Application for Permit

Submitted to the

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Regarding Construction of the

Laramie River Station

Steam Electric Generating Facility
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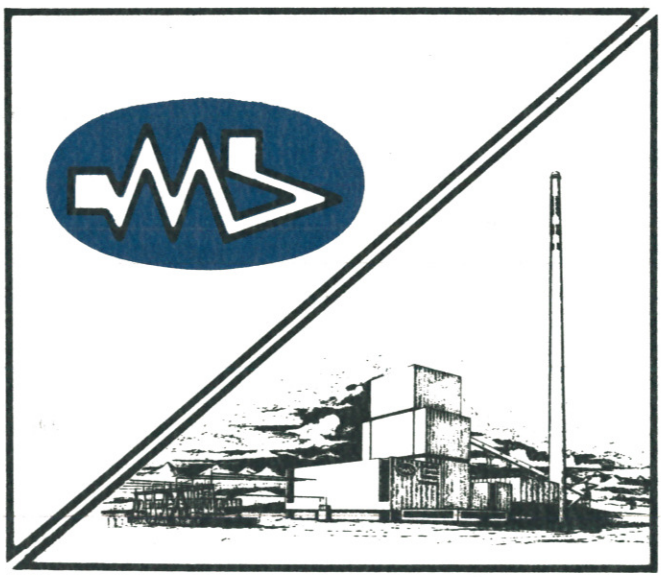

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I. INTRODUCTION:

A. Applicant:

subsection 1
subsection 2

DIVISION I:
Section A:

I. Introduction:

This document is presented before the Industrial Siting Council of the State of Wyoming by Basin Electric Power Cooperative, Project Manager of the Missouri Basin Power Project, in behalf of the participants listed hereafter and for the Council to make a determination and grant permission to the participants to construct an electric generating station and facilities appurtenant thereto in Platte County, Wyoming, and certain transmission lines and associated facilities in Platte, Converse, Laramie and Goshen Counties, Wyoming, and that further study be dispensed with in accordance with 35.502.80(e), W.S. 1957.

I.A. Applicant:

1.A.1. Executives Responsible for Wyoming Operation:

The name, title, and post office address of the persons to whom communications in regard to the Application shall be made are as follows:

Mr. James L. Grahl, General Manager of Basin, is the person directly responsible for operations in Wyoming. His address is 1717 East Interstate Avenue, Bismarck, ND 58501. Mr. Lloyd A. Ernst is Manager of Wyoming Operations of Basin and is responsible to Mr. Grahl. Mr. Ernst's address is 1810 Capitol Avenue, Cheyenne, WY 82001.

1.A.2. Description of Participants:

The names and addresses of the Participants are set forth hereafter. Service areas of each may be found on Figure 2, page 7 of the Report on the Environmental Analysis for the Laramie River Station, Burns & McDonnell, 1975. The Participants set forth will each own an undivided interest in the generating station lines and facilities described in this application, as tenants in common.

Wyoming Municipal Electric Joint Powers Board
3 East Third Street
Lusk, Wyoming 82225

Tri-State Generation and Transmission Association, Inc.
P. O. Box 29198
Denver, Colorado 80229

Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck, ND 58501
with its Wyoming office
located at
1810 Capitol Avenue
Cheyenne, Wyoming 82001

Missouri Basin Public Power Financing Corporation
Suite 130
707 East 41st Street
Sioux Falls, South Dakota 57105

Lincoln Electric Financing System Corporation
1401 "O" Street
Lincoln, Nebraska 68508

Heartland Consumers Power District
121 S.E. First Street
Madison, South Dakota 57042

A description of the participants is as follows:

The Wyoming Municipal Electric Joint Powers Board, hereinafter referred to as the "Board," is a non-profit corporation engaged in the acquisition of future supplies of bulk power for its members, all of which are towns or cities in Wyoming. The members of the Board are the City of Cody and the Towns of Fort Laramie, Guernsey, Lingle, Lusk, Pine Bluffs, Torrington, Wheatland, and Gillette, with the latter town being only an associate member with no vote at the present time. The Board does not presently own or operate any utility property, all of its members (other than the Town of Gillette which is served by Black Hills Power & Light Company) presently receive service from the United States Bureau of Reclamation over facilities owned by said Bureau. By reason of the construction, ownership, operation and maintenance of the facilities proposed herein The Board will become a public utility under Wyoming law.

The Tri-State Generation and Transmission Association, Inc., hereinafter referred to as "Tri-State" is a non-profit corporation organized on a cooperative basis and is engaged in the purchase, transmission, transformation and sale of electric power and energy at wholesale to its members within the states of Wyoming, Colorado and Nebraska.

It presently owns and operates transmission and transformation facilities in all of said states. The 11 Wyoming members of Tri-State are: Big Horn Rural Electric Company, Basin, Wyoming; Carbon Power and Light, Inc., Saratoga, Wyoming; Garland Light and Power Company, Powell, Wyoming; Hot Springs County Rural Electric Association, Inc., Thermopolis, Wyoming; Niobrara Electric Association, Inc., Lusk, Wyoming; Riverton Valley Electric Association, Inc., Riverton, Wyoming; Rural Electric Company, Inc., Pine Bluffs, Wyoming; Sheridan-Johnson Rural Electrification Association, Sheridan, Wyoming; Shoshoni River Power, Inc., Cody, Wyoming; Wheatland Rural Electric Association, Inc., Wheatland, Wyoming; and Wyrulec Company, Lingle, Wyoming. Tri-State has 14 other members, all of which are rural electric cooperatives or public power districts in the states of Colorado and Nebraska, for a total of 25 members. Tri-State has entered into a long-term power supply contract with each of its members, and its members have agreed to purchase their entire power and energy requirements from Tri-State. In fulfillment of such obligation Tri-State is required to provide certain facilities adequate to supply the needs of such members. Copies of the contracts which Tri-State has with each of its Wyoming members are on file with the Wyoming Public Service Commission. Tri-State is a public utility under Wyoming law and has previously received certificates of authority from the Wyoming Public Service Commission to construct and operate certain transmission lines and facilities within the State of Wyoming.

Basin Electric Power Cooperative, hereinafter referred to as "Basin" is a non-profit cooperative corporation and is engaged in the generation, purchase, transmission, transformation, and sale of electric power and energy at wholesale to its members within the states of North Dakota, South Dakota, Nebraska, Montana, Wyoming, Minnesota, Iowa and Colorado. It presently owns and operates generating facilities in the state of North Dakota, and transmission and transformation facilities in the states of North Dakota, South Dakota and Montana. Basin provides service to its member, Rushmore Electric Power Cooperative, which member further delivers said electric service to its Wyoming member, Tri-County Electric Association, Inc., located at Sundance, Wyoming and serving the

rural areas in the counties of Weston, Crook, and Campbell. Tri-State is a member of Basin, and Basin Electric plans to provide service to Tri-State so as to enable Tri-State to serve a portion of the loads of Tri-State's Wyoming members through a 100-megawatt ac-dc-ac tie presently under construction near Stegall, Nebraska.

Basin has a total of 147 members, all of which members are rural electric cooperatives, public power districts, or municipal utilities in the states of Wyoming, North Dakota, South Dakota, Nebraska, Kansas, Montana, Minnesota, Iowa, and Colorado. Basin has entered into long-term power supply contracts with certain of its members, and those members have agreed to purchase their entire power and energy requirements above allocations of the United States Bureau of Reclamation from Basin: other members of Basin have entered into other than long-term power supply contracts, such contracts generally obligating the member to purchase only a portion of its power and energy requirements above Bureau allocations from Basin. In fulfillment of its obligations under these various contracts, Basin is required to provide certain facilities adequate to supply the needs of such members. By virtue of the construction, ownership, operation and maintenance of the facilities proposed herein, along with the sale of power and energy therefrom, Basin will become a public utility under Wyoming law.

The Missouri Basin Public Power Financing Corporation, hereinafter referred to as the "Corporation," is engaged in the acquisition of future supplies of bulk power for its members within the states of Iowa, Minnesota and South Dakota. The Corporation does not presently own or operate any utility property. The members of the Corporation are those persons serving at the time as the Directors of the Missouri Basin Municipal Power Agency, an intergovernmental entity established under the laws of Iowa, Minnesota and South Dakota and comprised of municipalities located in the states of Iowa, Minnesota and South Dakota. By reason of the construction, ownership, operation and maintenance of the facilities proposed herein the Corporation may become a public utility under Wyoming

law. However, the Corporation proposes to sell no power or energy within the state of Wyoming and thus it may not be a public utility under Wyoming law.

Lincoln Electric Financing Systems Corporation, hereinafter referred to as "Lincoln" contemplates being the financing vehicle for the City of Lincoln (Neb.) Electric System, which System is engaged in the generation, purchase, transmission, transformation, and sale of electric power and energy at retail to its citizens and customers within and without the municipal boundaries of the City of Lincoln, but all of said citizens and customers are within the state of Nebraska. Lincoln does not presently own or operate any facilities, but the System presently owns and operates generating, transmission, transformation and distribution facilities in the state of Nebraska. By virtue of the construction, ownership, operation and maintenance of the facilities proposed herein, Lincoln may become a public utility under Wyoming law. However, Lincoln proposes to sell no power or energy with the state of Wyoming and thus it may not be a public utility under Wyoming law.

