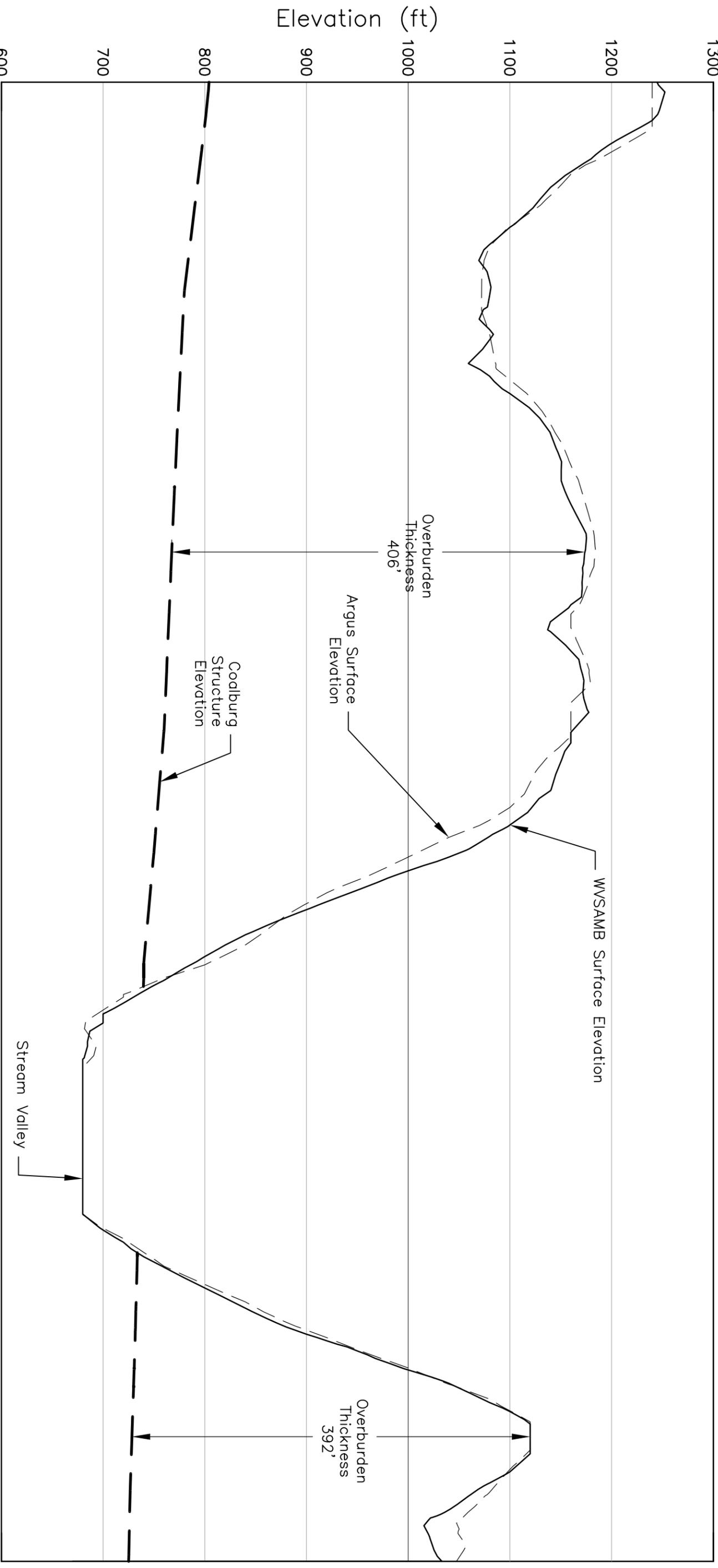
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BUREAU OF LAND MANAGEMENT EAST LYNN LAKE COAL LEASE DLVA/DEIS WAYNE COUNTY, WV	
ROCKSPRING OVERBURDEN THICKNESS CROSS SECTION A-A'	
FILE 0632239A002.DWG	DATE 02/19/2008
FIGURE 3.1-21	

B
 BH-5-27

B'
 ARG-WV-03-16



REFERENCES
 Argus Energy LLC 2206
 WVSAMB 2003

LEGEND

- — — — — Argus Surface Elevation
- — — — — WV State Addressing and Mapping Board Surface Elevation
- — — — — Argus Coal Seam Structure Elevation



WHEN REPRODUCED AT 11X17IN



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BUREAU OF LAND MANAGEMENT EAST LYNN LAKE COAL LEASE DLUA/DEIS WAYNE COUNTY, WV	
ARGUS OVERBURDEN THICKNESS CROSS SECTION B-B'	
FILE 0632239A002.DWG DATE ASV 02/19/08	FIGURE 3.1-22

PERIOD	FORMATION	MEMBER	THICKNESS	LITHOLOGIC DESCRIPTION
Quaternary	Alluvium/ Colluvium		Up to 30 ft	Extends visible along stream valleys. Sand and gravel with minor amounts of clay and siltstones.
Upper Pennsylvanian	Glenshaw	Mahoning Sandstone		Base of formation in proposed lease area. Mahoning sandstone present on highest ridge tops in proposed lease area.
Middle Pennsylvanian	Allegheny	Upper and Lower Freeport Coal Seam	Up max: 2.6 ft Low max 2.75 ft	Varies from boney coal to carbonaceous shale.
		East Lynn Sandstone	50-150 ft	Exhibits channel characteristics. Weathered zone. Coarse grained, massive, gray, and contains quartz pebbles. Forms massive cliffs along many ranges.
		No. 5 Block Coal Seam	5+ ft	Consists of 5 mapable coal beds: splits range from .65 to 8.7 ft. Sandy shale, silty shales, homogeneous layered shales and fireclays may cap or underlie the coal benches.
Lower Pennsylvanian	Kanawha	Homewood Sandstone	30-100 ft	Massive, grey and cross-bedded. Sometimes forms massive coarse grained cliffs along ridge tops.
		Stockton Coal Seam	2-5 ft	Two benches: sporadically present and poorly developed. Separated by shale.
		Upper Coalburg Sandstone	Approx. 55 ft	Occurs 0-10 ft below Stockton Coal Seam. Massive, coarse-grained, and gray. Shales and fireclay exist between intervals.
		Coalburg/Winifrede Coal Seam	4-8 ft, Avg. 4.75 ft	Six coal benches separated by bone or shale partings. May exhibit rolls or undulations. Sulphur concentrations average 0.56 percent.

SCALE: N.T.S.

REFERENCES

MM&A 2002
MM&A 2001
MM&A 1995
P&A 2000
P&A 1995

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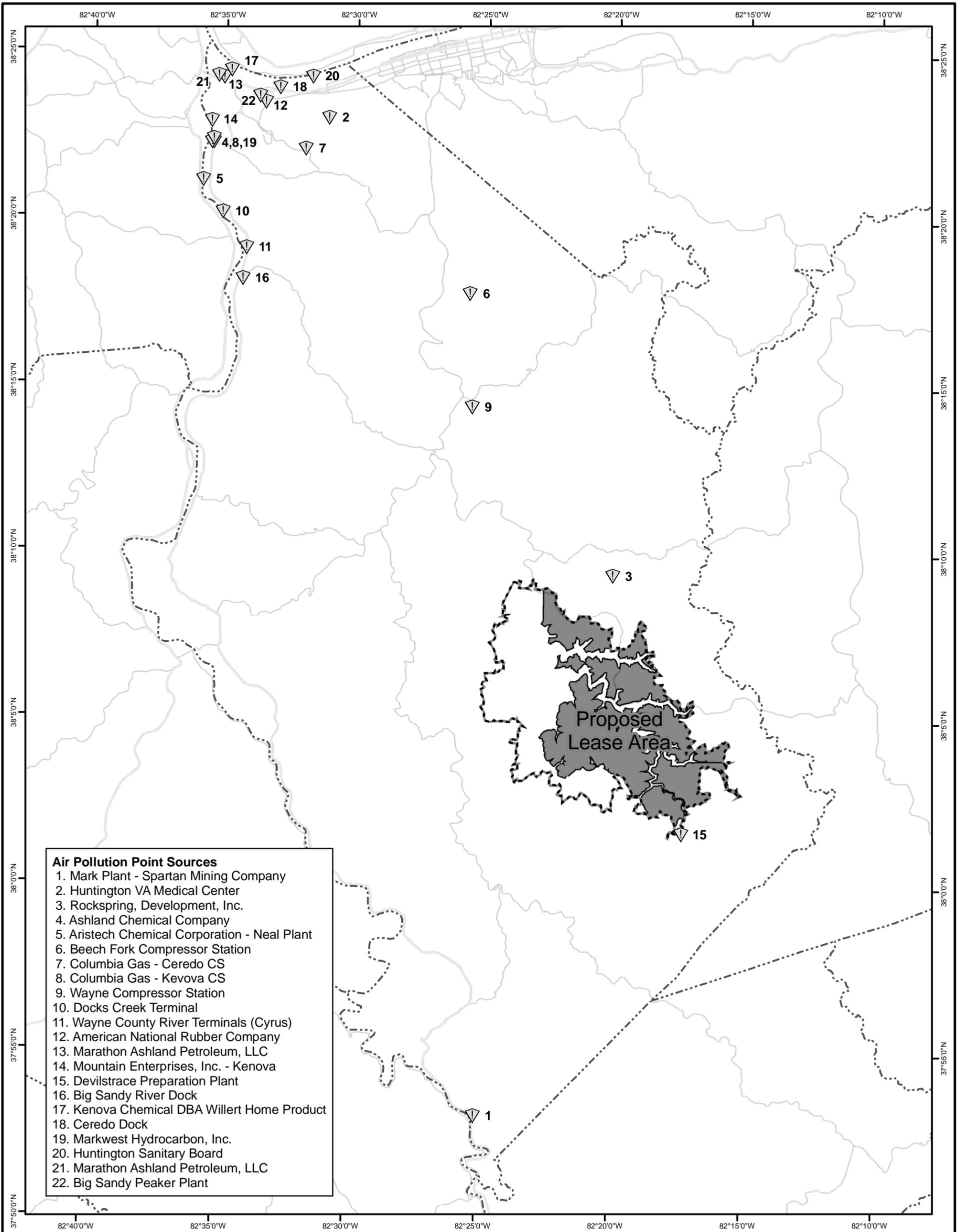


BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

STRATIGRAPHIC COLUMN

FILE 11x17_ELL_STratColumn
DATE UJH 11/05/2007

FIGURE 3.1-3



- Air Pollution Point Sources**
1. Mark Plant - Spartan Mining Company
 2. Huntington VA Medical Center
 3. Rockspring, Development, Inc.
 4. Ashland Chemical Company
 5. Aristech Chemical Corporation - Neal Plant
 6. Beech Fork Compressor Station
 7. Columbia Gas - Ceredo CS
 8. Columbia Gas - Kevova CS
 9. Wayne Compressor Station
 10. Docks Creek Terminal
 11. Wayne County River Terminals (Cyrus)
 12. American National Rubber Company
 13. Marathon Ashland Petroleum, LLC
 14. Mountain Enterprises, Inc. - Kenova
 15. Devilstrace Preparation Plant
 16. Big Sandy River Dock
 17. Kenova Chemical DBA Willert Home Product
 18. Ceredo Dock
 19. Markwest Hydrocarbon, Inc.
 20. Huntington Sanitary Board
 21. Marathon Ashland Petroleum, LLC
 22. Big Sandy Peaker Plant

LEGEND

- Air Pollution Point Source
- Proposed Lease Area (Air Resources Study Area)
- USACE East Lynn Lake Project Boundary
- County Boundary

REFERENCES

Air pollution point sources: EPA (2007k)
 Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Roads, county boundaries: ESRI (2006)
 Projection: State Plane NAD 83 West Virginia South (feet)

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N

2 1 0 2 Miles

SCALE 1:200,000
WHEN PRODUCED AT 11X17IN

BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

**AIR RESOURCES STUDY
AREA AND AIR POLLUTION
POINT SOURCES**

FILE 11x17_ELL_EIS_AirWayne.mxd
DATE UH 11/05/2007

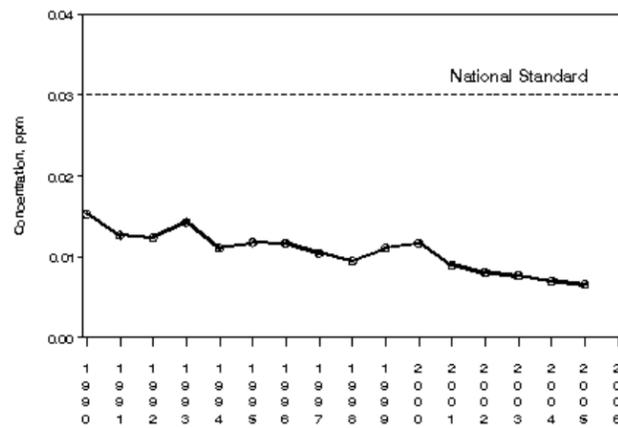
FIGURE 3.13-1

REFERENCE

USEPA (2007)

SO₂ Air Quality, 1990 – 2006

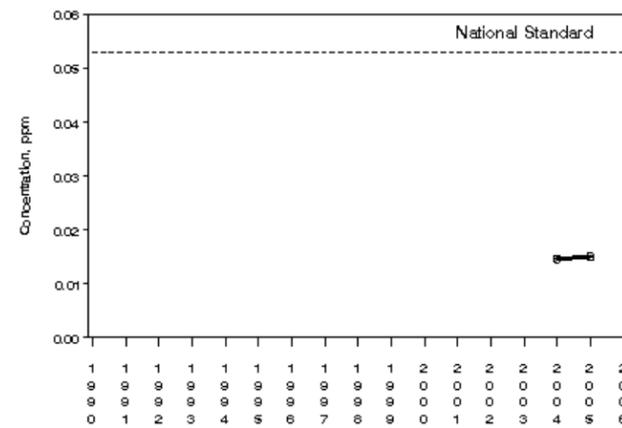
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a. SO₂ Air Quality, 1990-2006

