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NOTICES

The State of California has waived its preference right of application for high-way rights-of-way or material sites afforded it by section 24 of said Act.

Inquiries concerning the land should be addressed to the California State Office, Bureau of Land Management, Sacramento, Calif.

JESSE H. JOHNSON,
*Acting Chief, Branch of Lands,
and Minerals Operations.*

[FR Doc. 72-2078 Filed 2-10-72; 8:48 am]

[Serial No. Idaho-06678]

IDAHO

Notice of Termination of Proposed Withdrawal and Reservation of Lands

FEBRUARY 4, 1972.

Notice of an application Serial No. I-06678 for withdrawal and reservation of lands was published as FEDERAL REGISTER Document No. 57-8740 of the issue for October 24, 1957 (22 F.R. 207). The applicant agency has cancelled its application insofar as it involved the lands described below. Therefore, pursuant to the regulations contained in 43 CFR, Part 2091.2-5(b), such lands will be at 10 a.m. on February 19, 1972 relieved of the segregative effect of the above-mentioned application.

The lands involved in this notice of termination are:

BOISE MERIDIAN

T. 5 S., R. 3 E.,
Sec. 9, S½ of lot 1.

The area described aggregates about 20 acres in Elmore County, Idaho.

RICHARD H. PETRIE,
*Chief, Division of
Technical Services.*

[FR Doc. 72-2077 Filed 2-10-72; 8:48 am]

[Bureau Order No. 701, Amdt. 14]

LANDS AND RESOURCES

Redelegation of Authorities

FEBRUARY 7, 1972.

Bureau Order No. 701 dated July 23, 1964 (29 F.R. 10526), is further amended as follows:

A new paragraph (f) is added to section 1.7 and section 3.7 as follows:
SECTION 1.7 Range Management.

(f) *Protection of wild free-roaming horses and burros.* Take all actions under the Act of December 15, 1971 (35 Stat. 649; 16 U.S.C. 1331-1340), except those provided in section 8(b) thereof.

SEC. 3.7 Range Management.

(f) *Protection of wild free-roaming horses and burros.*

GEORGE L. TURCOTT,
Associate Director.

[FR Doc. 72-2076 Filed 2-10-72; 8:48 am]

Office of the Secretary

[INT FES 72-1]

NAVAJO PROJECT

Notice of Availability of Final Environmental Statement

Pursuant to section 102(2)(C) of the National Environmental Policy Act of 1969, the Department of the Interior has prepared a final environmental statement for the Navajo Project, located principally in Arizona.

The environmental statement pertains to the coal-fired electrical power project which is presently under construction. The major feature of the project, the Navajo Generating Station, is located near Page, Ariz. Other features of the project include the Black Mesa and Lake Powell Railroad, the Black Mesa Coal Mining Operation, the Southern Transmission System, and the Western Transmission System. The project will supply electrical energy to portions of Arizona, California, and Nevada, as well as the authorized Central Arizona Project.

Copies of the statement are available for inspection at the following locations:

Office of Communications, Room 7220, Department of the Interior, Washington, D.C. 20240, telephone (202) 343-9247.

Office of Ecology, Room 7620, Bureau of Reclamation, Department of the Interior, Washington, D.C. 20240, telephone (202) 343-4991.

Division of Engineering Support, E&R Center, Technical Services Branch, Building 67, Denver Federal Center, Denver, Colo. 80225, telephone (303) 234-3007.

Office of the Regional Director, Bureau of Reclamation, Post Office Box 427, Boulder City, NV 89005, telephone (702) 293-8560.

Single copies of the final environmental statement may be obtained on request to the Commissioner of Reclamation or the Regional Director. In addition, copies may be purchased from the National Technical Information Service, Department of Commerce, Springfield, Va. 22151. Please refer to the statement number above.

Dated: February 4, 1972.

JOHN W. LARSON,
Assistant Secretary of the Interior.

[FR Doc. 72-2080 Filed 2-10-72; 8:48 am]

DEPARTMENT OF AGRICULTURE

Animal and Plant Health Service

SPECIFIC APPROVAL OF STOCKYARDS AND SLAUGHTERING ESTABLISHMENTS

Pursuant to §§ 78.14(b), 78.15(b), and 78.16(b) of the regulations in Part 78, as amended, Title 9, Code of Federal Regulations, containing restrictions on the movement of certain animals because of brucellosis, under the Acts of May 29, 1884, as amended, February 2, 1903, as amended, and March 3, 1905, as amended (21 U.S.C. 111-113, 114a-1, 115, 117, 120, 121, 125), notice is hereby given that the following stockyards and slaughtering

establishments are specifically approved under said regulations as indicated below:

SPECIFICALLY APPROVED STOCKYARDS

The following stockyards preceded by an asterisk are specifically approved for the purposes of § 78.5, Title 9, Code of Federal Regulations, concerning brucellosis reactors and of paragraphs (b) and (c) of § 78.12 of said Title 9, concerning cattle not known to be affected with brucellosis. The following stockyards not preceded by an asterisk are specifically approved for the purposes of paragraphs (b) and (c) of § 78.12 only:

STOCKYARDS

ALABAMA

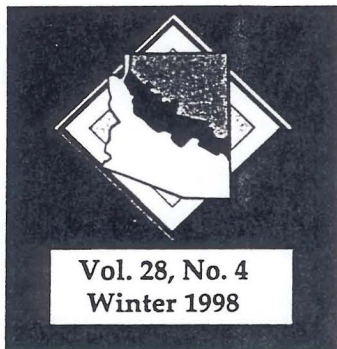
- *Adams & Eagle, Inc., Marion.
- *Arab Stockyard, Arab.
- *Atmore Truckers Association, Inc., Atmore.
- *Cherokee County Stockyard, Centre.
- *Covington Livestock Auction, Inc., Andalusia.
- *Dadeville Stockyards, Inc., Dadeville.
- *Enterprise Livestock Co., Enterprise.
- *Escambia County Cooperative, Inc., Brewton.
- *Farmers Cooperative Market, Inc., Frisco City.
- *Farmers Cooperative Market, Inc., Opp.
- *Fayette Stockyards, Fayette.
- *Florence Trading Post, Florence.
- *Fort Payne Livestock Commission, Fort Payne.
- *Geneva Stockyard, Geneva.
- *Hartford Livestock Co., Hartford.
- *Headland Stockyard, Inc., Headland.
- *Henry County Livestock Association, Inc., Abbeville.
- *Hodges-Capital Stockyards, Montgomery.
- *Hodges-Selma Stockyards, Selma.
- *Hooper Auction Co., Inc., Montgomery.
- *Jackson County Livestock Co., Scottsboro.
- *Kennamer Livestock Co., Inc., Guntersville.
- *Kennett-Murray & Co., Montgomery.
- *Limestone County Stockyard, Athens.
- *Linden Stockyard, Linden.
- *Livingston Stockyard, Livingston.
- *Madison County Livestock Market, Huntsville.
- *Pickens County Livestock Commission, Aliceville.
- *Ramsey & Sons, Inc., Dothan.
- *Roanoke Stockyards, Inc., Roanoke.
- *Robertsdale Livestock Auction, Inc., Robertsdale.
- *L. A. Roll & Son Cattle Co., Montgomery.
- *Tri-County Livestock Auction, Inc. (formerly Hodges-Hurtsboro Stockyards), Hurtsboro.
- *Triple S Stockyards, Inc., Montgomery.
- *Valley Stockyard, Decatur.
- *West Alabama Stockyards, Inc., Eutaw.
- *White Livestock Commission Co., Inc., Morris.
- *Winfield Livestock Commission Co., Winfield.