Heartland Consumers Power District, hereinafter referred to as "Heartland," is engaged in the acquisition of future supplies of bulk power for entities and persons within the boundaries of the District. It does not presently own or operate any utility property. By reason of the construction, ownership, operation and maintenance of the facilities proposed herein, Heartland does not propose to sell power or energy within the State of Wyoming and thus it may not be a public utility under Wyoming law.

I. INTRODUCTION:

A. Applicant:

subsection 3

DIVISION I:
Section A: (continued)

1.A.3. Request for Determination Under Section 35.502.80(e):

As grounds therefor, the Participants do state and allege as follows:

1.A.3.a. Status of Project at Time of Passage of Siting Act:

1. The Participants have purchased a total of approximately 7,470 ~~8,232~~ acres of land, leases and water rights for the proposed site of the Grayrocks Reservoir. This site is located ten miles northeast of the town of Wheatland, Wyoming and is situated on the lower Laramie River.

2. The Participants have purchased a total of approximately 2,710 acres of land which comprise the proposed generating plant site for the Laramie River Station. This site is located four miles northeast of the town of Wheatland, Wyoming.

3. The Wheatland Rural Electric Association filed for a reservoir permit under temporary filing No. 21 1/220 for the storage of approximately 104,000 acre-feet of water from the Laramie River. This temporary filing has now been transferred to the Participants and has ripened into Permit No. 7649 Res. which is in good standing with a priority date of April 24, 1973.

"The Wheatland Irrigation District originally filed for direct flow rights from the Laramie River pipeline. This application has been assigned to Basin Electric Cooperative and has ripened into Permit No. 24551, which is in good standing with a priority date of April 2, 1973.

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6. The Participants have obtained an option for the purchase of the RO Corporation water rights under the Boughton Ditch in Albany County, Wyoming.

7. The Participants, through an exchange of correspondence, have agreed to purchase the water rights owned by the State of Wyoming under the Boughton Ditch.

8. The Participants have purchased the water rights on one forty-acre tract of land, formerly owned by the Schmidles.

9. The Participants have filed, with the State Board of Control of the State of Wyoming, their application asking that the Boughton Ditch water rights be changed to a preferred use, which application has been heard by the Board and a decision is pending.

10. The Participants have entered into an agreement with the Corn Creek Reservoir Association of Goshen County, Wyoming by the terms of which the Participants have agreed to release irrigation waters from the proposed Grayrocks Reservoir. It is anticipated by the Corn Creek Reservoir Association that it will be able to develop 15,000 acres of land and to place the same under irrigation. This acreage will exceed the acreage of lands from which the Participants are removing the water rights in connection with the project. To date, the Participants have expended over $43,000.00 under the terms of this agreement with a maximum obligation of $50,000.00.

11. The Participants, in acquiring the reservoir site, the electric genrating station plant site, the water rights, together with all other capital outlays, engineering costs, legal costs, and miscellaneous expenditures, have spent or have obligated themselves in the total amount of $144,113,519.00 and all of which outlays and obligations were incurred prior to the enactment of the Wyoming Industrial Development Information and Siting Act.

1.A.3.b. Compliance With All Local Ordinances and Land-Use Plans:

1. The Participants have complied with all existing local ordinances and land-use plans. The Board of County Commissioners has rezoned the Grayrocks Reservoir site and the Laramie River Plant site for "industrial use."

1.A.3.c. Alleviation of Environmental, Social and Economic Impact In County:

1. A copy of the Environmental Impact Analysis prepared by Burns & McDonnell, Consulting Engineers of Kansas City, Missouri, is included with the support documents.

2. The industrial facility will not pose a threat to the environment, the social and economic condition of the present inhabitants, or the social and economic condition of the expected inhabitants; and the proposed facility will not impair the health, safety or welfare

of the inhabitants. For substantiation, please see Divisions III and IV of the application.

1.A.3.d. Delays to Project:

1. Based upon its projected energy requirements, Basin will require firm power from the first unit of the Laramie River Station by January 1, 1980, particularly for service to Tri-County Electric Association for energy required for development in the Powder River Basin.

2. Based upon its projected energy requirements, Tri-State, for its Wyoming members will require firm power from the first unit by the summer of 1980. If the construction schedule is delayed, this unit may not be completed in time to meet the requirements of these Wyoming consumers.

3. The present construction schedule provides that construction of the first unit shall begin in the spring of 1976, the second in December of 1976, and the third in 1979. The first unit is scheduled for commercial operation in January, 1980, the second in June of 1980, and the third in June of 1983.

4. The Wyoming city and towns herein are preference customers of the Bureau of Reclamation. These municipalities have been informed by the Bureau that they will be required to pay five times the contract rate for all energy consumed above their contracted allocations. This penalty also applies to Basin and Tri-State resulting in increased energy costs to its members. Certain municipalities are now paying this "5 times" rate.

5. Based on the recent rate of inflation, delays in the construction schedule will mean increased costs to the project resulting in substantially increased costs of power and energy to the consumers noted above.

WHEREFORE, the Applicant respectfully prays that the Council make a determination and approve and issue permission to site and construct the proposed electric generating plant, transmission lines, and related facilities as described in this Application, and that

DIVISION I:
Section A: (continued)

further study be dispensed with as provided for in Section 35-502.80(e), W.S. 1957.

Dated this 17 day of December, 1975.

BASIN ELECTRIC POWER COOPERATIVE

By Lloyd A. Ernst

Witness:

Pamela Burns

I. INTRODUCTION:

B. Description of Project:

subsection 1

DIVISION I:
Section B: (continued)

I.B. Description of Project:

I.B.1. General Description:

The participants propose to construct, own, operate and maintain a generating station to be composed of three coal-fired steam-electric generating units, each unit having a capacity of 500 megawatts (net) with certain pertinent facilities. It is anticipated that the total costs of such station and facilities appurtenant thereto will be approximately $975,872,358 (in 1975 dollars), of which approximately $62,978,300 will be expended on facilities to be located outside of the State of Wyoming. The power plant site is located in Platte County, Wyoming, on the south bank of the Laramie River, approximately five miles north and east of the town of Wheatland, Wyoming. The location of the generating station in Platte County is shown in Exhibit 1.

The participants further propose to construct, own, operate and maintain certain transmission lines and associated facilities in Platte, Converse, Laramie, and Goshen Counties, Wyoming, as follows:

1. A 230-kV transmission line from a substation to be constructed, owned, operated and maintained by the participants at the Laramie River Generating Station in Platte County, Wyoming, to the Dave Johnston Plant of Pacific Power & Light Company in Converse County, Wyoming. Said transmission line is to be approximately 76 miles in length.
2. A 230-kV transmission line and a 345-kV transmission line from the Laramie River Station to the existing Stegall Substation of the U.S. Bureau of Reclamation in Scotts-bluff County, Nebraska, is to be approximately 60 miles in length.
3. A 345-kV transmission line from the Laramie River Station to the Story Substation in Morgan County, Colorado with a temporary tie into the Archer Substation in Laramie County, Wyoming until the third unit at the Laramie River Station comes on line. Said transmission line to be approximately 171 miles in length.

4. A 345-kV transmission line from the Laramie River Station to the existing Ault Substation of the U.S. Bureau of Reclamation in Weld County, Colorado. Said transmission line to be approximately 108 miles in length.
5. A 345-kV transmission line from the Stegall Substation of the U.S. Bureau of Reclamation in Scottsbluff County, Nebraska to the Sidney Substation in Cheyenne County, Nebraska. Said transmission line to be approximately 80 miles in length.
6. A 345-kV transmission line from the Laramie River Station to the Sidney Substation in Cheyenne County, Nebraska. Said transmission line to be approximately 126 miles in length.

For additional information concerning the proposed transmission lines see Section III.L. and Exhibits 27 through 32 of this document.

The proposed Laramie River Station is a coal-fired steam-electric generating station of three units, with each unit having a net capacity of 500 megawatts under design conditions. The basic steam cycle for each unit is a reheat regenerative Rankine cycle with turbine inlet steam conditions of 2400 psi, 1000° F., with reheat to 1000° F. This heat cycle results in a turbine heat rate of 7909 Btu/kWh. Coal will be delivered to the station from mining operations in the Powder River Basin. It is anticipated that fuel delivery will be made by rail. The Colorado and Southern Railway passes through a corner of the generating station's site with a spur extending from the mainline to the fuel storage area.

The generating station cooling will be provided by mechanical draft cooling towers located on the generating station site. Makeup water for the generating station site will be delivered by pipeline from a pumping structure located at the Grayrocks Dam.

Grayrocks Dam and associated reservoir, located on the lower Laramie River, with a storage capacity of approximately 104,000 acre-feet, will serve as water storage facilities for the station.

For additional information concerning the Grayrocks Dam and Reservoir see Section III.K.18. of this document.

Pollution abatement plans will include treatment of the gas emissions from the boilers to insure compliance with all state and federal regulations, pertaining to boiler gas emissions. A zero discharge system will be used; thus there will be no discharge of processed waste water into the Laramie River. The zero discharge will be achieved by maximum reuse and recirculation of waste water and, finally, for a small quantity of waste water, by the use of evaporative ponds and lagoons.

I. INTRODUCTION:

B. Description of Project:

subsection 2

DIVISION I:
Section B: (continued)

I.B.2. General Economics:

I.B.2.a. Capital Expenditures:

The total estimated cost of the facilities in the State of Wyoming is the sum of $912,894,058 which results from the following:

Generating Station, Grayrocks Reservoir & Transmission Facilities	$975,872,358.00
Transmission Facilities Located Outside State of Wyoming	- 62,978,300.00 (1975
Total Cost in State of Wyoming	$912,894,058.00 Dollars)

I.B.2.b. Taxes Generated:

A primary impact of the MBPP will be the substantial increase in tax revenues realized by School District 1 and Platte County. Additional revenues will also be realized by School District 2, the town of Wheatland and the state of Wyoming.