NO₂ Air Quality, 1990 – 2006

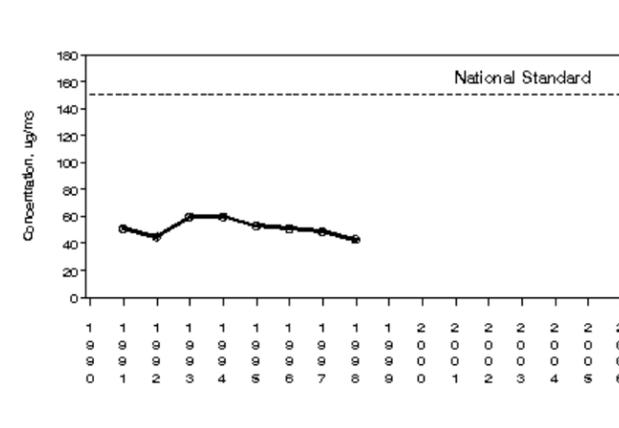
(Based on Annual Arithmetic Average)
Huntington—Ashland, WV—KY—OH
SITE= 540990003 POC= 1



b. NO₂ Air Quality, 1990-2006

PM₁₀ Air Quality, 1990 – 2006

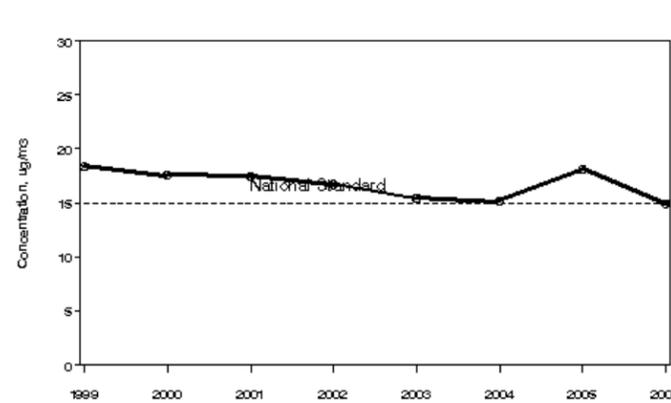
(Based on Annual 2nd Maximum 24—Hour Average)
Huntington—Ashland, WV—KY—OH
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c. PM₁₀ Air Quality, 1990-2006

PM_{2.5} Air Quality, 1999 – 2006

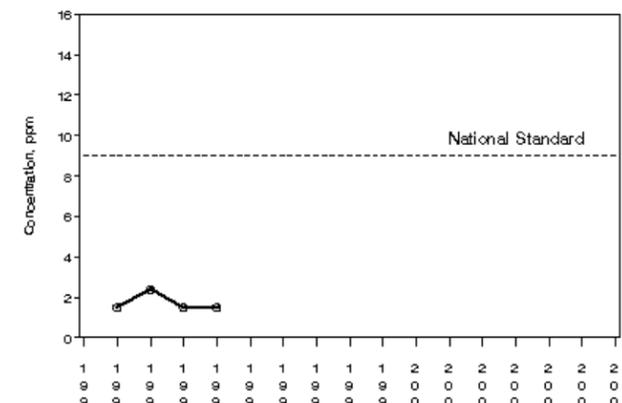
(Based on Seasonally—Weighted Annual Average)
Huntington—Ashland, WV—KY—OH
SITE= 540110006 POC= 1



d. PM_{2.5} Air Quality, 1990-2006

CO Air Quality, 1990 – 2006

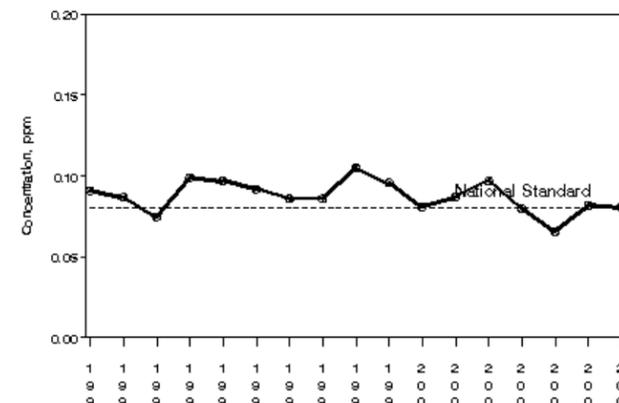
(Based on Annual 2nd Maximum 8—hour Average)
Huntington—Ashland, WV—KY—OH
SITE= 540990001 POC= 1



e. CO Air Quality, 1990-2006

Ozone Air Quality, 1990 – 2006

(Based on Annual 4th Maximum 8—Hour Average)
Huntington—Ashland, WV—KY—OH
SITE= 540110006 POC= 1



f. Ozone Air Quality, 1990-2006

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SCALE: N.T.S.

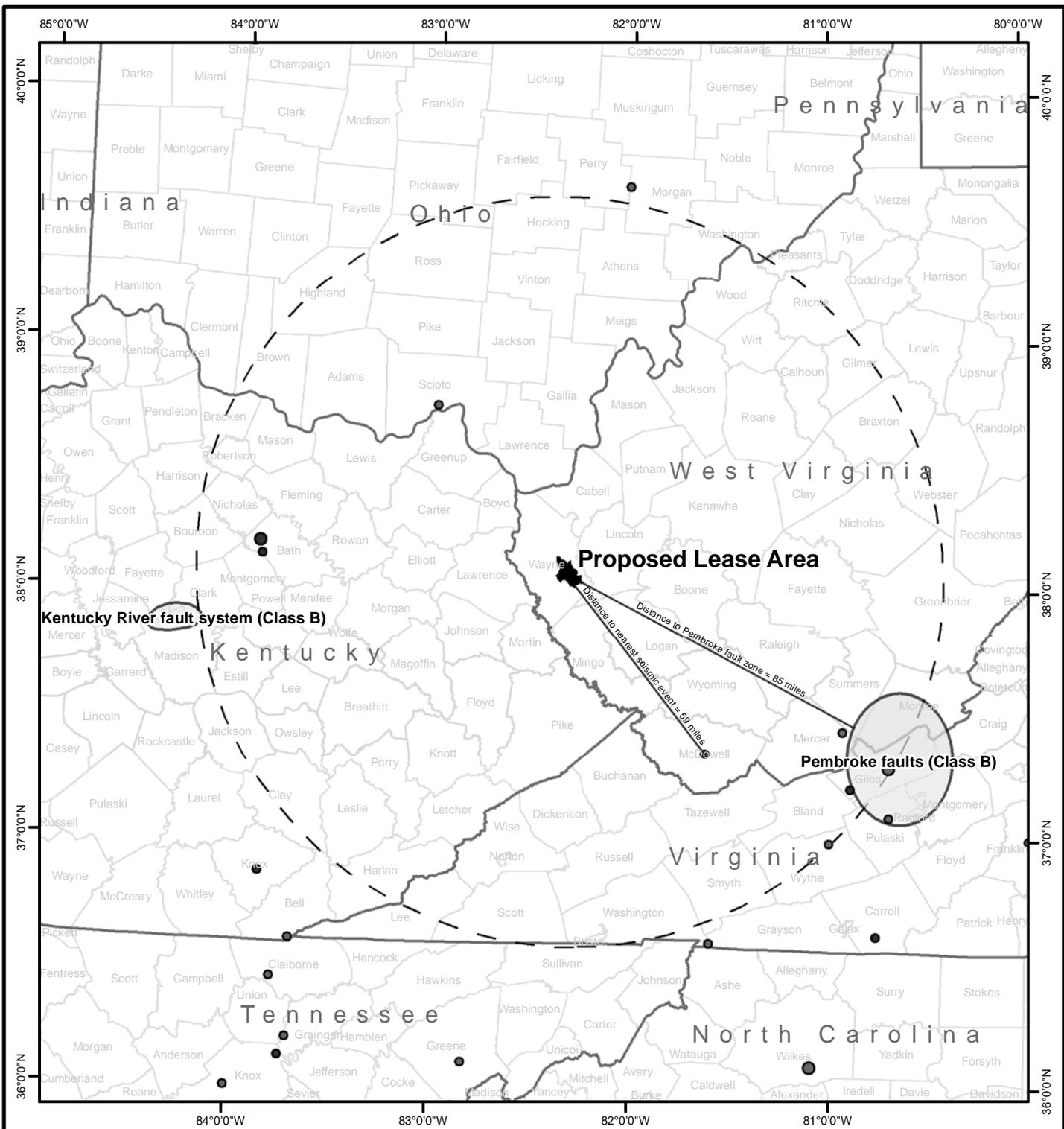


BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

AIR QUALITY TRENDS, 1990-2006
HUNTINGTON-ASHLAND, WV-KY-OH

FILE 11x17_ELL_EIS_Air.mxd
DATE UH 11/01/2007

FIGURE 3.13-2



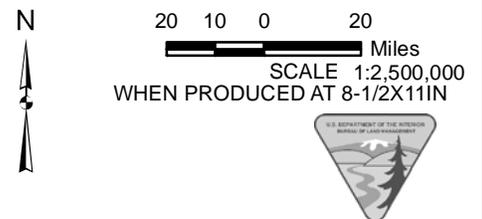
LEGEND

- | | |
|--------------------------------|-----------------------------|
| ● Seismic Event, Pre-1970 | Earthquake Magnitude |
| ● Seismic Event, Post-1969 | ● 4.0-4.9 |
| ▭ Quaternary Fault Zone | ● 5.0-5.9 |
| ▭ Proposed Lease Area | ● 6.0-6.9 |
| ▭ Lease Area - 100 Mile Buffer | ● >7.0 |

REFERENCES

Earthquakes, Quaternary Faults: USGS (2005)
 Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Projection: State Plane NAD 83 West Virginia South (feet)

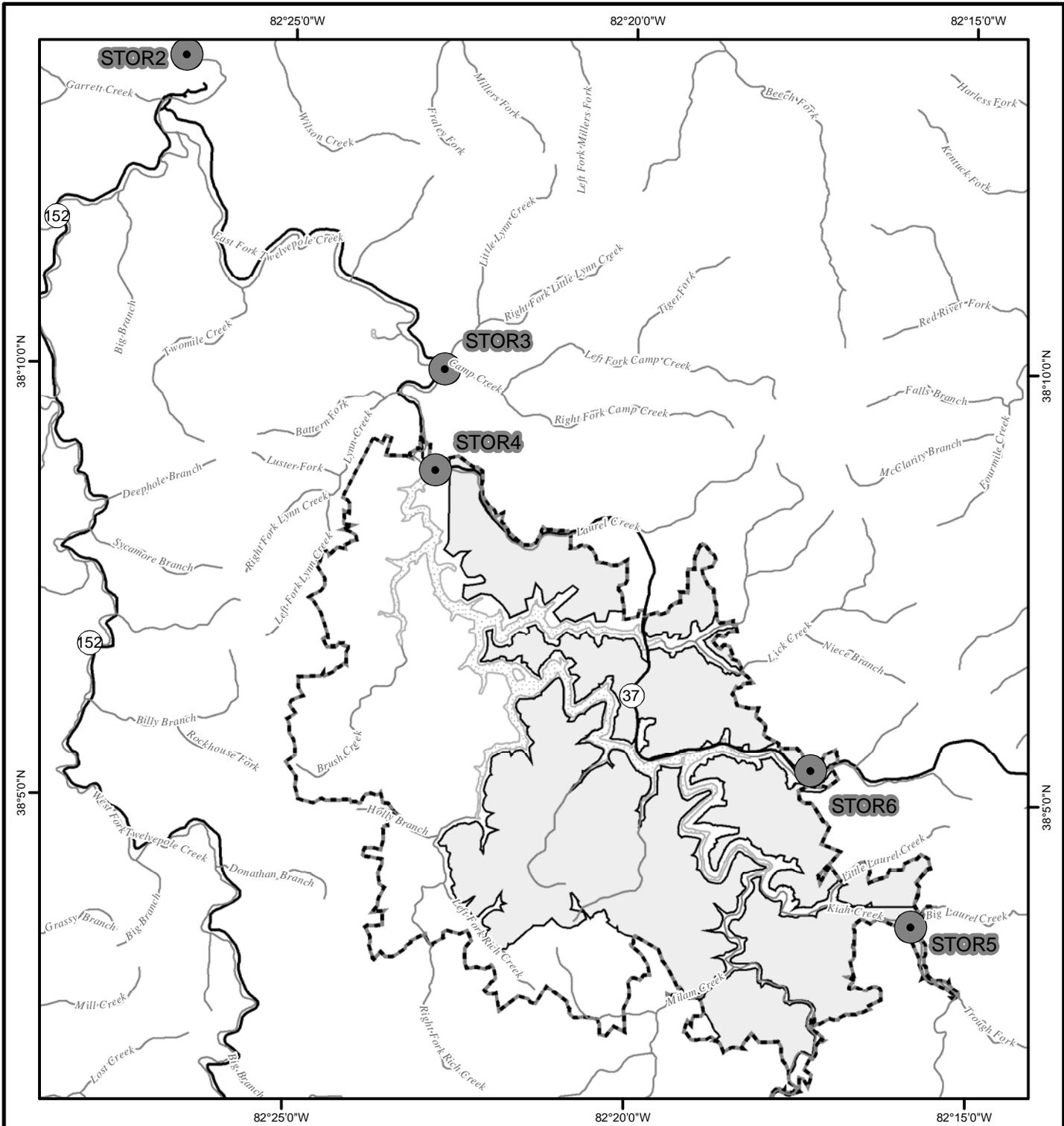
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BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

EARTHQUAKE HAZARDS

FILE 8-5x11_ELL_EIS_Seismic.mxd
 DATE UH 11/01/2007 **FIGURE 3.1-4**



LEGEND

- Sound Meter Sample Location (STOR# = Sample Identification Number)
- Proposed Lease Area
- USACE East Lynn Lake Project Boundary
- Lake
- Stream
- Road

REFERENCES

Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Projection: State Plane NAD 83 West Virginia South (feet)

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NOTES

- (1) Sound samples were collected on March 29, 2007 by Golder Associates Inc. staff, using a Type 1 (ANSI 1983) integrating sound meter in accordance with ANSI S12.9 Part 3.
- (2) Sample results are presented in table 3.13-1.