ARIZONA

Arizona Livestock Auction, Phoenix.
Nelson Livestock Auction, Willcox.
Phoenix Livestock Auction, Phoenix.
Wentz Bros. Livestock Auction, Tucson.

ARKANSAS

- *Ash Flat Livestock Auction, Ash Flat.
- *Beebe Auction, Inc., Beebe.
- *Bentonville Commission Sales, Bentonville.
- *Carroll County L. S. Auction, Berryville.
- *Central Arkansas Auction, Morrilton.
- *Clark County L. S. Auction, Arkadelphia.
- *Corning Livestock Auction, Corning.
- *County Line Sale, Ratcliff.
- *Davis Livestock Auction, Batesville.



Arizona Geology

Published Quarterly by the Arizona Geological Survey

ARIZONA GEOLOGICAL SURVEY

Information to
Arizonans since 1889

MISSION

To provide objective information to enhance public understanding of geologic processes, materials, and resources in Arizona and to assist citizens, businesses, governmental agencies, and legislators in making informed decisions relative to managing land, water, mineral, and energy resources.

GOALS

- Provide information about geologic processes, materials, and resources in a timely, courteous manner.
- Map and describe the bedrock and surficial geology of Arizona. Current emphasis is on the Phoenix-Tucson urban corridor, which contains 80 percent of the State's population.
- Investigate and document geologic processes and materials that might be hazardous to the public or limiting to land and resource management.
- Administer the rules, regulations, and policies established by the Arizona Oil and Gas Conservation Commission.

Arizona Coal

Black Mesa Mine & Kayenta Mine (C)

J.D. Nations, R.L. Swift
and H.H. Haven
Northern Arizona University

New Information. The writers are completing a study of the distribution and thickness of coal beds beneath Black Mesa, which covers 3,200 square miles within the Navajo and Hopi Reservations in northeastern Arizona (Figure 1). They produced a database of information from more than 230 subsurface and surface locations and constructed maps that show coal thickness trends. These maps can be used to locate areas that are favorable for exploration and development. The database and maps may also be used to evaluate the potential for coalbed methane. Results of the study will be released as Arizona Geological Survey and U.S. Geological Survey open-file reports, the availability of which will be announced in a future issue of *Arizona Geology*.

Production History. Black Mesa coal was mined for pottery firing as early as 900 A.D. More than 100,000 tons were mined between 1300 and 1600. Prior to the

introduction of natural gas, local reservation schools used coal for heating, probably fewer than 10,000 tons per year. Between 1960 and 1970, Arizona mines produced fewer than 1,000 tons of coal annually. Peabody Western Coal Company, which began mining on Black Mesa in 1970, produced 13,192,000 short tons, with an estimated value of \$300 million, in 1996. From 1970-1996 Peabody leases produced 265 million tons of coal.

Operating Mines. Two coal mines, the Black Mesa and the Kayenta, generate approximately \$40 million in royalties annually to the Navajo Nation and the Hopi Tribe. Nearly 700 tribal members work at the mines and support facilities. Coal for residential use is supplied to tribal governments for distribution to Navajo and Hopi people.

The Black Mesa Mine, which opened in 1970, produces nearly 5 million tons of steam coal annually.

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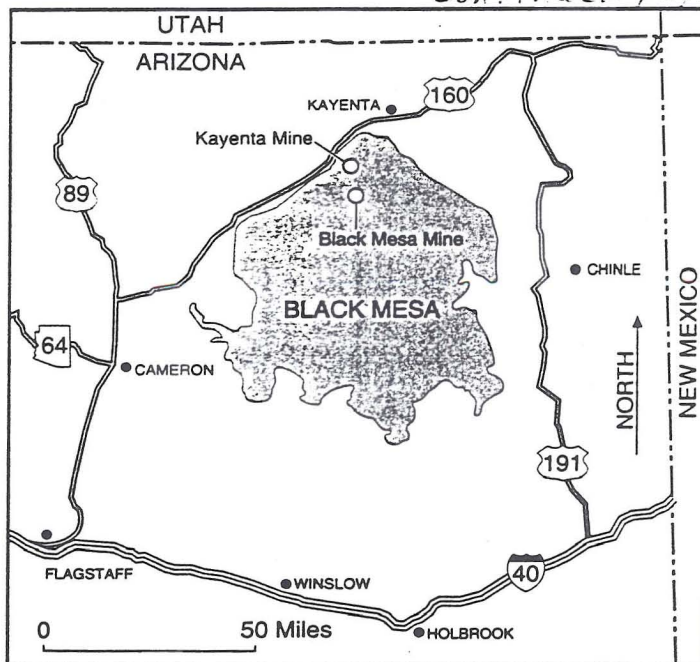


Figure 1. Black Mesa and Kayenta mines.

Arizona Coal (continued from page 1)

GOVERNOR
JANE DEE HULL

**ARIZONA
GEOLOGICAL
SURVEY STAFF**
December 1998

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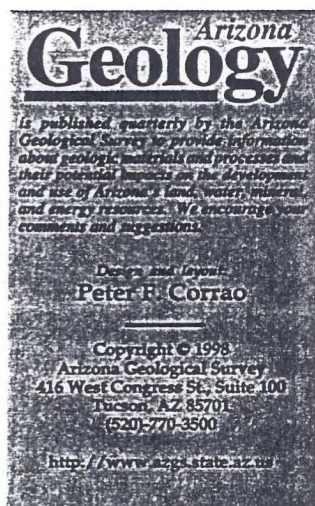
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Arizona Geology
Winter 1998

The coal is crushed and transported 273 miles through an 18-inch-diameter slurry pipeline to Southern California Edison's Mohave Generating Station near Laughlin, Nevada (Figure 2).

The adjacent Kayenta Mine, which began operating in 1973, produces almost 8 million tons of steam coal annually. The coal is crushed at the mine and carried 17 miles by a conveyor belt to storage silos. From there it is transported 78 miles on the Black Mesa & Lake Powell Railroad, a dedicated, electrified coal-haul railway, to the Navajo Generating Plant near Page, Arizona.