The total assessed valuation in Platte County is expected to increase from approximately $29,538,000.00 in 1976 to $166,497,400.00 in 1986. The total assessed valuation in School District 1 is expected to increase from approximately $23,079,000.00 to $153,329,600.00.

It is estimated that, on the basis of current mills levied, Platte County revenues from all sources will increase from $781,400 in Fy 1977 to $2,053,800.00 in Fy 1986. The total revenue available for the use of School District 1 is expected to increase from $2,431,300.00 to $6,171,400.00 in the above ten-year period. In the same time interval, the revenue realized by the town of Wheatland from all sources will increase from $822,500.00 to $1,491,500.00. Except for a relatively insignificant share, the above increases in revenue can be attributed directly or indirectly to the development and operation of the MBPP facilities.

As a result of the proposed project, state revenues will be augmented by additional sales and use tax receipts and the severance and privilege taxes related to the mining of coal. Considering all of the MBPP facilities to be constructed in the state, and anticipating that the required coal will be mined in the Powder River Basin in Wyoming, economic studies have estimated that the project will contribute annual revenues to the state varying from $1,729,900.00 in Fy 1977 to 4,249,500.00

in 1982 with a leveling off at $3,640,700.00 after 1986.

I.B.2.c. Payrolls and New Jobs Established:

The construction of the proposed MBPP facility will result in a marked increase in employment. The effects of the construction period will be temporary. The addition of approximately 200 operating personnel, their families and the induced population will have a long-lasting effect upon Wheatland and Platte County. The majority of the plant's employees will earn in the range of $5,000.00 to $22,000.00 per year with a median salary of approximately $12,000.00 per year in 1975 dollars. Table 1 gives the projected income and jobs from permanent employment due to plant operation. After the construction period, approximately $2,400,000.00 in wages to the plant personnel will go into the Platte County economy each year.

Induced employment will vary considerably with a median salary of approximately $9,000.00 per year in 1975 dollars. After the construction period, approximately $3,240,000.00 in wages to induced employment will also go into the Platte County economy each year.

During the 7½-year construction period for the Laramie River Station and the Grayrocks Reservoir, approximately $183,976,400.00 in total wages will be paid to new workers in Platte County.

Total wages paid to construction workers for construction of the transmission facilities will be approximately $12,753,000.00. These wages will be paid during the construction period in Platte County, Goshen County, Converse County and Laramie County.

Table 1

PROJECTED INCOME[1] FROM PERMANENT EMPLOYMENT DUE TO PLANT OPERATION[2]

Pay Range	Permanent Plant Employees	Indirect Employees	Total	Percent of Total
Under $7,000	3	135	138	24.6
$7,000 - 8,999	1	62	63	11.3
$9,000 - 10,999	18	45	63	11.3
$11,000 - 12,999	149	40	189	33.8
$13,000 - 14,999	18	32	50	8.9
$15,000 - 16,999	5	21	26	4.6
$17,000 - 18,999	4	14	18	3.2
$19,000 and over	2	11	13	2.3
TOTAL	200	360	560	100.0

[1] *Based on 1975 dollars; excluding fringe benefits.*

[2] *Division of Business and Economic Research estimates.*

I. INTRODUCTION:

B. Description of Project:

subsection 3

I.B. Description of Project:

I.B.3. Benefits of Project:

The Laramie River Station is significant to the State of Wyoming and the energy needs of its citizens. Based on conservative estimates, Wyoming consumers will ultimately used the equivalent of approximately 51% of the output of the Laramie River Station. Approximately 21,833 consumers of Wyoming municipalities and 98,593 Wyoming Rural Electric consumers will take some portion of their electric energy from the Laramie River Station. A detailed summary of Wyoming municipal populations and Wyoming Rural Electrification Association consumers is found in Tables 2 and 3.

The Laramie River Station is a necessary link for the MBPP participants to meet the constantly increasing power demands of their agricultural customers in the near future. Current projections of power requirements for the participants indicate that power deficiencies will occur as soon as 1980 without the construction of the Laramie River Station. A dependable power supply is essential to maintain and enhance living standards, economic vitality, and public health and safety. Electrical energy is needed to operate most of our modern labor-saving devices and comfort-producing equipment used at home and at work. Therefore, the Laramie River Station will be of great benefit to agriculture, industry, and the lifestyle of the people in Wyoming, other Rocky Mountain and Northern Plains states.

The construction and operation of the Laramie River Station will provide a new stimulus for the economy of Wheatland and Platte County. New jobs will be created both directly and indirectly by the project. The operation of the plant will also account for an increase in total income, retail sales, and property tax revenues.

By improving the human environment in rural areas served by the MBPP participants, the proposed generation facility may also help in slowing or reversing the trend of population migrations to heavily populated urban areas.

The construction of the proposed Grayrocks Reservoir would make approximately 22,500 acre-feet of water available annually to the Corn Creek Irrigation District. It is estimated that more than 15,000 additional acres of cropland could be placed under irrigation as a result. Although the reservoir would be managed primarily for industrial and agricultural uses, it is also the intent of the MBPP to develop some recreational uses of the reservoir.

Another benefit of the construction of the Laramie River Station will be the educational opportunities available to school children or other persons in the area. They would be able to learn first-hand about how electricity is generated and transmitted by participation in guided tours of the plant facilities. They could also view pollution control devices in use.

Table 2

POPULATION STATISTICS – WYOMING MUNICIPAL ELECTRIC SYSTEMS

Municipalities	1970 Census
Pine Bluffs	937
Torrington	4,237
Lingle	446
Fort Laramie	197
Guernsey	793
Wheatland	2,498
Lusk	1,495
Powell	4,807
Cody	5,161
Deaver	112
Superior	5
Basin	1,145
Total	21,833

Table 3

STATISTICS – WYOMING RURAL ELECTRICS

Member Name and Location	People Served	Consumer Service (Meters)	Miles of Line
*Riverton Valley Electric Assn.	12,075	3,132	1,746
*Big Horn Rural Electric Co. (Basin)	7,205	2,077	1,038
*Wyoming Wyrulec Co. (Lingle)	13,460	2,749	1,550
*Wheatland Rural Electric Assn.	4,725	1,802	1,522
*Garland Light & Power Co. (Powell)	2,380	619	225
*Rural Electric Co. (Pine Bluffs)	14,873	3,954	2,494
*Hot Springs County Rural Electric Assn. (Thermopolis)	5,215	2,420	1,745
*Carbon Power & Light (Saratoga)	9,925	2,724	1,384
*Niobrara Electric Assn. (Lusk)	5,450	1,783	1,961
*Shoshone River Power Inc. (Cody)	3,025	862	489
*Sheridan-Johnson Rural Electric (Sheridan)	4,470	1,173	1,015
**Tri-County Association (Sundance)	15,790	5,264	3,726
Total	98,593	28,559	18,895

** Members of Tri-State G & T*

*** Member of Rushmore G & T*

II. SUMMARY OF THE MISSOURI BASIN POWER PROJECT

A. General Project Descriptions:

II. SUMMARY OF THE MISSOURI BASIN POWER PROJECT:

II.A. General Project Descriptions:

The Participants propose to construct, own, operate and maintain a generating station, to be named the Laramie River Station, consisting of three 500-MW (net) coal-fired steam electric generating units. The station and appurtenant facilities will be located approximately 5 miles northeast of the town of Wheatland, near the Laramie River, in Platte County, Wyoming.

The Participants further propose to construct, own, operate and maintain a dam and reservoir, to be named Grayrocks Dam and Reservoir, for the primary purpose of providing water for the Laramie River Station. The dam and reservoir will be located on the Laramie River, approximately 10 miles northeast of Wheatland, in Platte County, Wyoming. The facility will cover an area of approximately 4,287 acres at maximum high water level and provide an approximate water-storage capacity of 104,100 acre-feet. A pumping station will be built at the dam site and water will be pumped to the Laramie River Station by way of a transmission main.

The Participants further propose to construct, own, operate and maintain transmission facilities necessary to distribute power generated at Laramie River Station into the bulk transmission system serving the region. The proposed facilities extending from the Laramie River Station are:

1. A 230-kV wood-pole line extending approximately 75.5 miles northeasterly to Dave Johnston Plant in Converse County, Wyo.
2. A 230-kV line and a 345-kV line extending approximately 60 miles southeasterly to the U.S.B.R. Stegall Substation, Scotts Bluff County, Nebraska. 53 miles of these lines will be within the State of Wyoming.
3. A 345-kV line extending southeasterly approximately 171 miles to the Story Substation, in Morgan County, Colorado. This line will have a temporary tie into the U.S.B.R. Archer Substation, in Laramie County, Wyoming, until approximately June, 1983. 90 miles of this line will be within the State of Wyoming.
4. A 345-kV line extending southerly approximately 108 miles to the U.S.B.R. Ault Substation, in Weld County, Colorado.

78 miles of this line will be within the State of Wyoming.

5. A 345-kV line extending southeasterly approximately 126 miles to the Sidney Substation, in Cheyenne County, Nebraska. 53 miles of this line will be within the State of Wyoming.
6. A 345-kV line extending southeasterly approximately 80 miles from the Stegall Substation to the Sidney Substation. No part of this line will be located within the State of Wyoming.