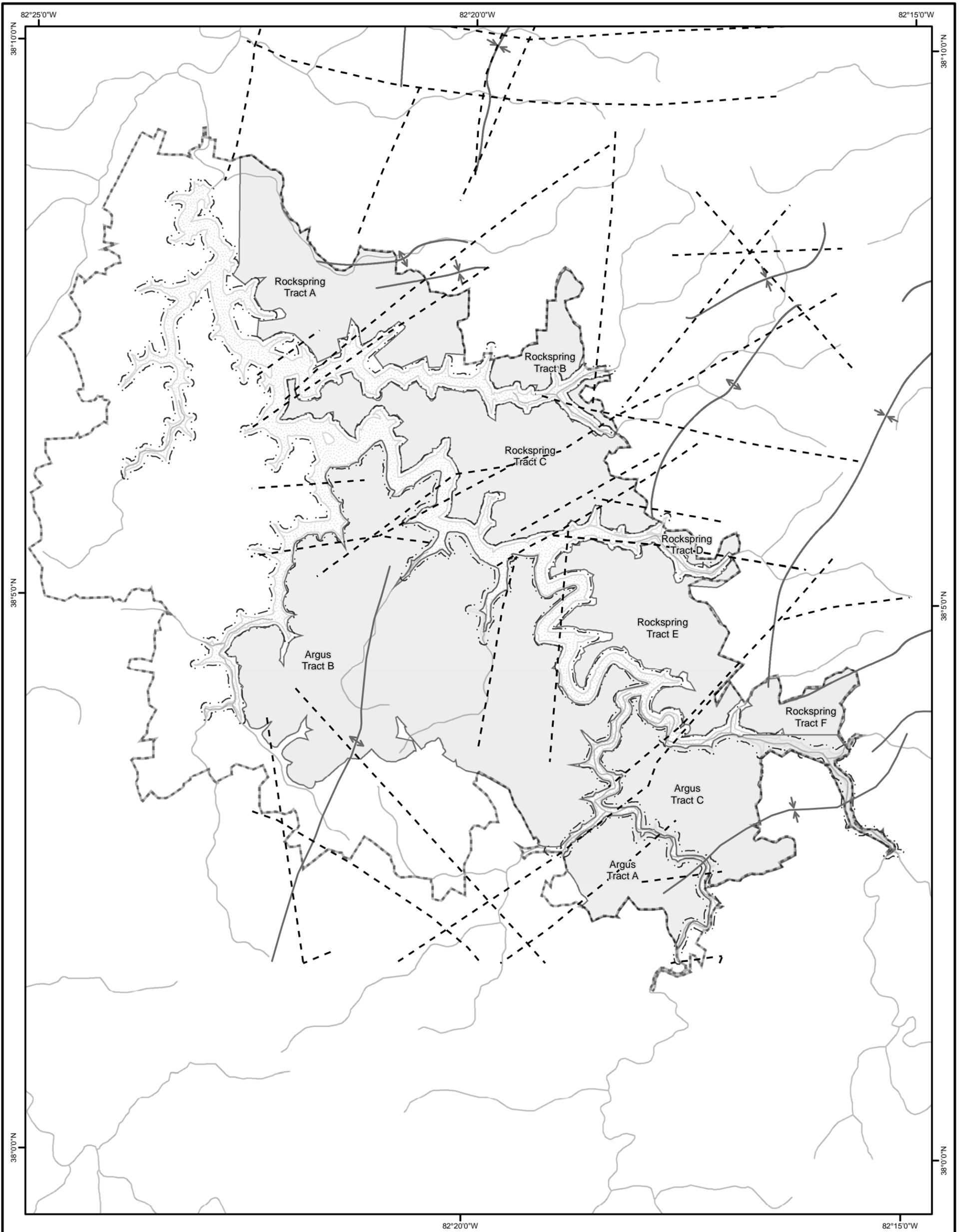
1 0.5 0 1 Miles
 SCALE 1:120,000
 WHEN PRODUCED AT 8-1/2X11IN



BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

**NOISE STUDY AREA AND
 SOUND MONITORING
 SAMPLE LOCATIONS**

FILE 11x17_ELL_EIS_Noise.mxd
 DATE JH 11/05/2007 **FIGURE 3.14-1**



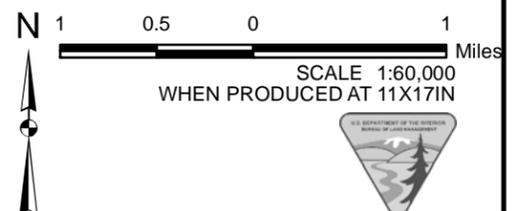
LEGEND

- - - Lineament
- ↑ Anticline
- ↓ Syncline
- Stream
- █ Proposed Lease Area
- ▭ USACE East Lynn Lake Project Boundary
- ▨ Lake (maximum pool elevation of 701 feet)
- ▬ Proposed 200ft Protective Coal Barrier (from maximum pool elevation of 701 feet)

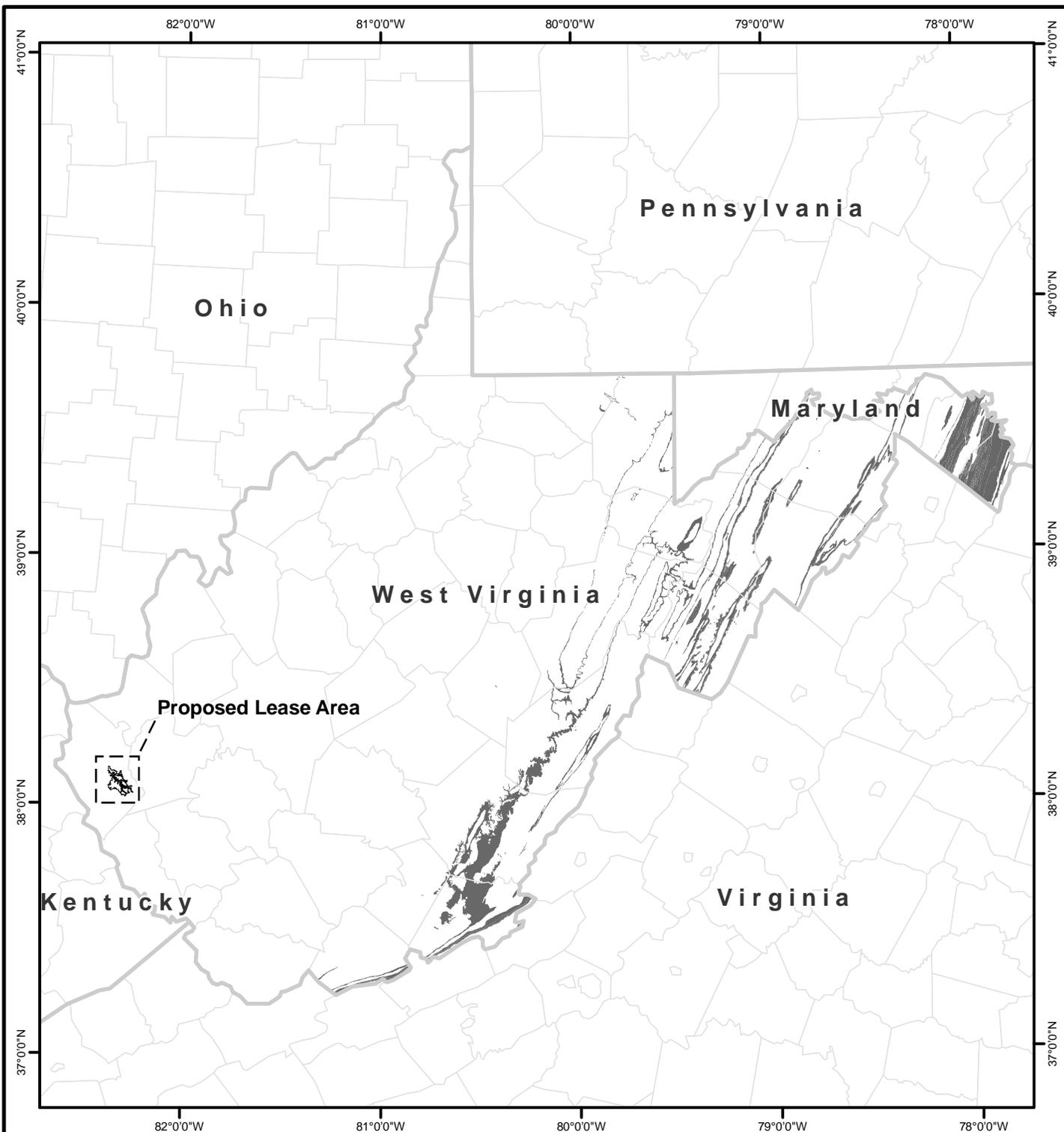
REFERENCES

Geologic structures: Argus Energy LLC (2006), Rockspring Development Inc. (2006)
 Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development (2006)
 USACE ownership boundary: Maptech (1998)
 Lake: 701t max pool level and 200ft lakeshore barrier derived from high water elevation from 2003 WV State Addressing and Mapping Board DEM
 Streams: USGS (2007a)
 Projection: State Plane NAD 83 West Virginia South (feet)

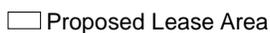
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BUREAU OF LAND MANAGEMENT EAST LYNN LAKE COAL LEASE DLUA/DEIS WAYNE COUNTY, WV	
STRUCTURAL FEATURES	
FILE 11x17_ELL_EIS_StructFeat.mxd DATE UH 11/01/2007	FIGURE 3.1-5



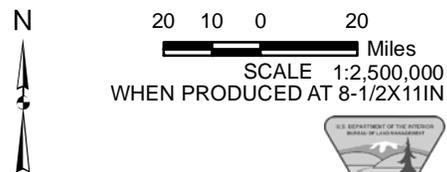
LEGEND

-  Karst area
-  Proposed Lease Area

REFERENCES

Geology: WVGES 1968
 Proposed lease boundaries: Argus Energy LLC (2006),
 Rockspring Development, Inc. (2006)

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BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

**WEST VIRGINIA
 KARST MAP**

FILE 8-5x11_ELL_EIS_WVKarst.mxd
 DATE JH 11/01/2007

FIGURE 3.1-6

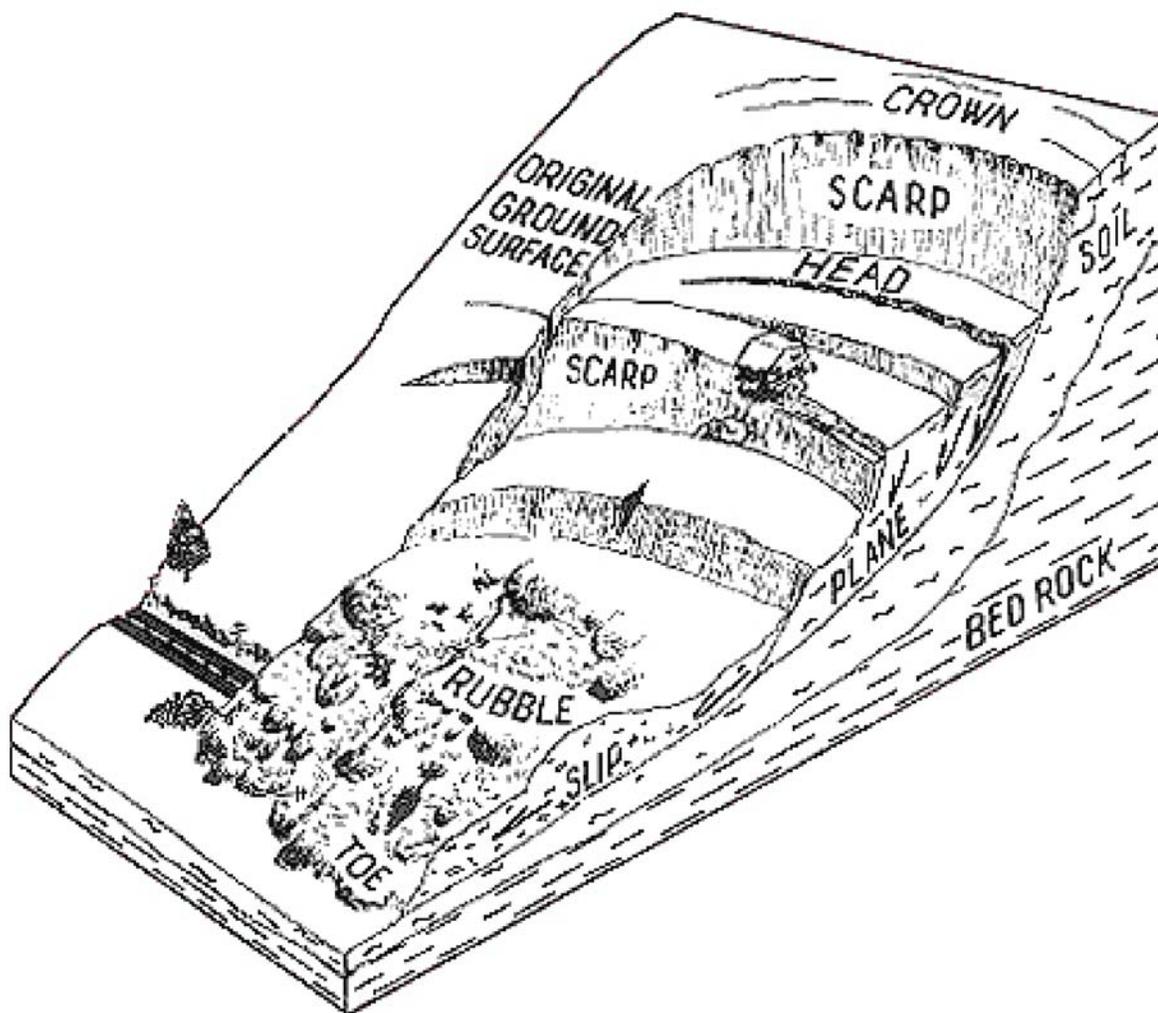


Illustration by Paul Queen

NOTE: Slumps scarp is at the head, and earth flow is at the toe.