Occurrence and Quality. Black Mesa is underlain by rocks of Late Cretaceous age, including the Yale Point, Wepo, Toreva, and Dakota formations and the Mancos Shale. Coal seams are present in the Dakota, Toreva, and Wepo.

The Wepo contains the highest rank and quality of coal on Black Mesa as well as the largest minable reserves. Although its coal seams average 4-8 feet in thickness, some are as many as 20 feet thick. Peabody reported eight coal zones, some of which contain multiple beds that range in cumulative thickness from 24-91 feet. The thickest bed indicated is 18.6 feet. The average net thickness of Wepo coal within the Peabody lease is 40 feet. The coal is subbituminous, with an average ash content of 7.3 percent, Btu per pound (dry) of 12,382, and

sulfur content of 0.58 percent.

The thickest and most extensive coal in the Toreva Formation is in the southeastern part of Black Mesa, where the average of 21 measurements is 12 feet. The rank and quality of this coal, known from only a few sample analyses, averages 13.8 percent ash, 12,338 Btu per pound (dry), and 1.09 percent sulfur.

Coal beds in the Dakota Formation average 2 feet in thickness, except in Coalmine Canyon and near Steamboat, where they are 7-9 feet thick. Rank and quality of coal in the Dakota, also known from only a few samples, averages 11.9 percent ash, 11,125 Btu per pound (dry), and 1.6 percent sulfur.

Reclamation. Reclamation is designed to preserve a traditional American Indian lifestyle by restoring mined land to hardy rangeland with up to 10 times more forage for grazing than native range. Mining and reclamation proceed at the same rate, about 500 acres

annually. Topsoil, removed before an area is mined, is returned after mining is completed and the surface has been contoured. The reclaimed land is also used for wildlife habitat and native plants. Peabody Western has received a number of awards for mining and reclamation, including an Excellence in Surface Mining Award from the U.S. Department of Interior's Office of Surface Mining in 1996.

Acknowledgments. Our Black Mesa studies have been supported by four grants from the National Science Foundation and one from the Mobil Corporation. Continuation of the project and preparation of this report were supported by Cooperative Agreement No. 143+HQ-97-AG-01897 between Northern Arizona University, the Arizona Geological Survey, and the U.S. Geological Survey, with funding from the National Coal Resources Data System Program.

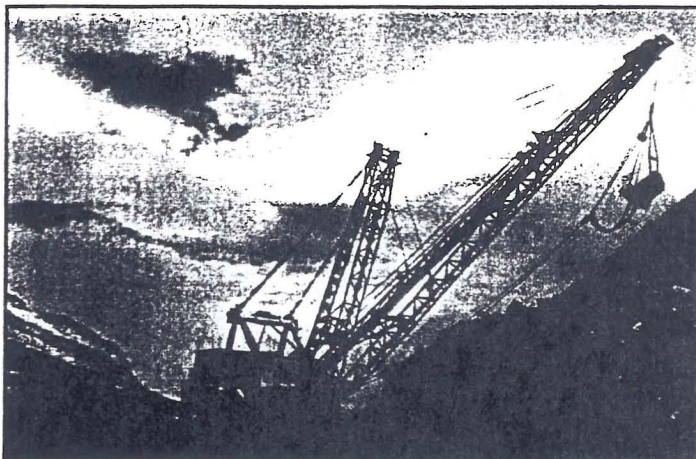


Figure 2. Mining coal on Black Mesa. Coal beds are visible in cut on left

State Coal Profile: Arizona

Coal ranks a distant second in value to copper among the mineral commodities produced in Arizona. However, Arizona is notable as a source of coal because all production is from leases on Indian lands, and because the State has the only long-distance coal-slurry pipeline in the country. Indian royalties from coal sales in 1992 were \$33 million.

All of Arizona's coal production, which totaled about 13 million short tons in 1992, is from the Black Mesa field in the northeastern part of the State, in Navajo County. This is a plateau area covering more than 3,000 square miles of Indian land. Black Mesa coal is generally classified as bituminous coal.

Black Mesa coal is historically noteworthy because archeological evidence shows that prehistoric Indians used it for firing pottery at least as far back as 1300 A.D. Although the first official record of coal production in Arizona was in 1926, small amounts of coal were mined by settlers for local use in earlier years. Between 1926 and 1970, coal production was intermittent and usually amounted to less than 10,000 short tons per year, reflecting the remoteness of the coal deposits, a small population, and a lack of coal-based industries. Most of the coal was produced for heating schools on the Navajo Indian Reservation.

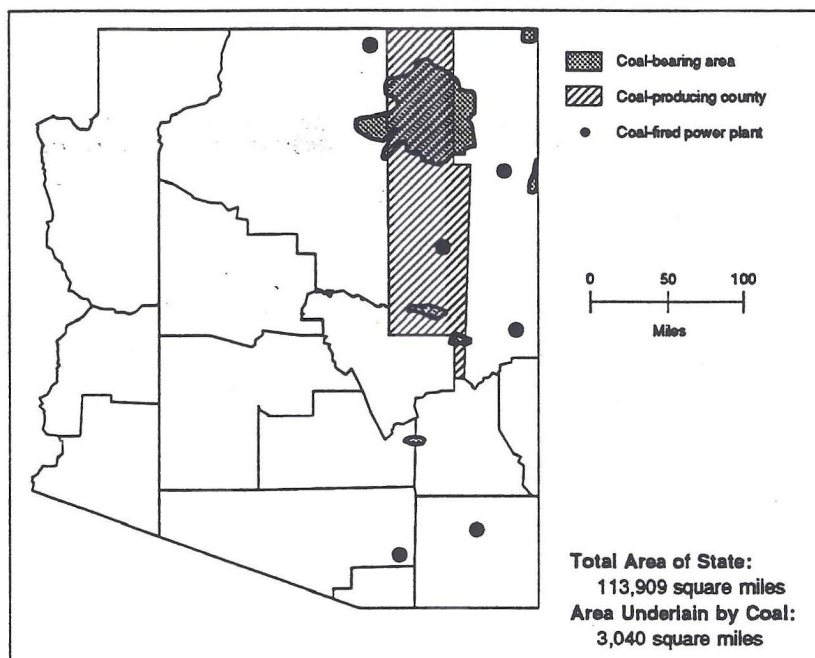
After 1970 the output of coal in Arizona increased markedly. This was due to the opening of two large surface mines in Black Mesa field—Black Mesa and Kayenta—to produce coal for two large power plants built

to help meet the growing demand for electricity in southern California and the Southwest. Peabody Coal Company developed and continues to operate both mines, located about 16 miles apart, on about 65,000 acres of land leased from the Navajo and Hopi Indian tribes. Production is from four to five coalbeds that range from 3 to 10 feet in thickness. Both mines rank among the largest U.S. coal mines.