Estimated Cost of the Facilities: The total estimated cost of all of the proposed facilities (plant, water supply, and transmission) located in Wyoming is $~~913,053,558.00~~ 912,894,058.00. This figure is the sum of the costs for various portions of the project. These portions are (in 1975 dollars):

1.	Land	$ 1,852,000.00
2.	Equipment	255,461,322.00
3.	Construction	225,974,382.00
	Sub Total	$483,287,704.00
4.	Contingencies, Engineering, and Working Capital	89,220,798.00
5.	Environmental Controls	246,494,915.00
6.	Water Supply	30,283,141.00
7.	Transmission (Wyoming only)	~~63,767,000.00~~ 63,607,500
	Grand Total	$913,053,558.00

Refer to Section III.E. of this Application for further information on costs of the project.

Estimated Construction Commencement and Duration: Construction of the Laramie River Station is scheduled to begin in April, 1976. The construction phase is estimated to require seven and one-half years. This includes an overlap in construction for three separate units. The first unit is scheduled to begin commercial operation in January, 1980, the second unit in June, 1980 and the third unit in June, 1983. Unexpected delays during construction could extend these expected completion dates; however, all efforts iwll be made to meet the above schedule and provide the electrical generating capacity needed in the area. Refer to Section III.E. of this Application for additional information on plant and

and reservoir construction.

Estimated construction commencement and duration of all transmission line segments will be as follows:

1. Laramie River to Dave Johnston - April, 1978 to November, 1978.
2. Laramie River to Stegall - April, 1978 to November, 1979.
3. Laramie River to Archer - March, 1977 to November, 1978.
4. Archer to Story - March, 1978 to November, 1979.
5. Laramie River to Ault - April, 1982 to November, 1983.
6. Laramie River to Sidney - April, 1978 to November, ~~1979~~ 1980.
7. Stegall to Sidney - April, 1977 to November, 1979.

Refer to Section III.L. for additional information on transmission line construction.

Estimated Number of Workers: The construction of the Laramie River Station will require a large work force. The number of workers will vary but approximate annual peaks for a one-month period are: 1) 1976 - 520 men; 2) 1977 - 750 men; 3) 1978 - 1,780 men; 4) 1979 - 2,000 men; 5) 1980 - 1,210 men; 6) 1981 - 630 men; 7) 1982 - 840 men; 8) 1983 - 560 men.

The applicant's personnel will become involved during 1978 and increase slowly to the required number of 200 men by the time construction of the third unit is complete in 1983.

Refer to Section III.F. of this Application for additional information on this matter.

The transmission line segments proposed for the project will require a considerably smaller work force component. Refer to Section III.L. for time periods and peak workers required for transmission system construction.

Status of Permits for Project: Applications for all federal and state permits required to construct the proposed facilities have been submitted.

Approval is expected on all permits for which application has been made. No delay in construction commencement is foreseen from permit rejections.

All applicable permits for plant operations will be secured prior to commercial operation.

Refer to Section III.~~B~~ G. for more information on this matter.

Life Span and Utilization of the Facilities: The three units at the Laramie River Station will each have a commercial life of 35 years. Considering the start of commercial operation in January 1980, June, 1980 and June, 1983, this would extend to the years 2014 and 2017, respectively.

The units, appurtenant facilities, and transmission lines will be used for their intended purpose for this 35-year period.

The proposed Grayrocks Dam and Reservoir will be used for its intended purpose for 35 years also. The time span of the dam and reservoir is indefinite.

No future additions or modifications are presently foreseen.

Refer to Section III.C. for additional information in operations of all facilities.

Power Generated: The Laramie River Station will generate approximately ~~3,439,000~~ 404,451.6 gigawatt hours during the projected 35-year commercial life. This energy will be made available to the Participants described previously in Section I.A. The specific allocations to each Participant is presented in Section III.C.

Area Socioeconomics: Since the late 1800's, agriculture has been the principal Platte County economic activity. Agricultural output in 1974 was 21.6 million dollars, 37 percent of which was from crops and 63 percent related to livestock. About 20 percent of the county's employment is agriculture related and a large portion of local economic activity supports the agricultural base. Platte County retail sales were 20.5 million dollars in 1974. Wheatland, the county seat, serves as the county's trade and service center.

Platte County has about 7,000 residents. This is an increase of 550 persons since the 1970 census. Within the county, Wheatland has 2,900 residents, Guernsey has 800 residents, Hartville has 250 residents, Glendo has 210 residents, and Chugwater has 185 residents. The remaining population, 2,655 is widely spaced rural farm dwellers.

Income levels in Platte County are below the state average. Estimated 1974 family incomes were $8,300 for Platte County, versus $9,923 for Wyoming.

Almost all public facilities are adequate for the present population base. Refer to Section III.K. for additional information on economics and social conditions.

II. SUMMARY OF THE MISSOURI BASIN POWER PROJECT

B. Specific Project Descriptions:

DIVISION II:
Section B:

II.B. Specific Project Descriptions:

Site Selection: In January, 1973, studies were authorized by Basin Electric to determine potential generating station sites for the MBPP Participants. These studies determined that a location in southeastern Wyoming afforded the most economical power supply alternatives to the Participants.

Alternative locations considered for the Laramie River Station began with an overall study of sites within the 5-state region of Montana, North Dakota, South Dakota, Nebraska, and Wyoming. Within the study region, 6 general areas were selected for field investigations. Within each of these 6 areas, numerous sites were selected and a comparative analysis prepared. From this analysis, a prime site was located in each search area. The results of this study and analysis show that single-plant generating station sites located in either southeastern or northeastern Wyoming afforded the most economical power supply to the Participants. Therefore, the remainder of the study of potential sites concentrated in Wyoming.

As studies continued, lack of definitive fuel supply forced abandonment of northeastern Wyoming locations. The study therefore was narrowed down and concentrated in southeastern Wyoming.

A final siting analysis was completed on four sites in the Wheatland-Torrington area and an economic analysis completed for these sites. Results of these analysis showed that the site at Wheatland and a site located in Goshen County, approximately 5 miles west of Lingle, approximately equal when considered for economic advantages. In addition to the economic analyses of the area, the Wheatland-Torrington area was also studied for possible plant site locations based on environmental factors. A completely independent study was conducted by Dr. Robert Lavigne and Dr. Morton May, Environmental Consultants from the University of Wyoming, who examined some 13 sites in the area which they believe to be potential generating station sites.

Based on the environmental analyses, Drs. May and Lavigne ranked the Wheatland area sites, which were considered in their studies, as being among the most acceptable generating station sites from an environmental standpoint. Two of the sites which Drs. May and Lavigne selected in the

Wheatland area comprise portions of the site proposed for the Missouri Basin Power Project.

The Laramie River Station site was selected for this project after a consideration of numerous possible sites based on ecological, environmental, economic factors, and system operating requirements. The extensive studies of engineering parameters, costs estimates, and probable environmental impact led to the selection of this site as the best of all sites considered.

Refer to Section III.J. for additional information on this matter.

Site Location: The location chosen for the Laramie River Station is on generally flat terrain 5 miles northeast of Wheatland in Platte County, Wyoming. The site occupies an area of approximately 2,710 acres comprising all or part of Sections 21, 22, 27, 28 and 29, T25N, R67W. The proposed site is shown on Exhibits 1 and 2; the arrangement of all plant facilities is shown on Exhibit 4. Additional information on the site location may be found in Section III.A.

The site of the proposed Grayrocks Reservoir extends along the Laramie River valley from a point three miles east of the plant site to the proposed dam located ten miles east-northeast of the plant boundary. The dam will be constructed at a point in Sections 5 and 6, T25N, R65W. Additional information on the dam and reservoir location may be found in Section III.A.

Roads: A paved road extends from the dam site, along the reservoir and plant site, to the town of Wheatland. Wheatland is accessible by Interstate 25, U.S. 87, and Wyoming 34, as well as several state secondary highways.

Refer to Section III.K.8. for additional information on this matter.

Land Use Plans: As of the date of this Application, no state or local land-use plans exist other than zoning regulations for the proposed plant and reservoir sites.

Alternative Land Uses: Alternative land uses for the area to be occupied by the Laramie River Station and Grayrocks Reservoir would be limited to agricultural uses such as cropland or livestock production.

Because of the rural location, lack of economically mineable resources, lack of new or existing industrial expansion, and the historically agricultural aspects of the area, no future land-use trends applicable to this area have become evident.

Refer to Section III.K.9 for additional information on alternative land uses.

Physiography: The area considered for the plant site lies in the Great Plains physiographic province, which parallels the Front Range of the Rocky Mountains from Texas to the Canadian line. The geological formation underlying the plant site is a member of the Arikaree Group of Miocene age. Bedrock at the site is the Arikaree sandstone which is believed to be over 200 feet thick. In regard to earthquakes, the three-state region in the vicinity of the plant site is designated as a "Zone 1" area, defined by the Coast and Geodetic Survey as a region where earthquakes and minor damage could occur, but where they are not expected to be of great intensity. No structural problems are expected from fault-induced stresses in this area.

Refer to Section III.K.11. for additional information on geological conditions in the area.

Soils: Soils in the plant site and reservoir areas have developed on various geologic materials which slope gently eastward and cover the area. Generally, these are, 1) bedrock; sandstone, siltstone and shale; and, 2) alluvium; deposits in the present and ancient stream beds; and 3) wind-blown silts and sands transported to and laid down as a veneer over portions of the area. In terms of total area, soils developed on wind-blown silt occupy the greatest area. This is true throughout the unglaciated portions of the Great Plains. This material was deposited as a result of the great amounts of rock debris and meltwater runoff which accompanied continental and mountain glaciation.