SCALE: N.T.S.



REFERENCES

WVGES 2005b

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BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

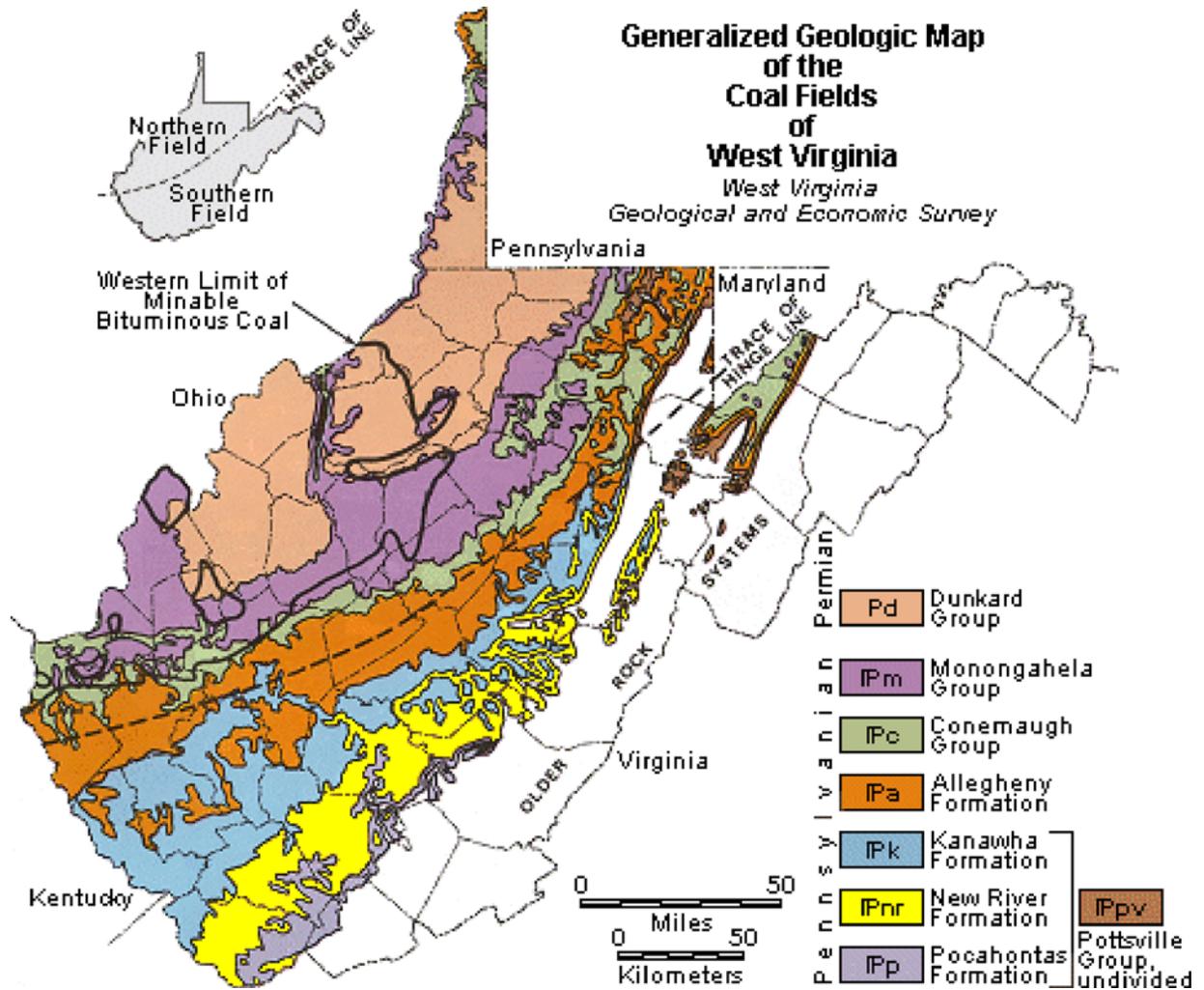
**CONCEPTUAL
 LANDSLIDE DIAGRAM**

FILE 8-5x11_ELL_EIS_Landslide.mxd
 DATE JH 11/05/2007

FIGURE 3.1-7

Generalized Geologic Map of the Coal Fields of West Virginia

West Virginia
Geological and Economic Survey



SCALE NTS



REFERENCES

WGES (1968)

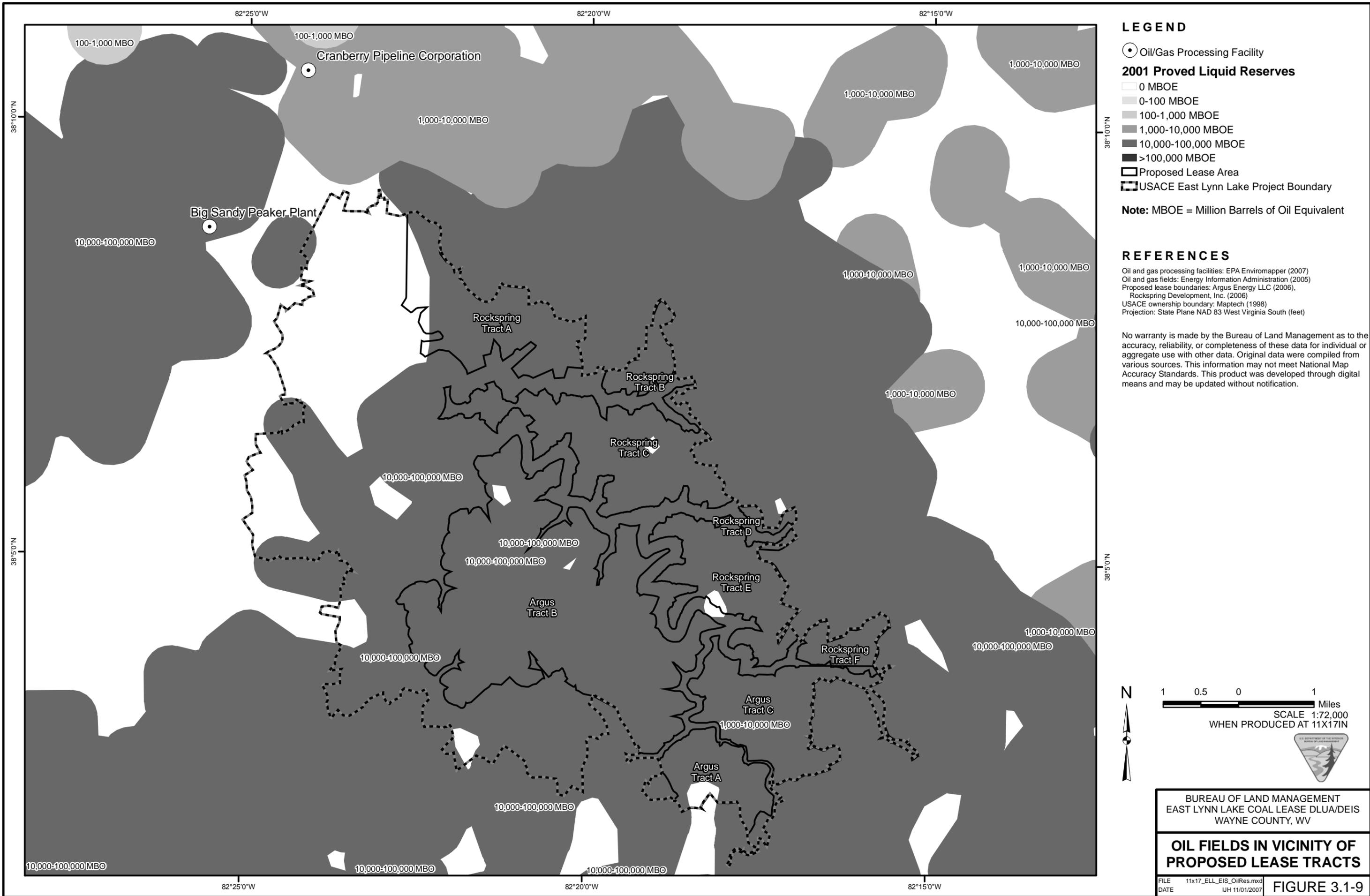
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

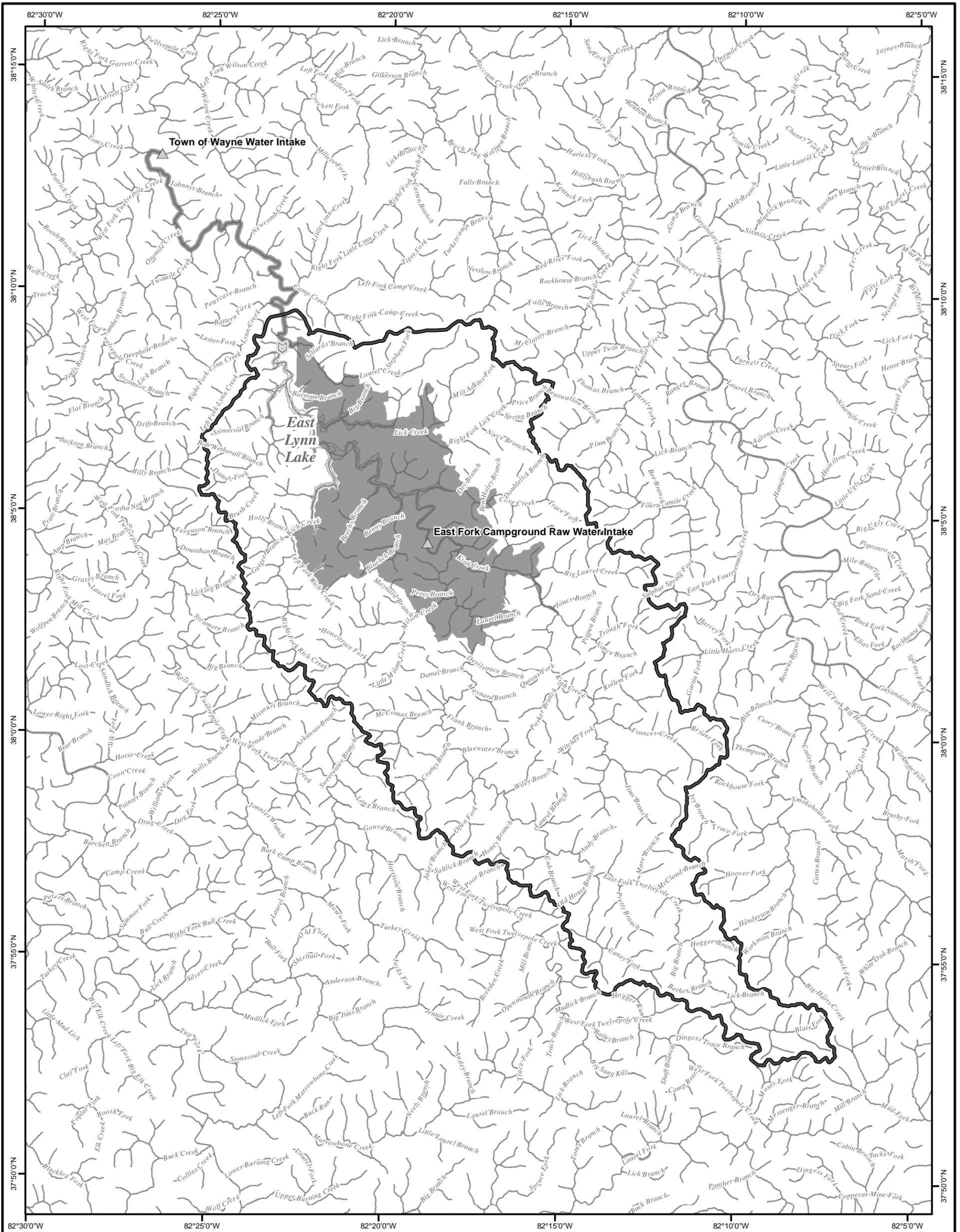
BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

WEST VIRGINIA COAL FIELDS

FILE 8-5x11_ELL_CoalFields.mxd
DATE UH 11/01/2007

FIGURE 3.1-8





LEGEND

-  Water Intake
-  East Lynn Lake Dam
-  Stream
-  Surface Water Study Area
-  East Fork of Twelvepole Creek Watershed Above USGS Gauging Station at East Lynn Lake
-  Lake

REFERENCES

Watershed boundary: Delineated from 30m DEM, USGS National Elevation Dataset
 Streams: USGS (2007a)
 Projection: State Plane NAD 83 West Virginia South (feet)