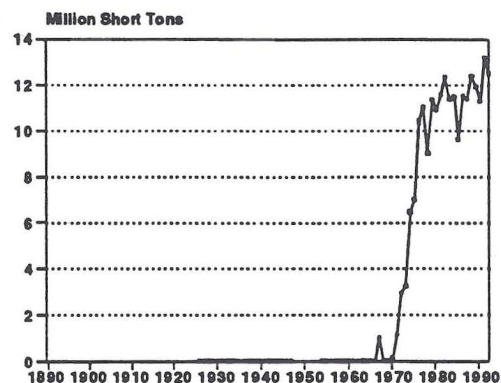
Black Mesa supplies coal to the 1,580-megawatt Mohave power plant of Southern California Edison Company, in southeastern Nevada. The transportation link between the mine and power plant is unique: coal is delivered as a slurry through a 273-mile long, 18-inch pipeline. The coal slurry (a mixture of half finely ground coal and half water, by weight) is pumped at a rate of about 3.5 miles per hour. Kayenta produces coal for the 2,250-megawatt Navajo power plant, located near Page, in Coconino County, and operated by the Salt River Project Agricultural Improvement and Power District. Coal from the mine is hauled to the power plant on an 83-mile-long private railroad. A 17-mile long conveyor connects the mine with the railroad.

Less than half of the 18 million short tons of coal consumed in Arizona in 1992 was produced in the State. Electric utilities were the principal consumers. Except for the Navajo power plant, the utilities consumed coal received primarily from New Mexico. Other coal consumers in Arizona were chiefly cement plants and a paperboard mill.

Arizona



Coal Production, 1890-1992



First Year of Documented Coal
Production 1926 (624 short tons)
Peak Year of Coal
Production 1991 (13,203,000 short tons)

Coal Reserves (Million Short Tons)

Type of Reserve	Underground	Surface	Total
Demonstrated Reserve Base: (January 1, 1992)	102	135	236
Estimated Recoverable Reserves: (January 1, 1992)			
Sulfur Content (pounds per million Btu)			
< 0.61 (low sulfur)	51	106	158
0.61-1.67 (medium sulfur)	0	0	0
> 1.67 (high sulfur)	0	0	0
Total	51	106	158
Estimated Recoverable Reserves at Active Mines, Year-End 1992	0	W	W

Production

Salient Data by Mine Type	1980	1985	1990	1991	1992
Underground					
Quantity (thousand short tons)	0	0	0	0	0
Mines	0	0	0	0	0
Miners	0	0	0	0	0
Productivity (short tons per miner per hour)	--	--	--	--	--
Average Mine Price (dollars per short ton)	--	--	--	--	--
Surface					
Quantity (thousand short tons)	10,905	9,625	11,304	13,203	12,512
Mines	2	2	2	2	2
Miners	897	885	951	900	888
Productivity (short tons per miner per hour)	5.29	6.53	5.93	6.64	6.29
Average Mine Price (dollars per short ton)	W	W	W	W	W
Total					
Quantity (thousand short tons)	10,905	9,625	11,304	13,203	12,512
Mines	2	2	2	2	2
Miners	897	885	951	900	888
Productivity (short tons per miner per hour)	5.29	6.53	5.93	6.64	6.29
Average Mine Price (dollars per short ton)	W	W	W	W	W

Arizona

Number of Mines by Production Range and Percent of Production, 1992

Mine Type	Production Range (thousand short tons)							
	1,000 and over		500 to 999		100 to 499		< 100	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Underground	0	0	0	0	0	0	0	0
Surface	2	100	0	0	0	0	0	0
All Mines	2	100	0	0	0	0	0	0

Coal Demand

Disposition	1980	1985	1990	1991	1992
Consumption (thousand short tons)					
Electric Utilities	10,915	14,448	15,758	16,116	17,227
Coke Plants	0	0	0	0	0
Other Industrial	W	W	660	689	632
Residential and Commercial	W	W	0	0	4
Total	11,558	16,364	16,419	16,805	17,862
Year-End Utility Stocks (thousand short tons)	5,541	3,163	3,090	4,177	3,543
Electricity Generation					
Total (million kilowatthours)	36,876	48,227	62,289	66,767	70,109
Coal (percent)	59	60	51	48	49
Nuclear (percent)	0	2	33	38	37
Other (percent)	41	38	16	14	14

Utility Coal Data, 1992

Average Quality and Average Delivered Cost	Produced In State	Receipts, All Sources
Heat Content (million Btu per short ton)	22.00	20.61
Sulfur Content (percent by weight)52	.51
Ash Content (percent by weight)	9.50	12.19
Pounds of Sulfur per million Btu47	.50
Dollars per million Btu	1.10	1.37
Dollars per short ton	24.28	28.31

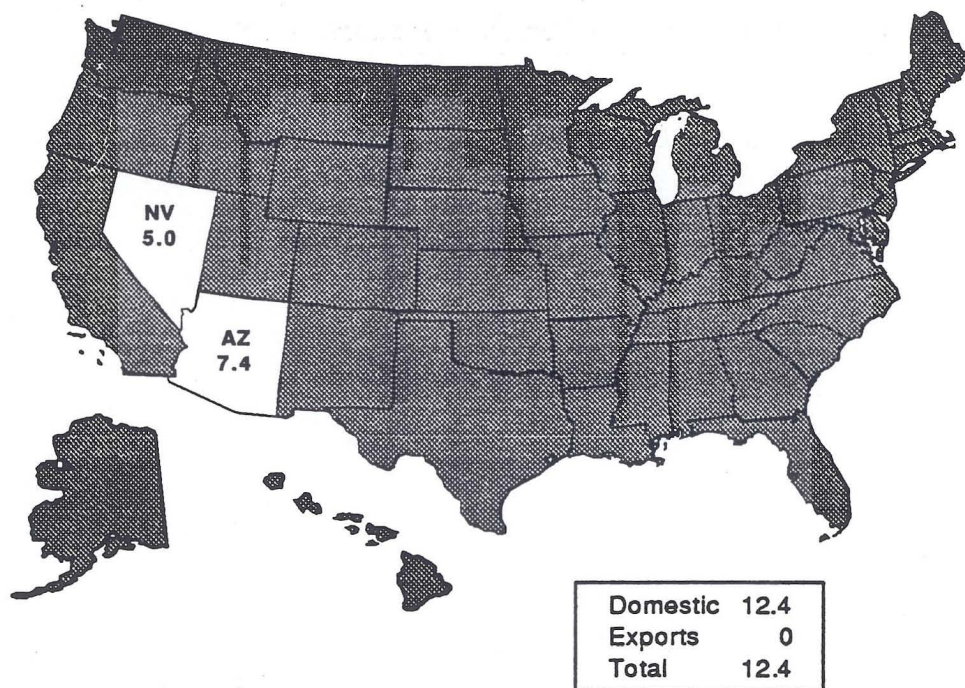
Estimated Total State Energy Consumption, 1991: 924 trillion Btu (coal, 348; natural gas, 128; petroleum, 353; nuclear electric power, 270; hydroelectric power, 75; other, 0; net interstate flow of electricity and associated losses, -250).