Refer to Section III.K.12. for additional information on soils.

Vegetation: The vegetation of this area may be differentiated into six major types. These are: 1) Cultivated Zones: 2) Mountain Mahogany; 3) Rough Breaks (steep side hill); 4) Silver Sagebrush; 5) Streambank, and 6) Shortgrass Plains. The plant site area of 2,710 acres contains

only the last four types noted (No. 3 through 6). Of these only the Shortgrass Plains vegetation type will be significantly disturbed. Less than one-half the total acreage (primarily the Shortgrass Plains) will be disturbed for plant site facilities. The impact of plant construction will be the removal of surface cover and soils where plant facilities are located. Plant operations are expected to have no adverse effects on vegetation off the plant site.

The area to be inundated by Grayrocks Reservoir is estimated to be ~~4,160~~ 4,237 acres during maximum high water. Some of this area is cultivated land (1,226 acres) and shortgrass grazing land (1,072 acres).

Refer to Section III.K.13. for additional information on vegetation in the area of interst.

Climate: The climate of the Wheatland-Torrington area is semiarid with wide annual variation in precipitation and temperature. The summers are relatively short, with warm days and cool nights. The winters are long with short periods of very cold weather. The low relative humidity tempers the cold during the winter and the heat during the summer. Seventy-five percent of the rain falls during the period of April through October with the peak occurring in May and June. The mean annual precipitation is 12.45 inches. Local spring and summer thundershowers and hail storms that produce several inches of moisture in a short time may cause more damage than benefit.

Refer to Section III.K.14. for additional climatic information.

Scenic, Archaeological, and Historic Resources: To assess the potential impact upon sites of scenic, or historical importance, resources in every county affected by the plant or transmission line construction were inventoried and located. All resources were considered in light of visual impact, physical impact and increased visitation impact. The impact of increased visitation is much more difficult to assess. Increased visitation may have potentially positive effects. Some officials feel that increased visitation levels have the effect of reducing vandalism because would-be vandals are less likely to be alone and undisturbed at a site. Another important point of increased visitations is the increased sales of items related to the sites, such as

souvenirs, food items, books and cards, toys, etc.

An archaeological survey of the reservoir and plant site area has been conducted. All sites found of value will be salvaged or preserved. A survey for the transmission lines will be conducted once the final routes are selected.

The project is expected to have little impact upon the scenic, historic, and archaeological resources of the area.

Refer to Division III, Sections K.2. and K.3. for additional information.

Noise: Tests were taken to determine the ambient noise levels at the plant site. When no wind, animal noise or vehicular traffic was noted, levels were in the 15-20 dB(A) range, typical of sparsely-populated rural areas throughout the area.

Noise levels from plant operation will be controlled to within existing regulations. Occupational exposure to noise is governed by the Walsh-Healy Public Contracts Act of 1967 and the Williams-Steiger Occupational Safety and Health Act of 1971. These laws set forth the permissible levels of exposure of personnel to noise. Property line noise levels are not regulated in Wyoming at the present time.

The emission of noise beyond the project property lines is not expected to cause any problems at this site. Present land uses of property adjoining the site are agricultural and general unpopulated rural land. Future use of this land is not expected to change, thus the noise levels at the property lines are not expected to cause activity interference or annoyance.

Refer to Section III.K.15. for additional information.

Fauna: The construction and operation of the power plant will have a minor impact on the local wildlife. Initial construction activities may usurp the habitat of some small animals, and will displace them to adjoining areas. Losses of the individual animals due to construction activities will not be significant. Operation of the plant will probably disrupt wildlife activities in the immediate area of the plant. These effects will be mitigated by the creation of additional wildlife habitat around the reservoir.

During filling of the reservoir there may be an impact on the bird populations presently occupying the stream-bank vegetation. New growth of vegetation along the reservoir will mitigate this impact in the long term.

The reservoir is in the area of a major waterfowl flyway and may provide suitable habitat for nesting and resting during migrations. No major big game migration routes cross the area to be occupied by the plant site or reservoir.

The project will not significantly disrupt the fauna. There are minimal adverse effects. No specific impact alleviation plans are considered necessary.

Refer to Section III.K.16. for additional information on wildlife in the area.

Water Supply for the Laramie River Station: The water supply plan for the Laramie River Station is based on the use of water from ~~three~~ four sources. The first of these sources is the excess flow of the Laramie River which would be stored in the proposed Grayrocks Dam and Reservoir.

The dam for the reservoir will be constructed across the main stem of the Laramie River about 10 miles upstream of its confluence with the Platte River in Sections 5 and 6, T25N, R65W. The reservoir is expected to have a normal surface area of 3,547 acres and a normal storage capacity of 104,100 acre-feet at the normal high-water level elevation of 4,404 feet.

The dam will be a zoned earthfill structure. The upstream slope will be protected with riprap and the upstream valley floor will be covered with an impervious blanket to limit seepage.

The design of the dam will include an outlet works, a principal spillway and an emergency spillway. The outlet works will be designed to release the maximum amount of water needed by the power plant and downstream users under the lowest conditions of the reservoir. The principal spillway will be constructed of reinforced concrete and will be designed to satisfy the Maximum Probable Thunderstorm requirements.

A pump station will be constructed at the dam site and will pump water back to the plant site.

The second source is well water obtained from a supply to be developed on the Johnson Ranch located approximately 3 miles north of Wheatland. This well water will be pumped only during periods of extended drought. The well water will be pumped to the plant by a transmission main.

The third source of water is from existing rights in the Boughton Ditch located approximately 100 miles upstream from the proposed reservoir.

The fourth source of water is the inundated water rights.

For a detailed discussion of the proposed water supply facilities, refer to Section III.K.18.

Water Treatment: The water treatment facility will consist of separate equipment for treatment of cooling tower makeup and potable water for plant services and demineralizers (see Exhibit 6, Water Flow Schematic).

Water from the on-site water storage pond will be treated for removal of hardness and silica. This will provide the most effective use of available water and allow operation of the cooling towers at higher concentrations. This precludes large quantities of blowdown and thus discharge of process waste water.

The potable water supply will be tapped off the pipeline from Grayrocks Reservoir before the on-site storage pond and kept separage from the cooling tower make-up water. Potable water will be treated to meet Public Health Standards.

The main features of the water treatment system will be the raw water pump station, the solids contact basins, the chemical feed system, the sludge recycle system, and the finished water pump station.

The raw water pump station will consist of multiple pumping units. These pumps will take water from the raw water storage and lift it into the treatment plant. Separate units will provide raw water for miscellaneous plant processes and fire protection.

The water treatment chemicals will consist of quick lime, ~~dolomitic lime~~, soda ash, ~~magnesia~~, and ferric sulfate. The lime products and the soda ash will be delivered in rail cars. The chemicals will be unloaded and conveyed pneumatically to storage silos. From the silos, the chemicals will be slaked and fed as required. The magnesia and ferric sulfate will be delivered by either rail or truck; they will

be conveyed to storage silos by mechanical means.

Refer to Section III.B.1. for additional information.

Laramie River Station: The basic steam cycle for each unit is a reheat regenerative Rankine cycle with turbine inlet steam conditions of 2400 pounds per square inch (psig) 1000 degrees Farenheit (F.), with reheat to 1000 degrees F This heat cycle results in a gross turbine heat rate of 7909 Btu/kW-hour which compares favorably with similar units being built elsewhere.

The Laramie River Station will employ proper equipment design, flue gas cleaning equipment, and two 600-foot-high stacks to eliminate any environmental problems. This equipment is described in detail in Section III.B. and will cost approximately $216,442,400. The boilers will be specifically designed to control nitrogen oxide emissions. Fly ash emissions will be controlled by an electrostatic precipitator. Sulfur dioxide emissions will be controlled with flue gas desulfurization equipment. These are the emission components identified by regulation and by far the greatest in quantity. The equipment can effectively remove any contaminants that may get into the flue gas stream. To insure compliance with all regulations during operation, a monitoring system will be installed. This system will provide continuous monitoring of opacity, O_2, SO_2, and NO_2.

Several models were used to predict the effect this plant will have on ambient air quality. Even under the most severe conditions, the predicted levels are below the federal and state ambient air quality regulations.

The operation of the Laramie River Station will generate various solid materials, mainly combustion products collected by the gas cleaning equipment. Solid wastes will also be collected as a result of the plant's water treatment system.

All solid wastes will be disposed on site. Bottom ash will be stored in the ash pond. Sulfur wastes from the FGD system will be dried, dewatered, mixed with fly ash and disposed by sanitary landfill methods. Filter backwash sludge and sanitary wastes will be deposited in the ash pond. Dissolved solids in other plant wastewater streams will be disposed of in the evaporative ponds.

The Laramie River Station will be designed for no discharge of process water into the Laramie River. The plant incorporates extensive recovery and recycling of process water. All unusable waste water is disposed of in evaporative ponds and no process water leaves the plant site.

All of the solid waste disposal areas will be constructed so no detrimental effects will occur. All waste disposal ponds will be sealed to prevent percolation of toxic or otherwise undesirable materials that would contaminate ground or surface waters. Surface runoff will be collected and routed to one of the evaporative ponds. Dust control in the various evaporative waste ponds and lagoons will be maintained by regulating the water level to cover waste materials that might otherwise be subject to wind erosion. Landfill operations will include procedures to minimize fugitive dust at the working face of the landfill and dust is not expected to be a problem in the sulfur waste areas.