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Miles

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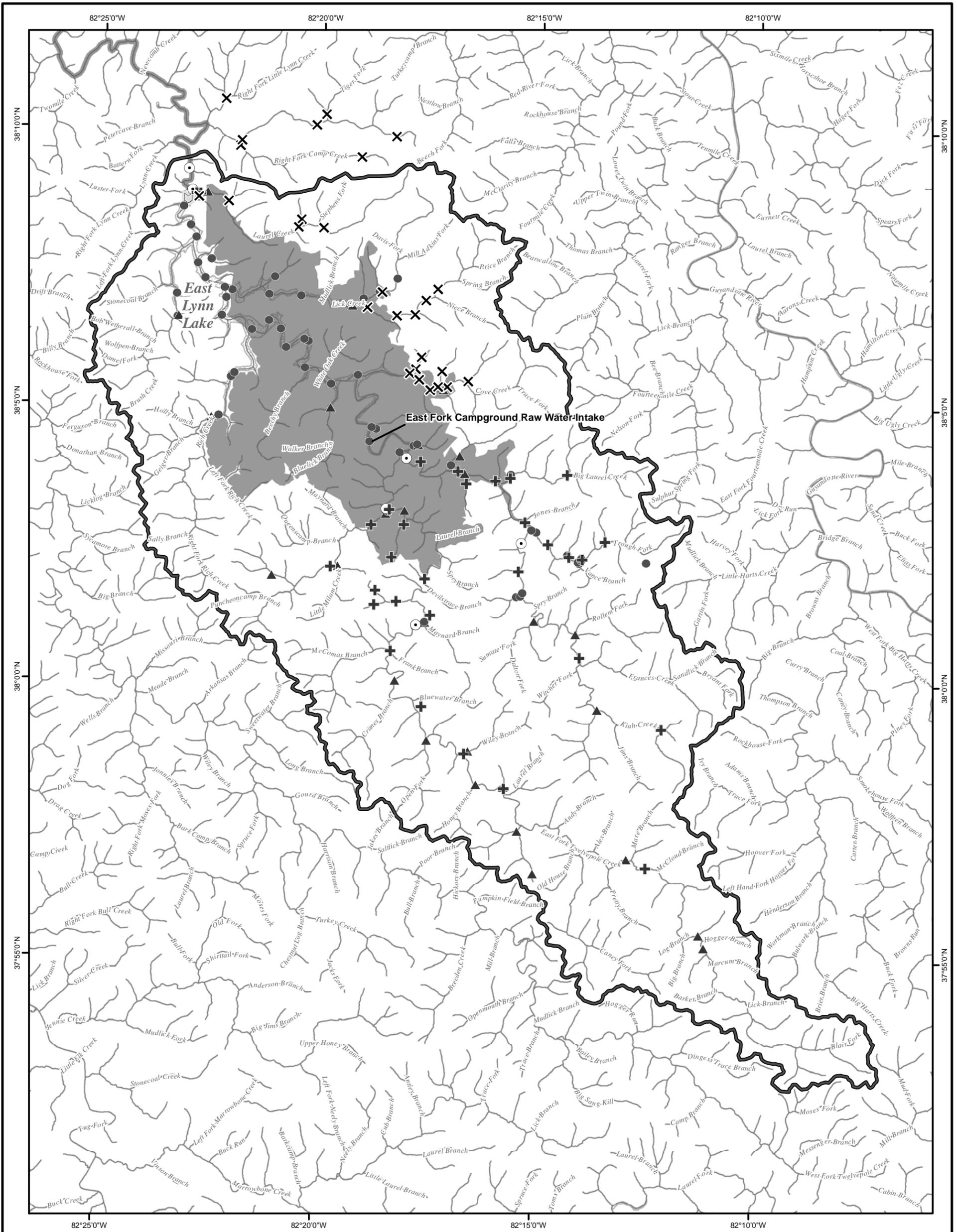


BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

SURFACE WATER STUDY AREA

FILE: x17_ELL_EIS_SWStudyArea.mxd
 DATE: UH 11/05/2007

FIGURE 3.2-1



LEGEND

- East Lynn Lake Dam (Agency)
- Stream
- Surface Water Study Area
- East Fork of Twelvepole Creek Watershed Above USGS Gauging Station at East Lynn Lake
- Lake
- Argus Energy LLC
- Rockspring Development, Inc.
- USACE
- USGS
- WVDEP

REFERENCES

Surface water monitoring locations: Argus Energy LLC (2006), Rockspring Development, Inc. (2006), USACE (2006), USGS (2006), WVDEP (2006)
 Watershed boundary: Delineated from 30m DEM, USGS National Elevation Dataset
 Streams: USGS (2007a)
 Projection: State Plane NAD 83 West Virginia South (feet)

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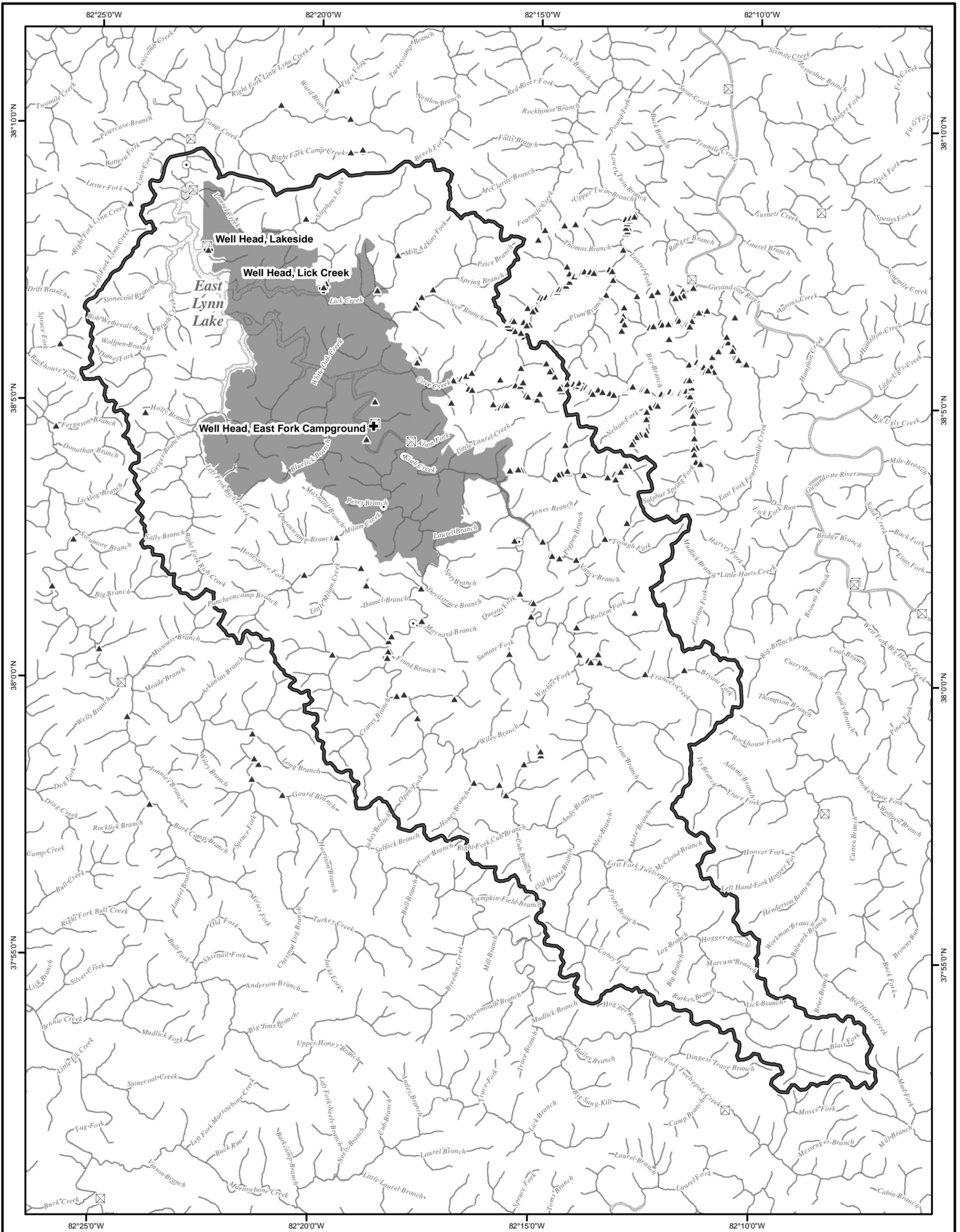


BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

SURFACE WATER MONITORING LOCATIONS

FILE: 1x17_ELL_EIS_SWSampling.mxd
 DATE: UH 11/05/2007

FIGURE 3.2-2



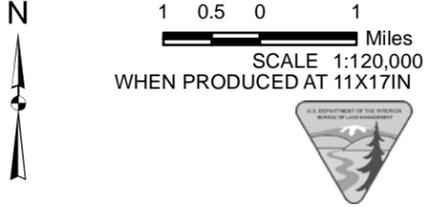
LEGEND

- ▲ Well Location
- USGS Gauging Station
- ⊕ Water Treatment Plant
- ⊠ Sewage Treatment Plant
- ▭ East Lynn Lake Dam
- Stream
- Ground Water Study Area
- ▭ East Fork of Twelvepole Creek Watershed Above USGS Gauging Station at East Lynn Lake
- ▭ Lake

REFERENCES

Gauging stations: USGS (2006)
 Water treatment plants: USACE (2006)
 Sewage treatment plants: WV Dept. of Env. Protection (2002)
 Dams: WV Department of Environmental Protection
 Wells: Argus Energy LLC (2006), Rockspring Development, Inc. (2006), USGS (2006), USACE (2007)
 Watershed boundary: Delineated from 30m DEM, USGS (2006)
 Streams: USGS (2007a)
 Projection: State Plane NAD 83 West Virginia South (feet)

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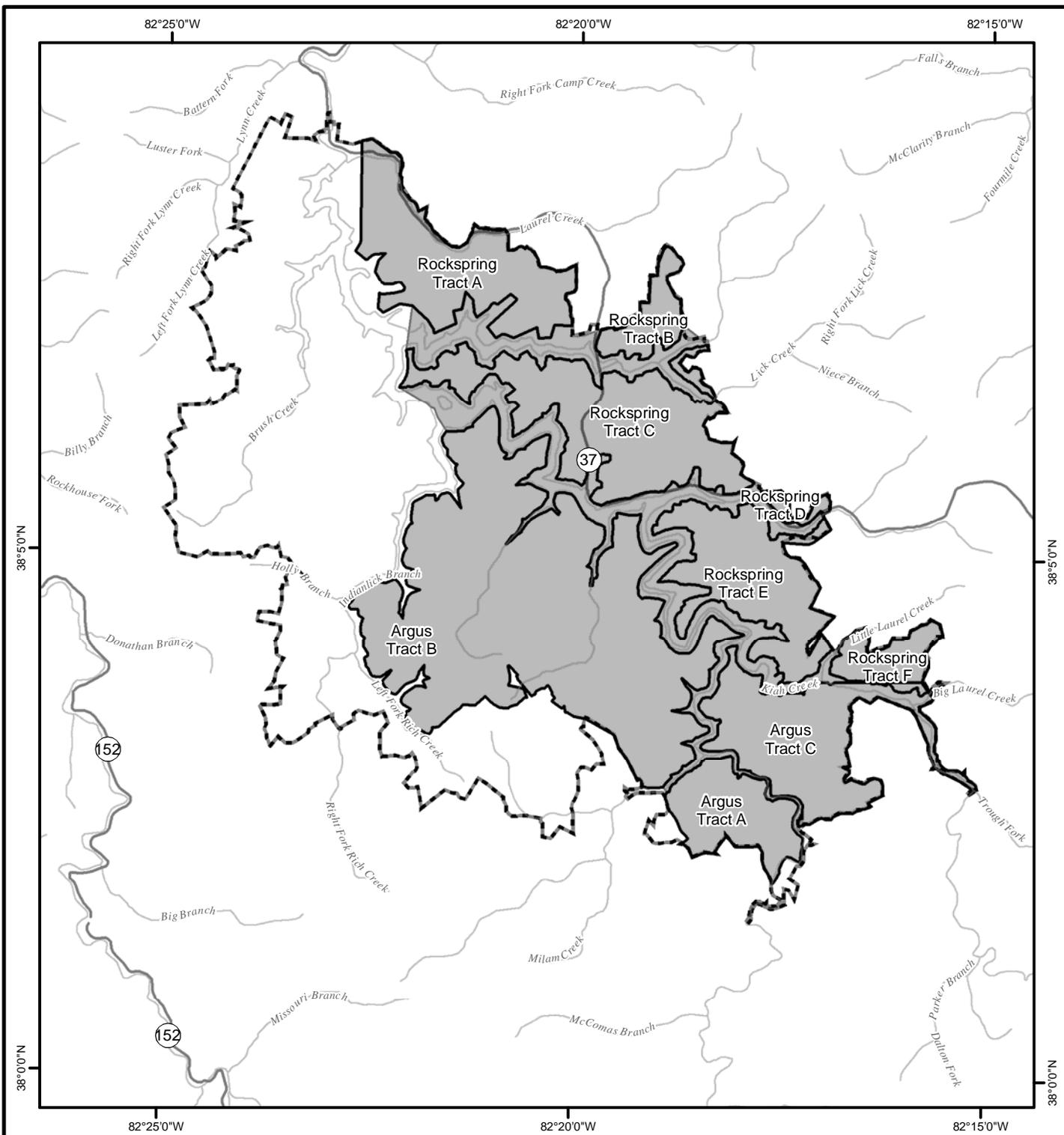


BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

**GROUNDWATER STUDY AREA
 AND EAST FORK OF TWELVEPOLE
 CREEK WATERSHED**

FILE 11x17_ELL_EIS_Watershed.mxd
 DATE UH 11/05/2007

FIGURE 3.3-1



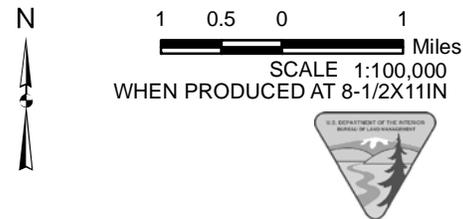
LEGEND

- Vegetation, Soils, Fish, and Wildlife Study Area
- Proposed Lease Area
- USACE East Lynn Lake Project Boundary
- Stream
- 37 Road

REFERENCES

Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Projection: State Plane NAD 83 West Virginia South (feet)