W = Withheld to avoid disclosure of individual company data.

Notes: Totals may not equal sum of components because of independent rounding. Data coverage—Production: all mines. Number of mines: 1980, mines that produced 10,000 short tons or more; other years, all mines. Number of miners and productivity: mines that produced 10,000 or more short tons and preparation plants that had 5,000 or more employee hours. Average mine price: mines that produced 10,000 or more short tons. Average quality and average delivered cost of utility coal: power plants with a generator nameplate capacity of 50 megawatts or more. Extent of coal-bearing areas and locations of coal-consuming plants shown on map are approximate; small coal deposits are not shown. Coal-producing counties shown on map exclude any county where all 1992 output was from mines producing less than 10,000 short tons.

Sources: Energy Information Administration—U.S. Coal Reserves: An Update by Heat and Sulfur Content, February 1993; Coal Production 1992 and prior issues; Coal Data: A Reference; Quarterly Coal Report October-December 1992 and prior issues; Electric Power Annual 1991 and prior issues; Electric Power Monthly, March 1993; Cost and Quality of Fuels for Electric Power Plants 1992; Inventory of Power Plants in the United States 1992; State Energy Data Report 1991: Consumption Estimates; Map of coal-bearing areas is based mainly on U.S. Geological Survey map, Coalfields of the United States, 1960. Data for historical graph 1890-1975, U.S. Department of the Interior, Geological Survey and Bureau of Mines (Minerals Yearbook and annual predecessor Mineral Resources of the United States); 1976 forward, Energy Information Administration, Coal Production 1992 and prior issues.

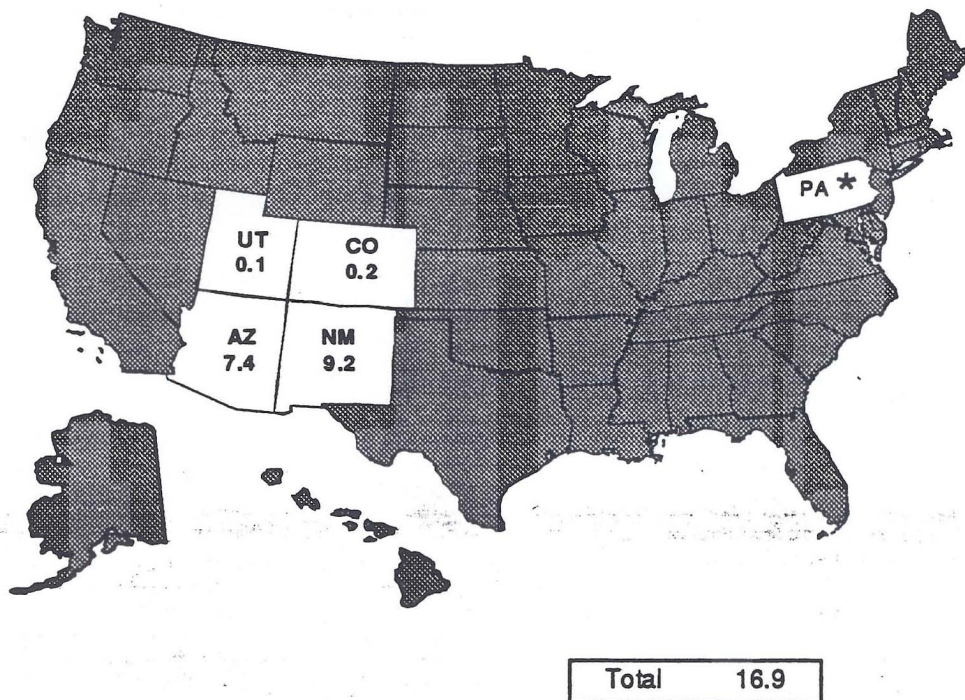
Destination of Coal Produced in Arizona, 1992
(Million Short Tons)



Transportation modes, domestic markets (percent): rail, 60; tramway/conveyor/slurry pipeline, 40.

Note: Total may not equal sum of components because of independent rounding.
Source: Energy Information Administration, Form EIA-6, "Coal Distribution Report."

Origin of Coal Received in Arizona, 1992
(Million Short Tons)



Note: Total may not equal sum of components because of independent rounding.
Source: Energy Information Administration, Form EIA-6, "Coal Distribution Report."



Black Mesa Permit Revision Application

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Below is an index to the February 12, 2004 Life of Mine Permit Revision application, submitted by Peabody Western Coal Company to the Office of Surface Mining on February 17, 2004. This application contains text, maps, and photos, all of which are indexed below and available for viewing or downloading. The text is available in [Acrobat PDF format](#) and the maps in JPG, and DWF format in file sizes range from 25KB to 9MB. To view the DWF drawings, first install the Autodesk Viewer ([Download AutodeskViewer.zip](#) from this website, unzip, and execute ("Open") ExpressViewerSetup.exe).

The U.S. Office of Surface Mining (OSM) is reviewing this application for a significant revision of the mining and reclamation plan for Peabody Western Coal Company's Black Mesa-Kayenta Mines. The Black Mesa-Kayenta Mines are located on the Navajo and Hopi Reservations in northeastern Arizona near the northern edge of Black Mesa, about 25 miles southwest of Kayenta, Arizona.

The revision application proposes: -- the addition of about 20,157 acres to the currently approved permit area for the Kayenta Mine (about 42,773 acres) to incorporate the Black Mesa Mine into the permit (i.e., the administrative delay for permitting the Black Mesa Mine would be terminated and the Black Mesa Mine would be permitted under the permanent Indian Lands Program) -- the addition of about 90 to 130 acres to the permit area for a coal transportation corridor from the J23 coal resource area to the Black Mesa preparation facilities, which will require a new surface right-of-way -- new mine plans extending operations at both mines for at least 20 years beyond 2005 -- an increase in the rate of coal production at the Black Mesa Mine, and a resultant increase in water use for coal slurry transportation, to accommodate anticipated increased coal demand at the Mohave -- a coal washing facility for the Black Mesa Mine to meet the anticipated future coal quality requirements of MGS after 2007 -- new environmental baseline information for future coal resource areas to augment the existing environmental baseline studies and ongoing environmental monitoring results -- an analysis of the probable hydrologic consequences of using a water supply other than the Navajo aquifer for coal slurry transportation, as well as a significant part of the mines' operational needs.