As proposed, the Laramie River Station would consume coal at the rate of approximately 6,189,500 tons/year. Coal consumption over the 35-year life of the plant would be 216,632,517 tons.

Maximum requirements of fuel oil for startup and auxiliary uses is estimated at 1,146,000 gallons per year.

Limestone usage for a flue gas desulfurization system would be approximately 134,067 tons per year, or 4,692,345 tons in 35 years.

Average water usage is estimated at 16.05 millions of gallons per day (mgd). Maximum demand is estimated at 24.18 mgd. Water, once utilized, will return to the hydrologic cycle via evaporation.

Chemicals consumed in the water treatment plant will total 19,741 tons/year. This is primarily ~~dolomite and~~ lime. The demineralizer will use 257 tons/year of sulfuric acid and 243 tons/year of liquid sodium hydroxide.

All consumption quantities are estimated by using the Participant's projected energy requirements annually and over the life of the project.

At the end of the useful life of the project, almost all physical components of the plant itself can be retrieved. Reuse or recycling of all metals is possible. All land occupied by plant buildings,

etc., can be regraded when facilities are removed, thus returning the plant site to its present condition.

Refer to Section III.C. of this Application for additional information and a materials analysis.

Transmission System: The previously described transmission line facilities are necessary to distribute power generated at the Laramie River Station into the regional bulk transmission system. All aspects of the proposed transmission lines will comply with all applicable regulations. The system will also comply with all applicable criteria found in "Environmental Criteria for Electric Transmission Systems," a publication of the U.S. Departments of Interior and Agriculture, and with applicable recommendations found in "Electrical Power Transmission and the Environment," prepared by the Federal Power Commission.

Refer to Section III.L. for additional information.

The construction work force for the transmission line segments is not expected to be similar to that force working on the generating station. The construction of a transmission line segment is of a much shorter duration than that of the generating station. Construction crews are not expected to locate in one place during the entire construction period but to move along with the construction. Work on a transmission line is sequential. As one crew finishes work in an area, the next crew enters the area to proceed with the next step in the construction process. The construction personnel will therefore tend to spread out over the transmission line route.

The location of the work force during construction will depend upon several factors. The contractor will establish a headquarters somewhere along the line route. The basic requirements for the headquarters are: 1) a small office for keeping records, (ordinarily contractors bring in a mobile home or trailer for this purpose); 2) sufficient parking space for construction vehicles and the personal cars of the workers; and 3) a convenient source of fuel and oil for construction vehicles.

There will be an archaeological survey conducted by a qualified archaeologist of the final line routes within the corridors. This survey

will determine if any unknown sites of archaeologic or historic significance are in the right-of-ways, and will prevent the possibility of valuable historic losses due to the construction of the proposed transmission lines.

The proposed lines will only have a minimal impact on the economics of the four counties affected in Wyoming, and the overall economic consequences of one corridor as opposed to another will not vary significantly. Areas containing mineral resources, used for cultivation, under irrigation, or potentially irrigable were avoided as much as possible. The county's economic bases and trends are briefly discussed in the Socioeconomic and Agricultural portions of the General Description of the Study Area sections of the Environmental Analysis for the Electrical Transmission Facilities (Burns & McDonnell, 1975).

The right-of-way acquisition and transmission line construction will provide a temporary beneficial increase in cash flow over the four-county region. The cost of transmission lines will be over $63,000,000. This will have a substantial benefit on the tax base with a resultant increase in revenues.

Although water, electricity, and other utilities will be required by the work force and the headquarters, it is not envisioned that any significant expansion of capital facilities will be needed.

The proposed lines should not have a significant impact on wildlife. The proposed corridors avoided lakes and ponds where water fowl might hit the lines during landing or takeoff. These lines do not cross any unique wildlife habitat and will not impede the migration of animals.

Ordinarily, transmission lines require a very minimum of maintenance. There may be occasional damage from lightning which will consist of broken insulators. Another source of trouble is caused by hunters who shoot out the insulators and conductors. Lines are usually inspected twice a year. These scheduled inspections will probably be done only by air, making it necessary to enter the right-of-way on ground only where damage is found. It is not unusual for lines to go for a period of four to five years without requiring any maintenance.

II. SUMMARY OF THE MISSOURI BASIN POWER PROJECT

C. Impacts and Proposed Alleviations

DIVISION II:
Section C:

II.C. Impacts and Proposed Alleviations:

The Missouri Basin Power Project has engaged in a unique process to assess potential impacts to the areas of site influence. This process has developed not only an assessment of impacts, but has set the stage for implementary plans to alleviate those negative impacts that might cause undue hardship on the present and future inhabitants. The impact alleviation process undertaken by MBPP includes the direct participation of local officials and allows for public input. The vehicle used for this effort is known as the Platte County Impact Alleviation Task Force. To assist the task force and project officials in dealing with potential impact problems, specific studies were commissioned by the Project. They include: 1) A Socioeconomic Impact Analysis by the Department of Business and Economic Research (DOBER), University of Wyoming; 2) A Social Impact Assessment by the Sociology Department of the University of Wyoming. The latter includes a Revenue and Expenditure Analysis for Platte County, Wheatland and School Districts No. 1 and 2, and an attitudinal summary to determine public preferences; also technical assistance has been provided to local public officials by the project staff personnel.

The project personnel and local officials have been developing plans and proposals to alleviate negative impacts. These are based on the population increase expected to accompany the construction of the Laramie Station. Through monthly meetings of the task force over the past 14 months, local officials have been able to pre-plan for the expected impact and develop means to mitigate specific impacts prior to the influx of new people. The assessments and plans for mitigation of impacts are discussed in Divisions III and IV.

Positive Impacts: Some positive impacts of the project have been identified by the impact assessment process. The economy of the area will be stimulated and benefit from the increased tax base provided by the project. In addition, the area of site influence will have improved capital facilities installed and paid for. These facilities will accommodate the normal growth for many years after the project is completed.

The economic base of the Platte County area is heavily dependent on agriculture. Current estimates indicate that about 7,000 people reside in the 2,086 square miles which make up Platte County. The reported population of 1970 showed a decline of approximately 10 percent from 1960 but has increased slightly during recent years. Agriculture is the largest employer in the county, but the number of employees has been declining in recent years. Platte County ranks seventh among 23 counties in terms of value of agricultural production, but for personal income level, it ranks 16th among the counties.

The project construction period will stimulate the economy by increasing demand for goods and services in the area. Nearly 184 million dollars will be paid in wages to workers related to the power plant construction. After construction 5.64 million dollars will be paid in wages to the direct and indirect employees each year. The University of Wyoming found that most retail businesses in Platte County are currently operating well below the average capacity for the state. It is very likely that the retail and service industry will be able to respond to the stimulus and expand to meet the demand. After the plant is completed, it is expected that property taxes will be reduced to reflect the greater-than-five-fold increase in assessed value of the county. The added income to the community and, the lower taxes will add support to the expanding retail trade and service industry.

This economic development due to the proposed project will reduce the up and down effects of the agricultural industry, and add stability to the economy.

The University of Wyoming determined that satellite industries are not a common result of power plant construction. Electricity is cheaper to transport than most other raw materials, and is seldom a prime factor for industrial location. The reservoir to be built in conjunction with this project may be considered responsible for a satellite industry, however. By retaining some of the excess flow in the Laramie River, enough water will be available to irrigate approximately 15,000 acres of land. The Corn Creek Irrigation District will be able to make use of the water available from the reservoir. This will also be an economic benefit to the area.

During the construction period there may be some hardships incurred, but in the long run, the project will benefit the community. The capital facilities are being designed and built to handle a population of over 10,000 people. This will allow the community to expand in the future without any additional cost of capital facilities.

The economic stimulation, the Corn Creek Irrigation District, the installed capital facilities are all positive impacts that can be attributed to the project.

Basically, there are three categories of negative impacts for which mitigation plans and proposals have been developed. The decision-making process for implementing any plans to mitigate impacts is very complex and involves many layers of government. Some of the plans being proposed involve both the private and public sector and where deemed appropriate, the Missouri Basin Power Project has defined a role in which it would either directly implement impact alleviation plans or indirectly assist the responsible public entity through use of the project's financial resources and/or technical assistance.

Capital Facilities: The first category of impacts needing immediate alleviation are capital improvements. Each capital facility was investigated as to its current capacity and future load projections The sewer treatment facility and the water distribution system were found to be inadequate for any increase over the present population. The project is currently involved in development of plans for improvement and expansion of these facilities to meet the expected demand. In addition plans are being developed to expand the electrical system, fire protection, and law enforcement staff. Space is also being considered to expand or remodel the city government facilities. The cost of each improvement, expansion, and increase of operation was estimated, and included in a revenue expenditure projection developed by the University of Wyoming. Summary Table C shows these expenses and the projected revenues.

The capital facilities for Platte County were also evaluated to determine their current and future needs. The library system has adequate space and facilities; however, some increase in staff will be necessary. Overall, the capacity and condition of hospital facilities

are considered adequate for current needs. Plans are being developed to add two ambulances and three standby vehicles during the construction period and recruitment is underway for additional doctors, nurses, and emergency medical technicians to bring the county up to state standards. There are also plans to develop a public health and sanitation program by hiring a full-time sanitarian and a public health nurse. To upgrade their capabilities, the hospital is planning some improvements to the emergency room and funding is being sought for 16 additional nursing home beds. In addition, the courthouse is expected to be remodeled, and the judicial staff increased. There are also increases planned to the recreation, road and bridge, and fire protection programs. All these costs were included by the University of Wyoming in their revenue expenditure projection. A brief summary of this projection can be seen in Summary Table B.