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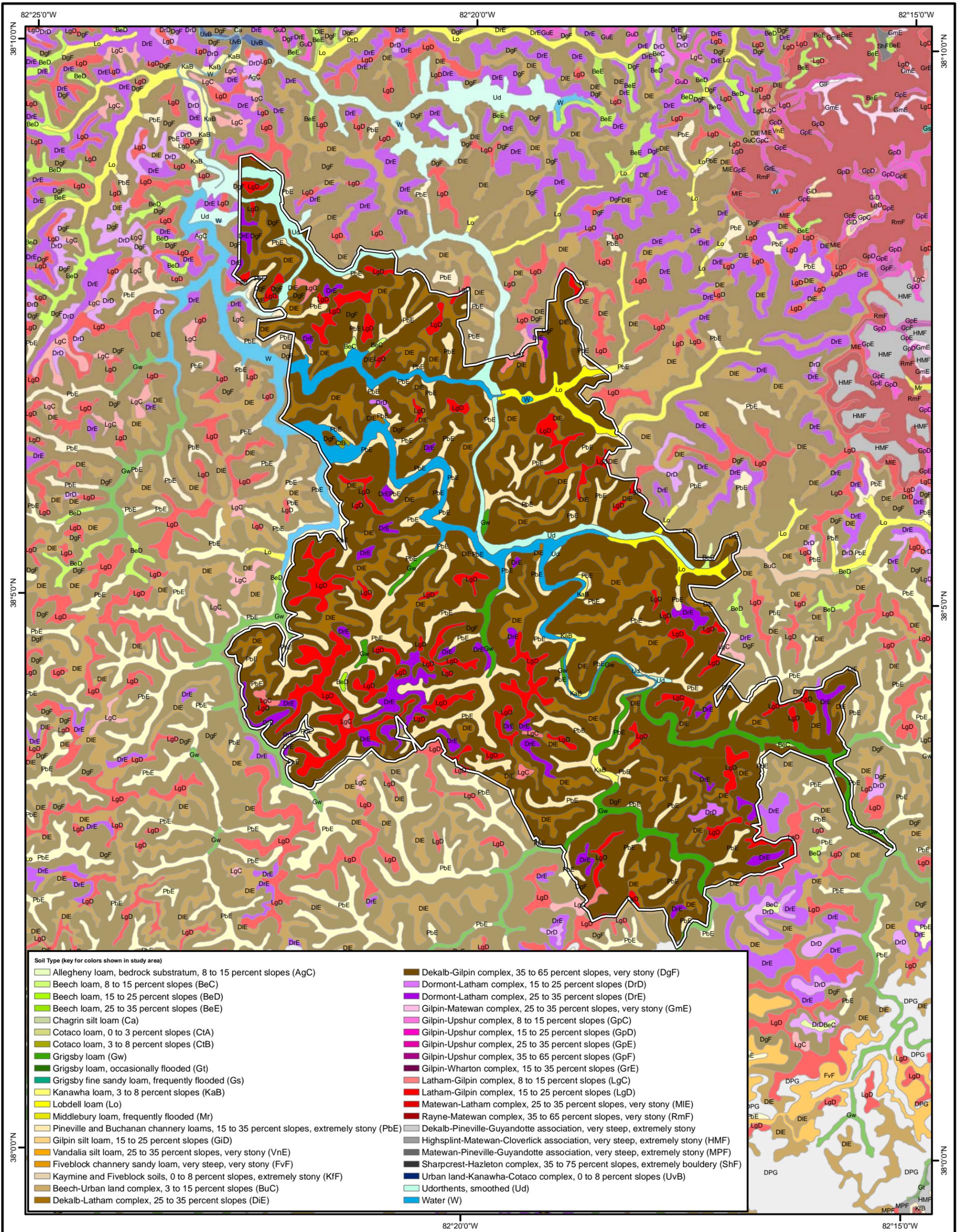


BUREAU OF LAND MANAGEMENT
 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

**VEGETATION, SOILS, FISH,
 AND WILDLIFE STUDY AREA**

FILEB-5x11_ELL_EIS_VSFWStudy.mxd
 DATE JH 11/05/2007

FIGURE 3.4-1



Soil Type (key for colors shown in study area)	
Allegheny loam, bedrock substratum, 8 to 15 percent slopes (AgC)	Dekalb-Gilpin complex, 35 to 65 percent slopes, very stony (DgF)
Beech loam, 8 to 15 percent slopes (BeC)	Dormont-Latham complex, 15 to 25 percent slopes (DrD)
Beech loam, 15 to 25 percent slopes (BeD)	Dormont-Latham complex, 25 to 35 percent slopes (DrE)
Beech loam, 25 to 35 percent slopes (BeE)	Gilpin-Matewan complex, 25 to 35 percent slopes, very stony (GmE)
Chagrin silt loam (Ca)	Gilpin-Upshur complex, 8 to 15 percent slopes (GpC)
Cotaco loam, 0 to 3 percent slopes (CtA)	Gilpin-Upshur complex, 15 to 25 percent slopes (GpD)
Cotaco loam, 3 to 8 percent slopes (CtB)	Gilpin-Upshur complex, 25 to 35 percent slopes (GpE)
Grigsby loam (Gw)	Gilpin-Upshur complex, 35 to 65 percent slopes (GpF)
Grigsby loam, occasionally flooded (Gt)	Gilpin-Wharton complex, 15 to 35 percent slopes (GrE)
Grigsby fine sandy loam, frequently flooded (Gs)	Latham-Gilpin complex, 8 to 15 percent slopes (LgC)
Kanawha loam, 3 to 8 percent slopes (KaB)	Latham-Gilpin complex, 15 to 25 percent slopes (LgD)
Lobdell loam (Lo)	Matewan-Latham complex, 25 to 35 percent slopes, very stony (MIE)
Middlebury loam, frequently flooded (Mr)	Rayne-Matewan complex, 35 to 65 percent slopes, very stony (RmF)
Pineville and Buchanan channery loams, 15 to 35 percent slopes, extremely stony (PbE)	Dekalb-Pineville-Guyandotte association, very steep, extremely stony
Gilpin silt loam, 15 to 25 percent slopes (GiD)	Highsplint-Matewan-Cloverlick association, very steep, extremely stony (HMF)
Vandalia silt loam, 25 to 35 percent slopes, very stony (VnE)	Matewan-Pineville-Guyandotte association, very steep, extremely stony (MPF)
Fiveblock channery sandy loam, very steep, very stony (FvF)	Sharpcrest-Hazleton complex, 35 to 75 percent slopes, extremely bouldery (ShF)
Kaymine and Fiveblock soils, 0 to 8 percent slopes, extremely stony (KfF)	Urban land-Kanawha-Cotaco complex, 0 to 8 percent slopes (UvB)
Beech-Urban land complex, 3 to 15 percent slopes (BuC)	Udorthents, smoothed (Ud)
Dekalb-Latham complex, 25 to 35 percent slopes (DIE)	Water (W)

LEGEND

Vegetation, Soils, Fish, and Wildlife Study Area

NOTE: The colors shown outside of the study area have been faded to contrast with the study area itself. These faded colors do not match the NRCS legend.

REFERENCES

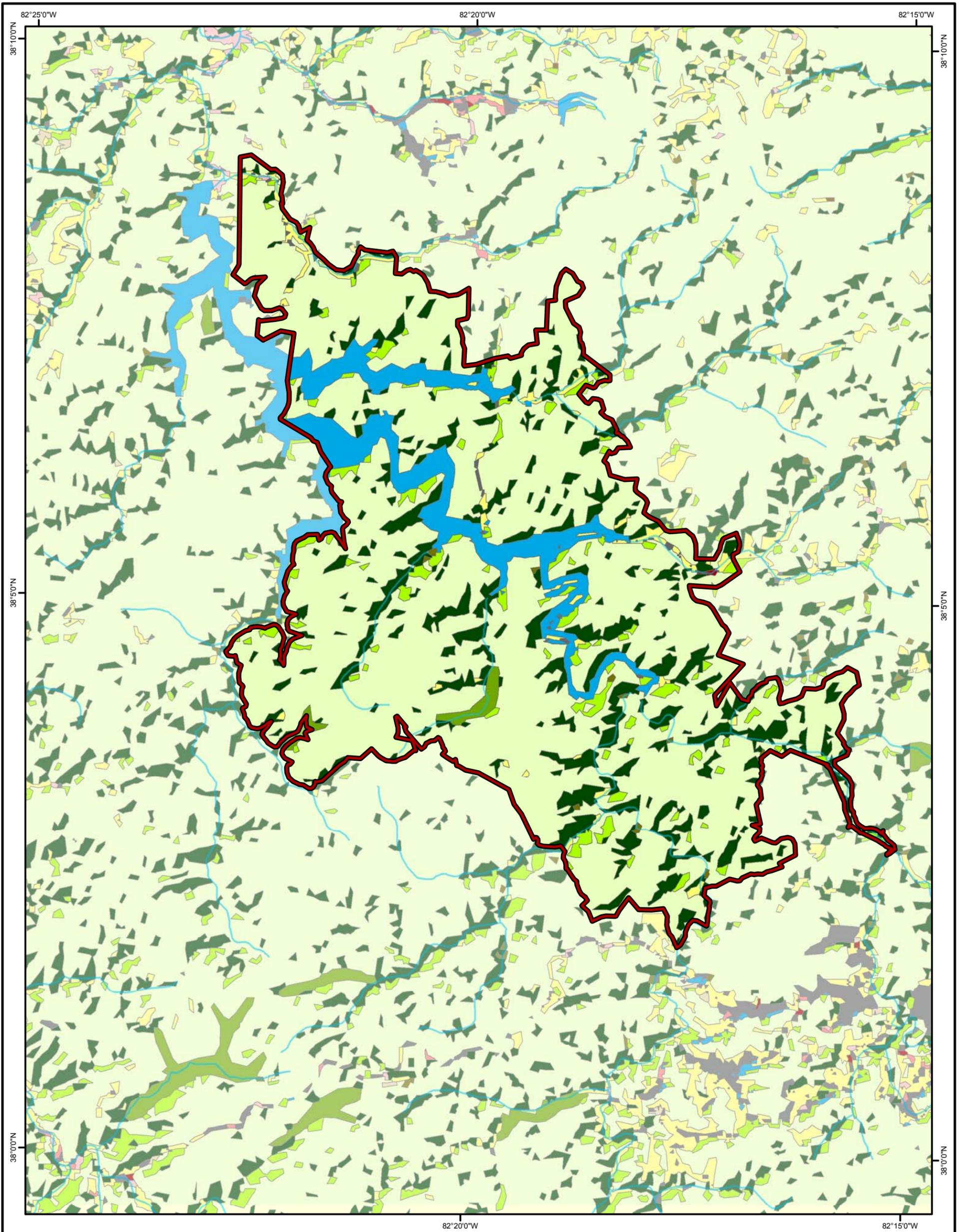
Soil Units: USDA NRCS SSURGO (2006)
 Orthophotography: WV Statewide Addressing and Mapping Board, 2003
 Projection: State Plane NAD 83 West Virginia South (feet)

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 WAYNE COUNTY, WV

AREA SOIL UNITS	
FILE	11x17_ELL_EIS_Soils.mxd
DATE	11/05/2007
FIGURE 3.4-2	



LEGEND

Landcover Type (key for colors shown in study area)

- | | | |
|------------------------------------|------------------------------------|--|
| Cove hardwood forest | Row crop agriculture | Stream |
| Diverse mesophytic hardwood forest | Light intensity urban | Vegetation, Soils, Fish, and Wildlife Study Area |
| Hardwood/conifer forest | Moderate intensity urban | |
| Mountain hardwood forest | Intensive urban | |
| Oak dominant forest | Barren land – mining, construction | |
| Shrubland | Herbaceous wetland | |
| Pasture/grassland | Surface water | |

NOTE: The colors shown outside of the study area have been faded to contrast with the study area itself. These faded colors do not match the WVDEP legend.

REFERENCES

Landcover: WV-GAP, USGS Biological Resources Division (Data shifted 70m east and 280m North from original to match surface water polygons with known coordinates of East Lynn Lake)
 USACE ownership boundary: Maptech (1998)
 Projection: State Plane NAD 83 West Virginia South (feet)

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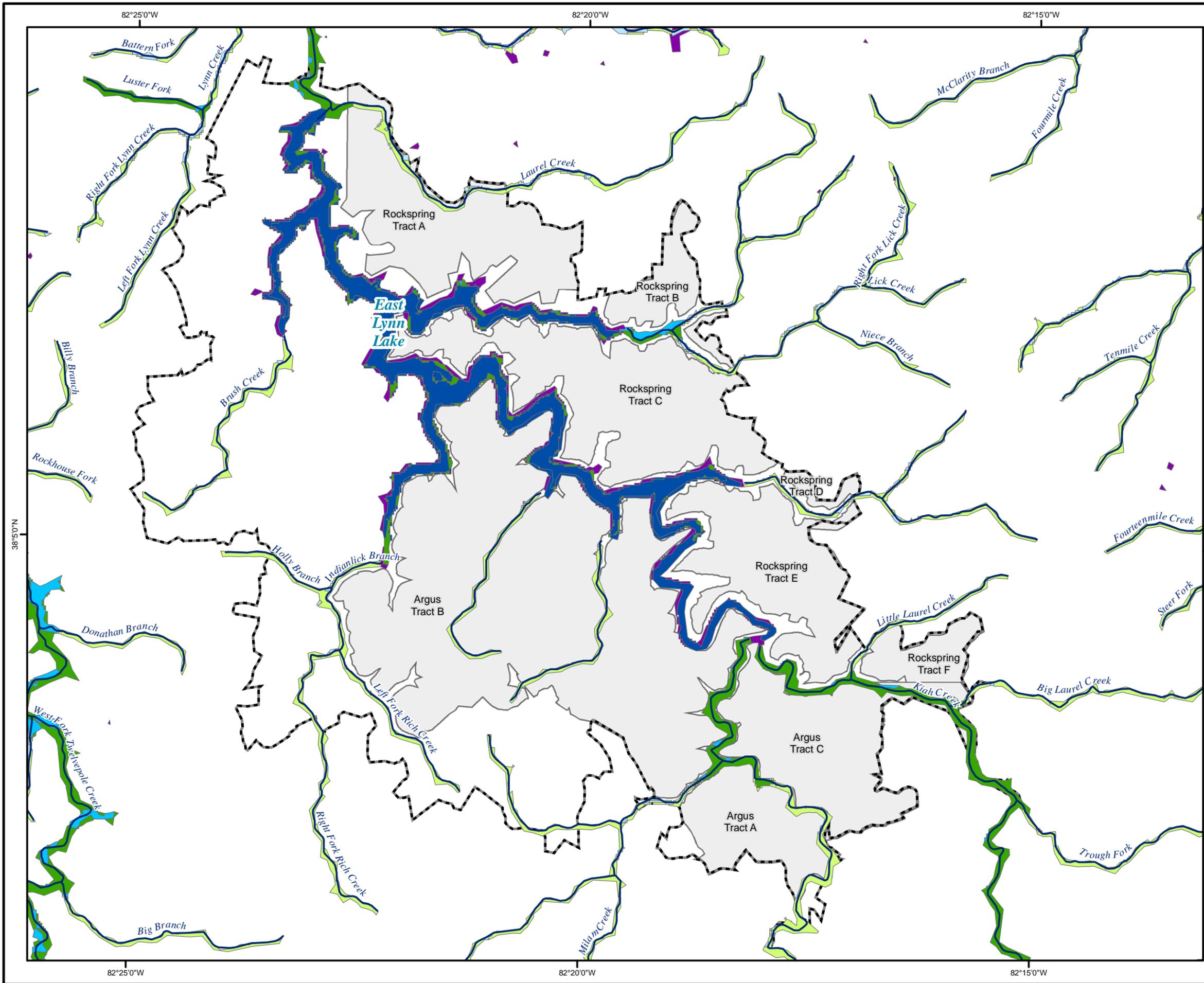