You may send written comments or objections about the proposed revision to the Office of Surface Mining or request that the Office of Surface Mining hold an informal conference on the application. Your request for an informal conference must be in writing and must include: your name and mailing address; a brief summary of the issues to be raised by you; and whether you desire to have the informal conference conducted near the Black Mesa-Kayenta Mines. Your comments, objections, or request for an informal conference must be sent by September 15, 2004 to:

Jerry D. Gavette, Black Mesa-Kayenta Mines Team Leader
Office of Surface Mining
P.O. Box 46667
Denver, Colorado 80201-6667
Telephone number in Denver 303-844-1400 x1496.

You may also call the Office of Surface Mining, toll-free, at 1-877-274-4025 or e-mail comments, objections or request for an informal conference to Blackmesa-comments@osmre.gov.


























You may review a complete copy of the revision application below, or at:

1. Navajo Nation Minerals Department-Office of Surface Mining
Window Rock Boulevard
Window Rock, AZ 86515.
2. The Hopi Tribe Office of Mining and Mineral Resources
located on Highway 264, about 1 mile east of Kykotsmovi, Arizona.
3. The Forest Lake Chapter House
located on Navajo Route 41 in Pinon, Arizona.
4. The Office of Surface Mining Albuquerque Field Office
505 Marquette NW, Suite 1200
Albuquerque, New Mexico.
5. The Office of Surface Mining Western Regional Coordinating Center
1999 Broadway, Suite 3320

Denver, Colorado.

The applicant for the revision is Peabody Western Coal Company, P.O. Box 650, Navajo Route 41, Kayenta, Arizona 86033.

Text

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Last Updated: 11/02/2004 05:19:16

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Black Mesa - Peabody coal

The Navajo Power Project and Environmental Protection Plans

GENERAL

The Navajo Generating Station will be Arizona's largest electric generating plant. Its design includes comprehensive plans for environmental protection. These plans for preserving environmental quality are described in a special report on Page Four.

Energy generated at the plant will supply the growing power demand of electrical consumers of Salt River Project, Los Angeles Department of Water and Power, Arizona Public Service Company, Nevada Power Company, and Tucson Gas and Electric Company, and will be used by the U. S. Bureau of Reclamation for pumping Colorado River water for the Central Arizona Project. Salt River Project, as project manager, will construct and operate the generating station.

CONCEPT

The Navajo Generating Station will be the third power generating plant to be built under the Western Energy Supply and Transmission (WEST) Associates concept, in which participating utilities cooperate in extensive regional planning of generation and transmission facilities, and coordinate their investment in such facilities. Generating plants, much larger than any single utility would need, are constructed and operated by groups of utilities, achieving economies that the participants could not otherwise enjoy; this practice helps to keep consumers' power costs low.

CAPACITY

20,000 kw
The plant will consist of three generating units (Units No. 1, No. 2, No. 3) each with an estimated net output of 770,000 kilowatts. The plant will have a total net capacity of 2,310,000 kilowatts.

CONSTRUCTION SCHEDULE

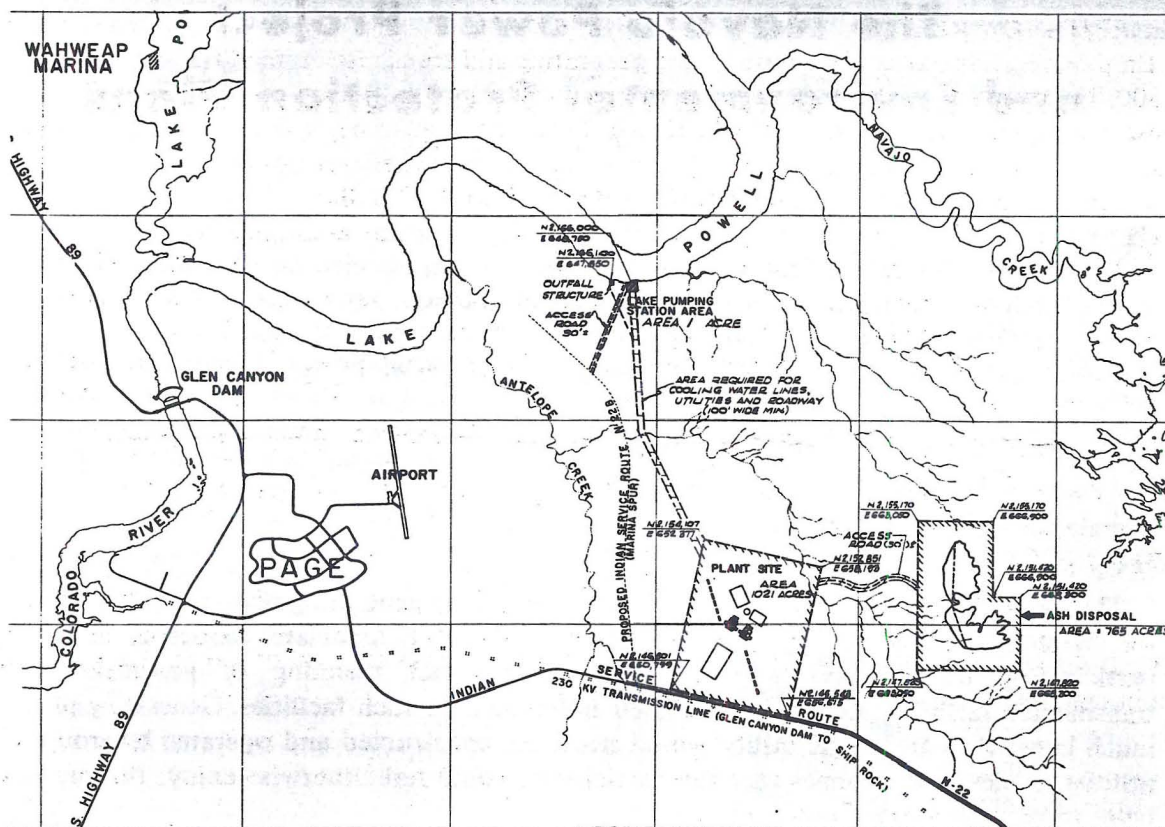
250,000
750,000
Groundbreaking for the plant is planned for April, 1970. The first unit is scheduled to begin commercial operation during June, 1974. The second is expected to go on line in June, 1975. And the third unit will begin operation by June, 1976.

COSTS

Investment in the three-unit plant will be approximately \$328 million. Transmission facilities will cost about \$172 million. The railroad which will carry fuel to the plant will require an investment in excess of \$20 million. Capital investments and operating expenses will be paid by participating utilities in proportion to their percentage participation.