Educational Facilities: School Districts 1 and 2 facilities were investigated. The elementary schools are currently at capacity, however, the secondary schools have some room for expansion. A thorough estimate of necessary facilities using the preference of 20 students per classroom yielded: 47 new classrooms, 47 new teachers, and some additional administrative personnel equipment and supplies. The funding alternatives are currently being investigated. At the current mill levy, the taxes generated by the proposed project will more than pay for the additions but legal, constitutional and fiscal constraints make it necessary to find a source of front-end financing. The revenue expenditure projection for School Districts 1 and 2 are shown in Summary Table D.

Basically, each potential subdivision will have sufficient revenue to handle increased budget requirements and capital outlays. The biggest problem has to do with insufficient revenue available prior to the impact needing alleviation. This problem is most significant with the school district. The town of Wheatland does see a significant drop off in revenue after 1982 and it is important that town officials establish sound fiscal policies to assure adequate revenue generation to meet public needs. One alternative available to Wheatland is the adoption of the 1% additional sales tax and levy the maximum mills allowed by state law.

Housing Supply: The second category of negative impact is housing. The housing supply in Wheatland is not adequate to meet the demands of the construction work force. Very little housing is available at this time, but the project is working with several private developers to provide the housing that will be necessary. This includes apartments, bachelor housing, mobile homes and single-family dwellings to supply the total population predicted. It is an objective of this project to maintain and enhance the integrity of the existing municipalities. The planned developments will blend into the existing town of Wheatland rather than be a "Plant Community." This plan is discussed further in Division IV.

Social Services: The third category of impact is in the area of social services. The local office of the Department of Public Assistance and Social Service (D-PASS) will need an increase in staff and operating budget. Immediate attention should be given by state officials to assure adequate funding levels for this agency. Elderly housing and senior citizen programs are also expected to experience an increased load. Guernsey is currently constructing a housing complex for the elderly, and Wheatland is expected to begin construction on a complex in early 1976. A new senior citizen's center is planned for Wheatland and should be able to satisfy the social and recreational needs. Services for Seniors, Inc., is planning expansion of the "meals on wheels" and health-care service programs.

Mental health facilities are adequate for future needs. There is a need for some increase in staff and development of an alcoholism program. It is recommended that the state take some active part in the mental health program.

Children's day-care facilities are another area expected to experience an increase in demand. Based upon projections by the University of Wyoming, it is recommended that a new day-care complex be built capable of handling 85 students. Funding alternatives for this are being investigated.

II. SUMMARY OF THE MISSOURI BASIN POWER PROJECT

D. Major Studies Conducted and Conclusions:

DIVISION II:
Section D:

II.D. Major Studies Conducted and Conclusions:

Studies: Several studies and reports have been conducted for determination of potential impacts upon the environment and the socio-economic factors of the areas of site influence. These studies and reports are listed hereafter and are included with the source documents attached with this application.

1. Environmental Analysis for the Laramie River Station - Burns & McDonnell - 1975.
2. Environmental Analysis for the Electric Transmission Facilities - Burns & McDonnell - 1975.
3. Environmental Reconnaissance Study - Burns & McDonnell - 1973.
4. Environmental Report on Proposed Transmission Line - Dr. M. May and Dr. R. Lavigne - 1974.
5. Ecological Report Volume 1 and 2 - Ecology Consultants, Inc. (ECI) - 1975.
6. Ambient Air Test Volume I-IV - Burns & McDonnell - 1973-1975.
7. Ambient Noise Measurement Report of the Laramie River Station Site - Burns & McDonnell - 1975.
8. A Social Impact Assessment of the Proposed Laramie River Station - Platte County, Wyoming - University of Wyoming Department of Sociology - 1975.
9. Socioeconomic Impact of the Laramie River Station - University of Wyoming, Division of Business and Economic Research (DOBER) - 1975.

Conclusions: The environmental studies and reports conducted show the proposed Laramie River Station and its appurtenant facilities will have an acceptable impact upon the area of site influence. No public nuisances will be created. The public health and safety, human, animal, plant life or recreational resources will not be endangered.

The social and economic studies and reports reveal the Laramie River Station and its appurtenant facilities will have a beneficial impact on the economy of the area of site influence. Also, the efforts by the project to mitigate any potentially negative impacts will assure

a net improvement to the social condition of the present and future inhabitants. It should be noted that the attitude survey conducted by the University of Wyoming's Department of Sociology yielded a very positive 67.6 percent of the Platte County residents in favor of the project, and only 24.8 percent opposed.

The project is designed to comply with all applicable law throughout each phase of planning, construction, and operation. Every effort has been made in the past, and will be made in the future to comply with restrictions imposed by each Federal, State, or Local Agency. Further, the project is attempting to solve problems and minimize negative impacts which are not controlled by any law.

Summary Table A

ESTIMATE OF ANNUAL INCREASE IN TOTAL REVENUES AS A RESULT OF THE IMPACT OF MBPP (THOUSANDS - 1975 DOLLARS)[1]

Fiscal Years	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	Total
Platte County	147.3	366.1	746.3	1,059.3	1,117.7	1,208.1	1,372.2	1,436.0	1,431.0	1,419.5	10,303.5
School District 1[2]	490.3	727.3	2,062.8	2,954.6	2,999.9	3,170.0	3,839.4	4,207.2	4,268.4	4,230.4	29,050.3
School District 2[2]	0	23.5	137.8	221.0	205.2	216.3	248.4	277.5	295.7	290.1	1,915.5
Wheatland	681.9	654.8	1,318.9	1,432.1	1,162.2	898.4	868.0	772.0	512.6	492.2	8,793.1
State of Wyoming[3]	1,651.0	3,097.5	3,505.2	2,349.2	3,812.1	4,170.6	3,504.5	3,497.9	3,406.4	3,561.8	32,695.8

[1] *Data modified from a Social Impact Assesment of the Proposed Laramie River Station, University of Wyoming, 1975*

[2] *Includes money from school foundation fund.*

[3] *State taxes included taxes paid into school foundation fund.*

Summary Table B

AVAILABLE FUNDS VS. ANTICIPATED EXPENDITURES IN PLATTE COUNTY WITH AND WITHOUT LOCAL SALES TAX FOR FISCAL YEARS 1977 TO 1986

(THOUSANDS - 1975 DOLLARS)

Present Tax Structure	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Total Revenue	781.4	1,000.4	1,380.9	1,694.2	1,752.3	1,842.5	2,006.7	2,070.4	2,065.1	2,053.8
Operating Cost	841.4	928.4	1,200.0	1,366.4	1,333.1	1,269.7	1,319.5	1,311.4	1,234.7	1,205.9
Total Expenditures	845.8	1,002.6	1,208.6	1,297.7	1,274.0	1,220.5	1,277.3	1,272.3	1,205.3	1,176.5
Annual Surplus (Shortage)	(-64.8)	(-2.2)	172.3	396.5	478.3	622.0	729.4	798.1	859.8	877.3

With Local Sales Tax 1%	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Total Revenue	908.6	1,139.0	1,560.6	1,894.5	1,840.8	1,921.3	2,088.4	2,149.1	2,134.3	2,123.0
Operating Cost	841.4	928.4	1,200.0	1,366.4	1,333.1	1,269.7	1,319.5	1,311.4	1,234.7	1,205.9
Total Expenditures	845.8	1,002.6	1,208.6	1,297.7	1,274.0	1,220.5	1,277.3	1,272.3	1,205.3	1,176.5
Annual Surplus (Shortage)	62.4	136.4	352.0	596.8	566.8	700.9	811.1	876.8	929.0	946.5

Summary Table C

AVAILABLE FUNDS VS. ANTICIPATED EXPENDITURES IN TOWN OF WHEATLAND WITH AND WITHOUT LOCAL SALES TAX FOR FISCAL YEARS 1977 TO 1986

(THOUSANDS - 1975 DOLLARS)

Present Tax Structure	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Total Revenues	1,515.8	1,505.4	2,196.5	2,317.0	2,064.7	1,819.1	1,809.4	1,732.4	1,492.0	1,491.5
Operating Costs	979.1	1,113.0	1,514.2	1,738.3	1,615.1	1,451.6	1,501.4	1,457.3	1,292.4	1,296.9
Total Expenditures	1,327.0	1,593.2	1,944.4	2,141.5	2,025.5	1,862.0	1,911.8	1,867.7	1,706.8	1,706.8
Annual Surplus (Shortage)	188.7	(87.8)	252.2	175.5	39.2	(42.8)	(102.4)	(135.2)	(214.8)	(215.7)
Cumulative Surplus (Shortage)	188.7	100.9	353.1	528.6	567.8	525.0	422.6	287.5	72.7	(143.0)

With Local Sales Tax 1%	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Tax Revenues	1,640.2	1,641.0	2,372.4	2,513.0	2,335.3	2,060.3	2,059.3	1,973.0	1,703.6	1,703.1
Operating Costs	979.1	1,113.0	1,514.2	1,738.3	1,615.1	1,451.6	1,501.4	1,457.3	1,296.4	1,296.9
Total Expenditures	1,327.0	1,593.2	1,944.4	2,141.5	2,025.5	1,862.0	1,911.8	1,867.7	1,706.8	1,706.8
Annual Surplus (Shortage)	313.2	47.8	428.0	371.6	309.8	198.4	147.6	105.4	(3.2)	(4.1)
Cumulative Surplus (Shortage)	313.2	361.0	789.0	1,160.6	1,470.4	1,668.8	1,816.3	1,921.7	1,918.5	1,914.4