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 WAYNE COUNTY, WV

**WEST VIRGINIA GAP
 LAND COVER TYPES**

FILE 11x17_ELL_EIS_Vegetation.mxd
 DATE UH 11/05/2007

FIGURE 3.5-1



LEGEND

- Headwater stream riparian area (non-forested)
- Small stream riparian area (non-forested)
- Headwater stream riparian area (forested)
- Small stream riparian area (forested)
- Lake (LAC)
- Open water wetland (POW, PUB, PUS, PML)
- Proposed Lease Area
- USACE East Lynn Lake Project Boundary
- Stream

REFERENCES

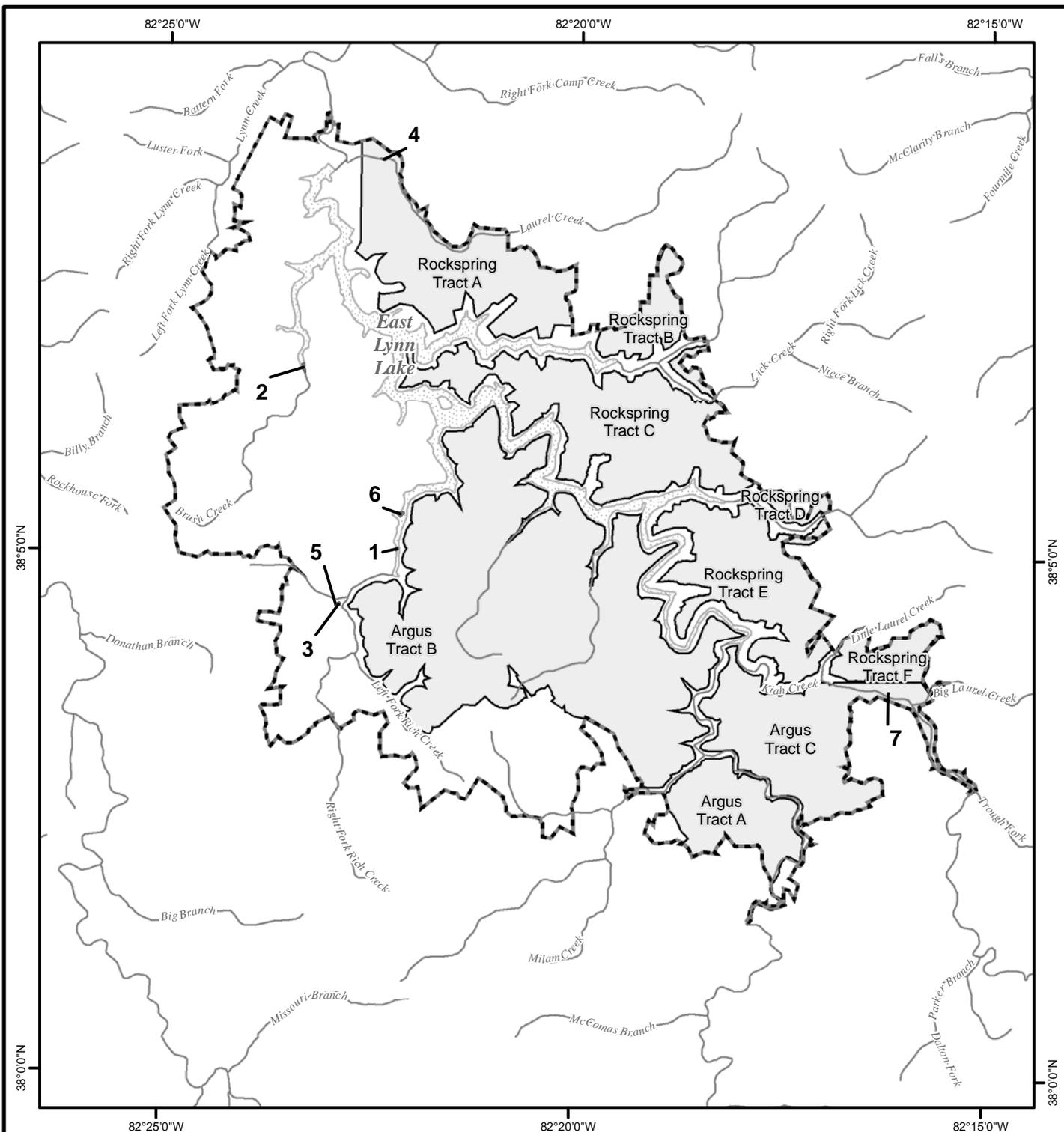
Riparian Areas: Strager and Others (2000)
 Streams: USGS (2007a)
 Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Projection: State Plane NAD 83 West Virginia South (feet)

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 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

**WEST VIRGINIA GAP
 MAPPED RIPARIAN AREAS**



LEGEND

- 1 Wetland Area Location
- Wetland
- Proposed Lease Area
- USACE East Lynn Lake Project Boundary
- Stream
- Lake

REFERENCES

Wetlands: USFWS (2007)
 Streams: USGS (2007a)
 Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Projection: State Plane NAD 83 West Virginia South (feet)

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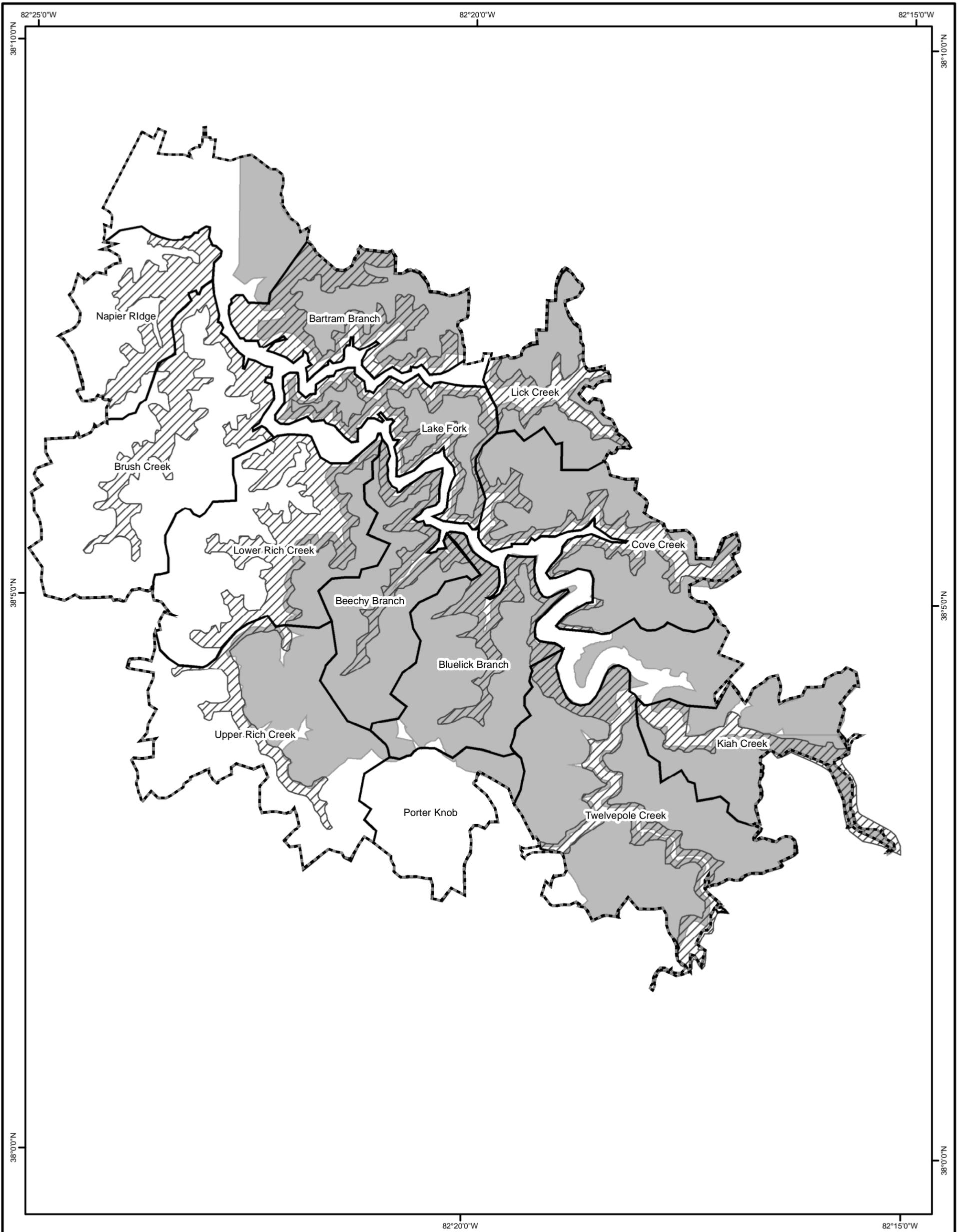


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 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

**NWI MAPPED WETLANDS
 AND NHD MAPPED STREAMS**

FILE 8-5x11_ELL_EIS_Wetlands.mxd
 DATE JH 11/05/2007

FIGURE 3.5-3



LEGEND

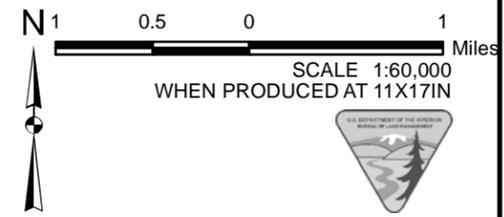
-  WVDNR Timber Compartment
-  Proposed Lease Area
-  Non-Commercial Timber Land
-  USACE East Lynn Lake Project Boundary

NOTE: See Figure 1.1-2 for names and locations of individual proposed lease tracts.

REFERENCES

Timber Compartments: Dotson (1992)
 Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Projection: State Plane NAD 83 West Virginia South (feet)

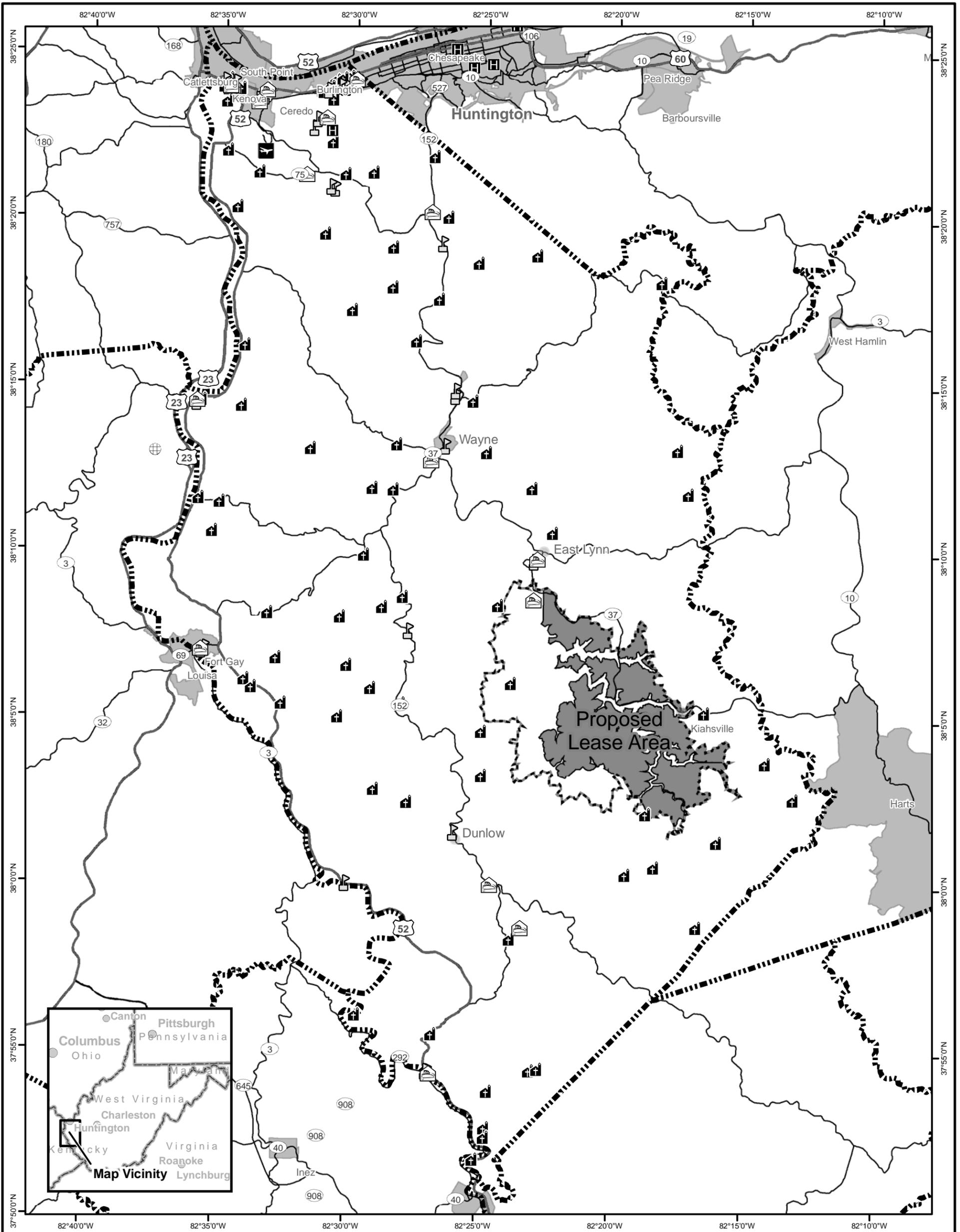
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 WAYNE COUNTY, WV