PARTICIPATION

	Percentage of Participation	Kilowatts to be Received (approximate)
Salt River Project	21.7%	501,000 kw
Los Angeles Dept. of Water and Power	21.2%	490,000 kw
Arizona Public Service Co.	14.0%	323,000 kw
Nevada Power Co.	11.3%	261,000 kw
Tucson Gas and Electric Co.	7.5%	173,000 kw
U. S. Bureau of Reclamation	24.3%	561,000 kw



LOCATION

The plant will be on 1,021 acres of land leased from the Navajo Indian Tribe, at Antelope Creek approximately four miles east of Page. Another 765-acre parcel, two miles farther east, has been leased from the Tribe for an ash disposal area.

The site was chosen for the generating station to meet five requirements: availability of competitively priced fuel; an adequate, reliable supply of cooling water; a nearby community large enough to support the facility during construction and operation; proximity to major power load centers, enabling economic power transmission; and, ability to protect the environment.

TRANSMISSION LINES

Some 800 miles of 500 kilovolt transmission lines, costing approximately \$172 million, will be constructed to carry power from the generating station to the participants' delivery points. The transmission lines from the generating station to the Phoenix area will be constructed, operated and maintained by Arizona Public Service Company. The lines to the Las Vegas area will be built by the Los Angeles Department of Water and Power and operated and maintained by Nevada Power Company.

ENGINEER-CONTRACTOR

Bechtel Corporation was selected as the engineer-contractor for the generating station. This company is the world's largest and most experienced engineer-contractor of electric generating stations.

It is the intent of the Navajo Generating Station participants to make this installation an economic and environmental asset to the community of Page and to the state of Arizona. In constructing and operating the plant, the Salt River Project as project manager will adhere to the following policy.

Environmental Policy

The policy of the Salt River Project is to take whatever steps are technologically and economically feasible to protect the environment, while fulfilling our primary responsibility of providing adequate low-cost water and power. We will:

1. Conduct those studies necessary to obtain a complete understanding of how any new facility or activity may affect the environment, and take appropriate action to provide that protection.
2. Install the necessary equipment at our facilities to protect against excessive emission of particulate matter into the atmosphere.
3. Prevent any emissions of oxides of sulphur and nitrogen from exceeding established limits.
4. Construct generating plants in a manner which assures that stack effluents will be adequately dispersed.
5. Cool water used in generating plants when needed to meet acceptable temperatures before returning the water to lakes, rivers or streams, thereby protecting the ecology of the body of water.
6. Avoid the return of water to lakes, rivers or streams which has dissolved solids or other material which would be detrimental to the ecology of the area as determined by ecologists, biologists and controlling agencies.
7. Avoid dispersion of fuel particles and dust.
8. Build into all plants the appropriate facilities for noise abatement.
9. Design and landscape all new facilities so that they will blend pleasingly with the surrounding area.
10. Inspect and survey all new facility sites so that any historic or archaeological materials can be saved for posterity.
11. Work harmoniously with all federal, state, and local agencies and groups responsible for or interested in the protection of our environment.

Vonder Berg Process req. cooling gases, then heating for
stark. One process doesn't req " but M.C. so far
scale up to 100 megawatts would be great scale-up.
Acid problem. Wellman-Lord prob one of first to be seriously
tried. If can sell acid need high S coal.
In the east problem would disappear w 0.5% coal.
Rosenfeld - Bechtel.

William - M.M. Conservationist?

merge Kaiparowits? = question proposed

Ed Gault - H + W. 1355 micrograms / meter. Reduced to 150

1st storage for power supply will be cooling water.

Jack Monahan - ^{not} ^{service} ~~Page~~ - Page

Eng. Rep. to Alexander. Do you accept state standards

Kelchen - 99.5 ultimate - can't meet day by day State says 99.4

To put on 2 precipitators Standard says 157/2 can't meet all criteria

AGENDA

Navajo Generating Station Environmental Protection Presentation to Arizona State Agencies

State Highway Department Auditorium - March 5, 1970
9:00 a.m. - 12:30 p.m.

- 9:00 a.m. Opening remarks by Governor's representative, Stanley Womer, Staff Administrator.
- 9:05 a.m. Introduction of participants and representatives of engineer-contractor by Stanley Hancock, Director of Community Relations, Salt River Project.
- 9:20 a.m. "Environmental Protection Plans at Navajo Generating Station" by L. M. Alexander, Associate General Manager, Power, Salt River Project.
- 9:45 a.m. Meteorological Studies Relative to Navajo Station -- Pete Courtney, Sr. Meteorologist, Dames & Moore.
- 10:00 a.m. Water Pollution Control Studies -- Herbert S. Reisbol, *+ Mr. Minkley, ASU, Salt River Project*
Engineering Manager, Hydrology, Bechtel Corp.
- 10:12 a.m. Black Mesa Mine -- Edwin R. Phelps, Sr. Vice-President of Operations, Peabody Coal Company.
- 10:22 a.m. Transmission Line Construction -- Russ Hulse, Manager, Power Resources Projects, Arizona Public Service Company; and Howard R. King, Engineer of System Development, Los Angeles Department of Water & Power.
- 10:35 a.m. Break.
- 10:45 a.m. Air Pollution Control Studies -- Irwin A. Raben, Bechtel Corp.; N. Van De Verg, Chemical Engineer, Bechtel Corporation; and Dr. T. K. Sherwood, Professor of Chemical Engineering, University of California, Berkley.
- 11:20 a.m. Environmental Design -- Lewis Rozenfeld, Chief Planner and Manager of Planning Operations, Bechtel Corporation.
- 11:35 a.m. Questions & Answers
L. M. Alexander, Salt River Project, will act as moderator.

Lee brochure p4. As A' permitted return - 6 in 10 AM of lake
noise suppression to be done. Rats, restoration. Archaeological study for
plant, lines etc. etc. Program costing must have approval of Lee Inst.
Must have got unit by 6/1/74. Prefer talk with you than public return
up w inadequate answers.

Country - meter - started in 1968. Don't start long. 100, 1000, 10000, 100000. Water
7.5 micrometers about equal. State 10/10 250 from 1000 stand.
for 1 hr. To take upper air data - particulate etc. 15 min. and 100 min
SO₂ samples also. Flying studies of particulate. Rel. humidity.
CO, NO₂ etc. from 100 - take stacks. Have got 5 min. and 100 min.
standards change.

Reisbol former hydro for New Britain. 9 induced draft coolers.
26 MA/hr. 10° A/hr. 52 ft/sec. Pet 13 ft. Temp 290°F. 25°F in water.
conc. solid 700 ppm to 4000 ppm. Heat & solid flow in line. Flow. Solid
5 main case at depth. 2nd priority - Antelope Dam.

Phelps - Coal - Mass. Node - Low ash - S 1/2% DTU. W 1/2% prep. Coal
at 1000' - 1000' intervals 8 mil T/hr. 30 mil T/hr. handled.
Leaves w. Nav. Stop a joint Nav. 400'. Artifacts. Mohave plant
leaves req. govt. approval. Water @ 38 ft.

Pulse 2-500 KV. Trans. Line to bridge. 4 by APS. Start count late '71.

King LA & coast. 500 KV. Line to Mohave jct. Proven - LA 270 MV
120 line Columbia R. to L.A. Proven in high & low.

Raders

SO₂ 21-25% gas 100+ pl ppm CO₂ 240. 2 ppm SO₂ in
cool - 1000. 2200. SO₂ removal - in slatted flume.
Electrostatic precip. 90%, of particulates. SO₂ - alkaline
scrubbers. 100% capture - recov 5 and 2K-4H. SS4
Cat. ex. water of contact - stop groups. Recov acid to ant. Cat. high
2nd group recov - lines adsorption L+W - zero. ~~Long~~
In ant. ant. Cat. 25% megawatt - broken. Ant. at 200,
5 removal. 7000 - particulate removal less not measured as percent
equiv.

Van der Veng. Can't do much better than 15 coal after processing. Not real
Lee on foot project 5 and 5. 200-25 processes heard. Others.
Basically types. One pick up as what you throw away. At the
end a solid pick up 5 - then remove 5 on H₂SO₄. But of 25 only 3
partly de-sulf. 1 comb. 2 pp. 2 ft. 5 out w. de. Plugging & corrosion prob.
2) ^{min. 1000} ~~Hot~~ 1 process 5 produce acid. Requires expensive removal of ppt.
3) ^{25 mil / 100} Wellman-Lord - 25 megawatt plant. Removal not yet proven
technically. Based on large plant.

See brochure p 4. again if permitted return to 6 in 10 AM of date
Noise suppression to be done. Birds & stone wall - archeological study for
plant, lines etc, etc. Program costing must have approval of Sec Int.
Must have 1st visit by 6/1/74. Prefer talk with "you" than published
if w inadequate answers.

Country-meteorology studies started 1968. Don't stand height near
 3-500. C - 7000 m. 1970 take stocks. Have got 8 m. cond. can't meet under
 standard change.

Reisbol former hydro for Ben Nelson. Gen'd used draft cool towers.
26 MA'/m. 10 f A'/da. 53 ft³/sec Ret 13 A' per da. Temp $\approx 90^{\circ}\text{F}$ 40°F in winter
Conc. solids 200 ppm. 4000 ppm. But x solid flow is large. Favor ditch
& main lake at depth. 2nd prob'y = Antelope owner.

Phelps - Coal - Near Verde - Lowash - $S \frac{1}{2}$ BTU $11 \frac{1}{2}$ % Moist - Coal
at 4600' 5' to 100' interval 8 mil T per 30 mil T per handled
Leases w Nav. Dept a joint Nav. Dept & Antitrust. Mohave plant
Leases req govt. approval. Water @ 88 cfs.

Hulse 2-500KV trans. line to King? apply APS. Start construction late '71
King LA to connect 500KV line to Mohave jet. Power LA 270 MW
HCC line Columbia R to LA. Power in line ✓ line.

Raben

SO₂ 210 T/d just before removal - over 2,900 tons
coal - register 26700. SO₂ removal - in state of flux.
Aerostatic filter 99.5% of particulates. SO₂ - alkaline
scrubbing. DM & system - recover 5 and 2 1/2 - 4 H₂SO₄
- Cx of unit feasible. It appears. Recover acid & melt. Out higher
2nd stage - drop acidities B+W. Zero. Large
largest units tested 25% incipient problem. Acid at 90%
removal. ppm - particles numerous less not measured or present
equiv.

Vanderberg. Can't do much better than 15 coal after processing. Not acid
leach for project & reduce 5. 20 or 25 process lead - others.
Basically it's a problem. One pick up on water you throw away & rather -
also acid pick up 5 & then remove 5 or 10. Out of 25 only 3
partly developed. 1 Comb. Engg. 82% 5 out wds. Plugging & corrosion prob.
2) ^{minerals} ~~How~~ process to produce acid. Requires expensive removal of ppt
3) ^{25 mils / KW} Wellman-Lord - 25 megawatt plant. Removal not yet proven
technically feasible in large plant.

BENEFITS TO AREA

Employment during construction of the generating and transmission facilities will peak at 1,500. Following construction, the plant will result in some 650 jobs: approximately 175 of these will operate the plant, another 225 will be at the coal mine, and the remainder will work in nearby businesses. Indians will be hired for the jobs whenever possible.

These 650 jobs will have an estimated annual payroll of \$5.9 million.

Participants in the generating station are providing financial assistance to the Navaho Community Junior College.

Coal royalties, lease payments and other contributions to the Navajo and Hopi Indian tribes will exceed \$1.8 million annually.

Arizona Public Service Company will make available to the Navajos, for their future development, 55,000 kilowatts of power generated at the plant.

Local schools, other area taxing entities and the state of Arizona will receive an estimated \$6.4 million annually in property taxes, based on the expected assessed valuation of the generating station, related transmission lines, coal mine and railroad.

FUEL

Fuel for the plant will be coal from deposits at Black Mesa on reservations of the Navajo and Hopi Indian tribes. The coal will be mined by Peabody Coal Company. It will be carried the 80 miles from the mine to the plant by a unit train, construction of which will cost in excess of \$20 million. When the plant is in full operation, its three units will consume approximately 23,000 tons of coal each day.

BOILERS

Each of the three generating units will have a separate boiler supplied by Combustion Engineering, Inc. Each boiler will have a heat output of 6,186,000,000 BTU per hour, enough to heat more than 155,000 homes, and a steam capacity of 5,535,000 pounds per hour.

TURBINES

The turbines for all three units are the type known as tandem compound, four flow, 33½. They will have a steam temperature of 1,000 degrees F. and a reheat temperature of 1,000 degrees F. also. The steam pressure is 3,500 psig at the inlet of the high pressure turbines.

GENERATORS

Each of the three General Electric Company generators will operate at 24,000 volts, at a speed of 3,600 rpm. The stator will be water cooled while the rotor will be cooled by hydrogen at 75 psig. Each unit will weigh 446 tons.

The assembled turbine-generators will be single shaft units 167 feet long.

COOLING TOWERS

The plant probably will have nine cooling towers—three towers for each generating unit. The towers are expected to be of the cross flow, induced draft type, with five cells each. If preliminary concepts are effected, the towers will be 65 feet high, 70 feet wide, 220 feet long, and will have a water flow of 270,000 gallons per minute.

WATER SUPPLY

Water will be pumped approximately 3 miles to the plant from Lake Powell. The plant will require approximately 34,000 acre-feet annually. Although the contract permits maximum return to Lake Powell of 5,900 acre-feet per year, it is expected that the return will be between 4,500 and 4,800 acre-feet and never more than 5,200 acre-feet.

Environmental Quality