**WVDNR TIMBER
 COMPARTMENTS**

FILE 11x17_ELL_EIS_Forestry.mxd
 DATE UH 11/05/2007 **FIGURE 3.5-4**



LEGEND

- Airport
- Hospital
- Fire Department
- School
- Church
- Landfill
- Proposed Lease Area
- USACE East Lynn Lake Project Boundary
- County Boundary (Socio-economic study area boundary)

REFERENCES

Airports: USDOT (1998)
 Hospitals: WV Health Care Authority (2004)
 Schools: WV Army National Guard (2005)
 Churches: GNIS (1981)
 Fire Departments: WV Div. of Forestry (2002)
 Landfills: WVDEP (2002)

Proposed lease boundaries: Argus Energy LLC (2006), Rockspring Development, Inc. (2006)
 USACE ownership boundary: Maptech (1998)
 Roads, streams, cities, county boundaries: ESRI (2006)
 Projection: State Plane NAD 83 West Virginia South (feet)

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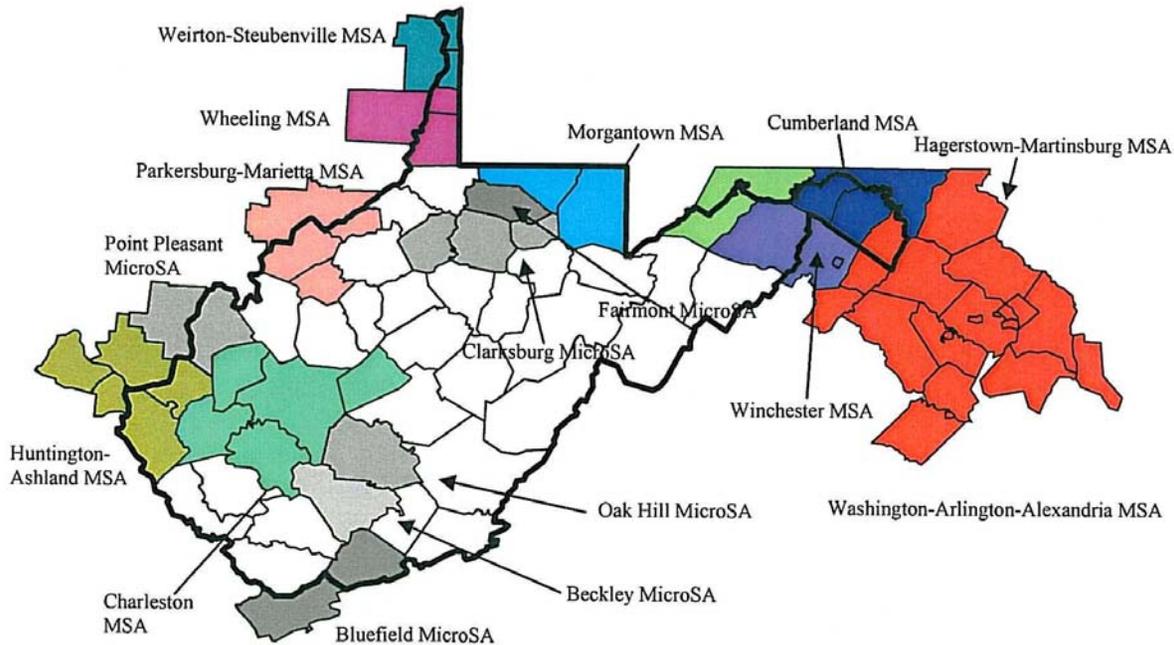
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 EAST LYNN LAKE COAL LEASE DLUA/DEIS
 WAYNE COUNTY, WV

**SOCIOECONOMIC
 STUDY AREA**

FILE	11x17_ELL_EIS_Socio.mxd	FIGURE 3.8-1
DATE	11/01/2007	

WEST VIRGINIA'S STATISTICAL AREAS CENSUS 2000



Source: Office of Management and Budget (OMB)

REFERENCE

WVDO, 2005.

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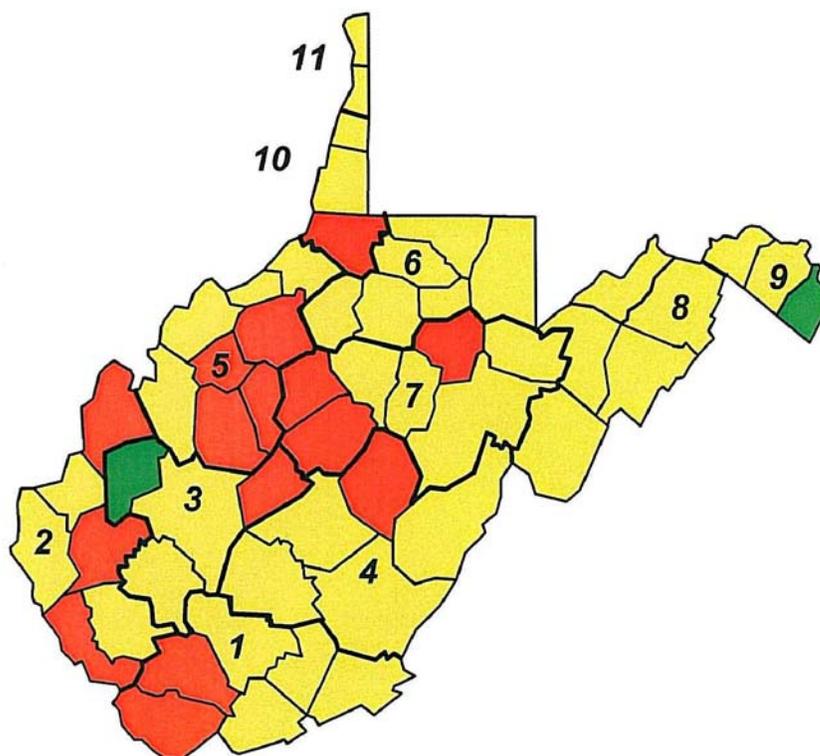
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EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

WEST VIRGINIA'S METROPOLITAN STATISTICAL AREAS

FILE 8-5x11_ELL_WVMetro.mxd
DATE JH 02/14/2008

FIGURE 3.8-2

West Virginia Distressed Counties FY 2005-06



ARC County

■ Distressed

■ Transitional

■ Competitive

6 Regional Planning District Number

SCALE N.T.S.

TO BE PRODUCED AT 8-1/2X11IN



REFERENCE

WVDO, 2005.

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WAYNE COUNTY, WV

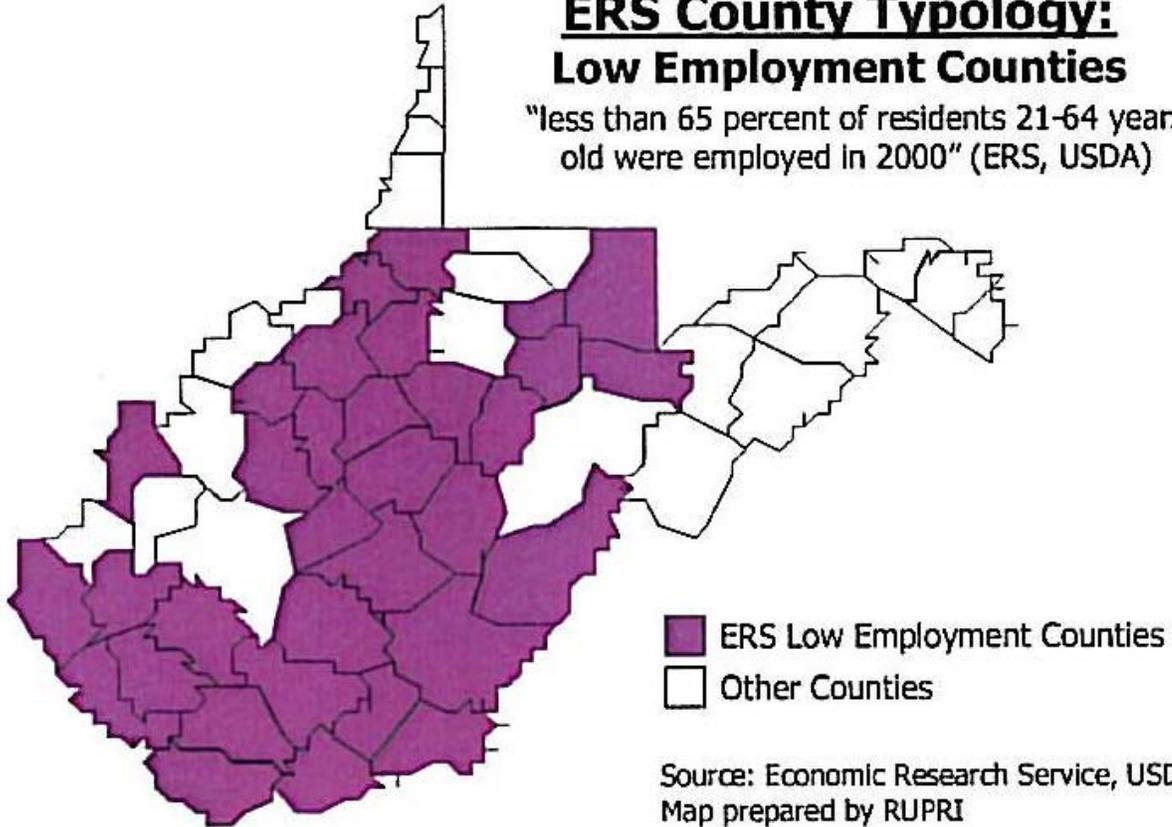
**APPALACHIAN REGIONAL
COMMISSION DISTRESSED COUNTIES
IN WEST VIRGINIA 2005-2006**

FILE 8-5x11_ELL_WVDistCnty.mxd
DATE JH 02/14/2008

FIGURE 3.8-3

ERS County Typology: **Low Employment Counties**

"less than 65 percent of residents 21-64 years old were employed in 2000" (ERS, USDA)



SCALE N.T.S.

TO BE PRODUCED AT 8-1/2X11IN



REFERENCE

RUPRI, 2006.

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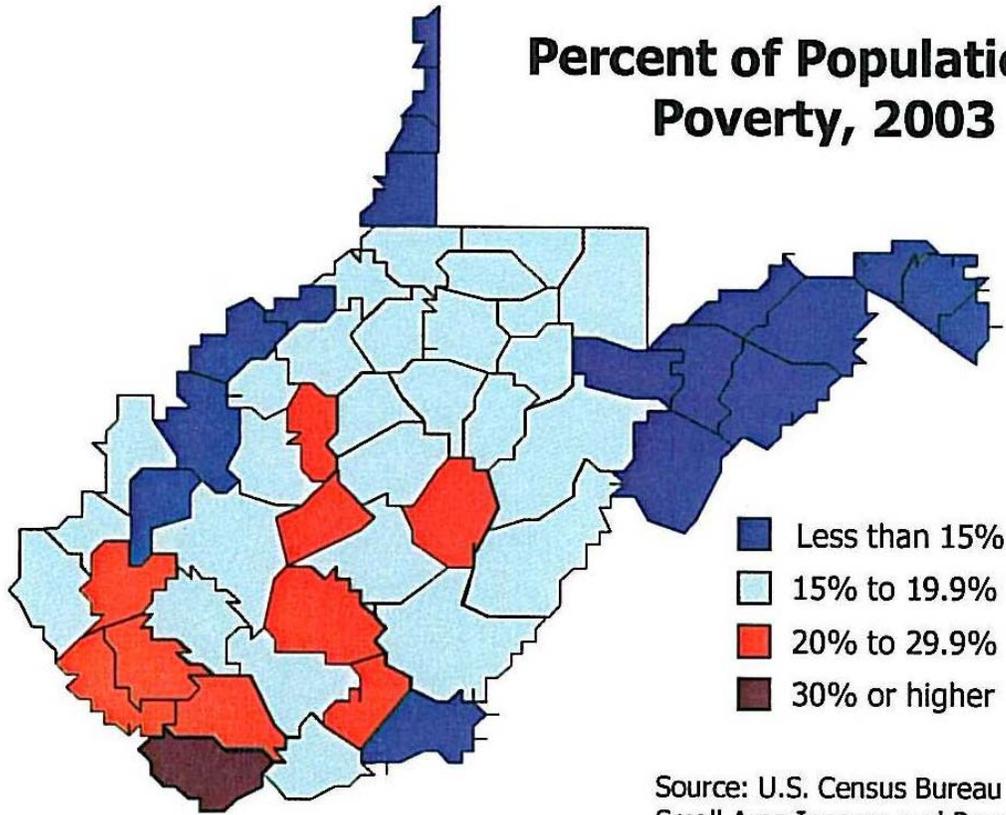
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WAYNE COUNTY, WV

LOW-EMPLOYMENT COUNTIES IN WEST VIRGINIA, 2000

FILE 8-5x11_ELL_WVEmploy.mxd
DATE JH 02/14/2008

FIGURE 3.8-4

Percent of Population in Poverty, 2003



Source: U.S. Census Bureau
Small Area Income and Poverty Estimates
Map prepared by RUPRI

SCALE N.T.S.

TO BE PRODUCED AT 8-1/2X11IN



BUREAU OF LAND MANAGEMENT
EAST LYNN LAKE COAL LEASE DLUA/DEIS
WAYNE COUNTY, WV

**PERCENT OF POPULATION IN
POVERTY FOR THE STATE OF
WEST VIRGINIA, 2003**

FILE 8-5x11_ELL_WVPoverty.mxd
DATE JH 02/14/2008

FIGURE 3.8-5

REFERENCE

RUPRI, 2006.

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