Summary Table D

AVAILABLE FUNDS VS. ANTICIPATED EXPENDITURES IN SCHOOL DISTRICT 1 & 2
FISCAL YEARS 1977 TO 1986

(THOUSANDS - 1975 DOLLARS)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
DISTRICT NO. 1										
Total Revenues	2,431.3	2,668.3	4,003.8	4,895.6	4,940.9	5,111.0	5,780.4	6,148.2	6,209.4	6,171.4
Operating Costs	2,617.5	2,901.9	4,213.9	4,805.8	4,423.2	3,978.9	4,127.1	4,020.5	3,584.0	3,695.1
Total Expenditures	2,762.5	3,046.9	4,358.9	4,950.8	4,568.2	4,123.9	4,272.1	4,165.5	3,729.0	3,750.1
Annual Surplus (Shortage)	(331.2)	(378.6)	(355.1)	(55.2)	372.7	987.1	1,508.3	1,982.6	2,480.4	2,421.3
Cumulative Surplus (Shortage)	(331.2)	(709.8)	(1,064.9)	(1,120.1)	(747.4)	239.7	1,748.0	3,730.7	6,211.1	8,632.4
DISTRICT NO. 2										
Total Revenues	560.6	584.1	698.4	781.6	765.8	776.9	809.0	838.1	856.3	850.7
Operating Costs	581.8	611.5	709.2	765.7	730.3	689.0	703.6	694.0	653.3	655.8
Total Expenditures	633.8	633.6	761.2	817.8	782.4	741.1	755.6	746.1	705.4	707.9
Annual Surplus (Shortage)	(73.2)	(79.5)	(62.8)	(36.2)	(16.6)	35.8	53.3	92.0	150.9	142.8
Cumulative Surplus (Shortage)	(73.2)	(152.8)	(215.6)	(251.8)	(268.4)	(232.6)	(179.3)	(87.3)	63.5	206.4

III. SITING APPLICATION:

A. Site:

subsection 1
subsection 2
subsection 3
subsection 4

DIVISION III:
Section A: (continued)

III.A. Site:

III.A.1. Site Location:

III.A.1.a. Laramie River Station:

The location chosen for the proposed Laramie River Station is on generally flat terrain, 5 miles northeast of Wheatland, Wyoming. The site occupies an area of approximately 2,710 acres comprising all or part of Sections 21, 22, 27, 28, and 29, T25N, R67W.
This area is located in the central portion of Platte County, Wyoming. The size of the area designated for the plant site allows adequate space for the powerhouse, solid waste disposal, water storage, unit train accommodations and related facilities. The proposed site is shown on Exhibit 1, and the arrangement of all plant facilities is shown on Exhibit 4.

The Colorado and Southern Railway passes through the western portion of the proposed site. Rail access to the station buildings and the coal yard would be accomplished by construction of a spur track.
A paved road leads from Wheatland to the site.

Straight line distances from the plant site to the nearest large metropolitan areas are:

1. Cheyenne, Wyoming - 68 miles south.
2. Casper, Wyoming - 91 miles northwest.
3. Scottsbluff, Nebraska - 65 miles east-southeast.
4. Laramie, Wyoming - 66 miles south-southwest.

III.A.1.b. Grayrocks Reservoir:

The site of the proposed Grayrocks reservoir extends along the Laramie River valley from a point three miles east of the proposed plant property to the proposed dam located ten miles east-northeast of the plant boundary. The reservoir site is shown in Exhibit 1. The dam will be constructed at a point 2 miles west of the Goshen County line, 7 miles south of Guernsey and 10 miles west-southwest of the town of Fort Laramie.

The reservoir will cover an area of ~~4,160~~ 4,237 acres at maximum high water level.

III.A.1.c. Transmission Facilities:

The proposed corridors for the construction and operation of the associated transmission facilities extend from the Laramie River

Station for a distance of 75.5 miles to the Dave Johnston Plant, 108 miles to the Ault Substation, 171 miles to the Story Substation, 60 miles to the Stegall Substation, 126 miles to the Sidney Substation; and from the Stegall Substation 80.5 miles to the Sidney Substation.

The corridors are pictured in Exhibit 28.

III.A.2. Areas of Site Influence:

III.A.2.a. Laramie River Station:

Platte County and the political subdivisions within Platte County, which are easily accessible from the plant site, constitute the areas which will be socially and economically influenced to any significant degree by the construction and operation of the Laramie River Station. The social and economic patterns of the adjacent counties and their political subdivision are not expected to be significantly affected by the project primarily because of the considerable travel distance involved.

In regard to the environmental impact, the area affected by stack emissions is defined by air quality display models shown in Figures 36, 37, and 38 in the Environmental Analysis for the Laramie River Station. This analysis has been submitted to the Rural Electrification Administration. All emissions will comply with Wyoming and federal regulations. All calculated ground level concentrations are below Wyoming and federal standards established to protect public health and welfare. The use of water for plant operations will have an effect on the Laramie River watershed from the Boughton Ditch diversion in Albany County, Wyoming to the mouth of the river in Goshen County, Wyoming.

The geographic extent of influence on environment is defined by testing procedures, computer modeling, field baseline studies and inventories and projections by experienced specialists. The environmental impact in terms of construction effects, noise and appearance will, of course, be most intense at the plant site proper.

III.A.2.b. Grayrocks Reservoir:

The social and economic implications of the reservoir, which will be wholly confined to Platte County, will be minimal. The change in animal and plant life will be extreme in that portion of the Laramie

River valley that will be flooded as a result of the reservoir construction.

III.A.2.c. Transmission Facilities:

The construction of transmission facilities is a mobile and constantly moving operation. Several construction crews, operating separately, move from place to place as the construction progresses. The crew members ordinarily live in motels, rooming houses, campers or trailer houses. Because the number of people involved in this activity is relatively small, and their change of location rapid, there is no significant social and economic impact in any of the areas involved.

Any environmental impact as a result of the construction of transmission lines or their appearance will be confined to the proposed corridors shown in Exhibit 28. The terrain actually disturbed by the construction equipment and the emplacement of poles, towers and support structures constitutes a relatively small portion of the corridor.

III.A.3. Local Governments Affected:

The local government bodies principally affected by the project are Platte County, the incorporated towns of Wheatland and Guernsey, and Unified School Districts 1 and 2.

III.A.4. Industrial Siting Director's Recommendations:

In accord with the provisions of Section 5.c of the Siting Council Rules and Regulations, MBPP management identified areas of site influence and local governments affected in a letter submitted to the Director of the Siting Administration on October 6, 1975 for his concurrence.

III. SITING APPLICATION:

B. Graphic Description of Facility:

subsection 1

DIVISION III:
Section B:

III.B. Graphic Description of Facility:

III.B.1. Major Components:

The Laramie River Station consists of three coal-fired units each having a net capacity of 500 MW. All major pieces of equipment will be designed to allow continuous operation at that capacity. The following sections describe the major components of the plant. Exhibit 4 details the site plan for the Laramie River Station.

III.B.1.a. Steam Generators:

The steam generators produce high energy steam which drives the steam turbine - electrical generators. The maximum rating is 4,025,000 pounds of steam per hour at 2640 psig at 1005 degrees F. The boilers will be of the vertical furnace, balanced-draft type. They will be top supported and will be totally enclosed to provide protection against freezing. Each boiler will be equipped with seven ball-and-race-type pulverizers. They will be capable of operating at full load with only six of these pulverizers. This provides one full-capacity spare to enable pulverizer maintenance to be performed. Each boiler is equipped with two forced-draft fans, two induced-draft fans, and two primary air fans. Each fan is capable of providing 60% of the capacity required for full-load operation. Superheaters, super-heat control devices, economizers, soot blowers, and air preheaters will be provided to maintain unit efficiencies and to provide continuous operating capability.

Each furnace will be designed to limit the emission of oxides of nitrogen to 0.7 pounds per million Btu. Combustion control techniques will be applied to the boiler design to reduce the main factors in nitrogen oxide formation: i.e., flame temperature, the length of time the combustion gases are maintained at that temperature, and the amount of excess air present in the flame. At the same time proper boiler operating practices will be followed to maintain flame stability thus insuring safe and economical operation.

III.B.1.b. Steam Turbine Generators:

The steam-turbine generators are rated at 570-MW capacity with steam supply at 2400 psig, 1000 degrees F at the throttle and 1000 degrees F reheat. The turbines are tandem compounded 4-flow exhaust units. The high-pressure and intermediate-pressure turbines are contained within a

common shell. Two double-flow low-pressure turbines, each in a separate shell, are interconnected with the intermediate section by cross-over pipes.

III.B.1.c. Cooling Towers:

Circulating water for condenser cooling will be provided through the use of mechanical draft cooling towers. The cooling towers will be of the cross-flow induced-draft type. Provisions, such as reversible fans, cell isolation valves, etc., will be provided to maintain water temperature and to permit operation during extremely cold weather.

The cooling tower water system will be of the recirculating type. It will be automatically controlled to maintain the maximum dissolved solids level in the system compatible with prevention of scaling and sedimentation in the heat exchange equipment. Total dissolved solids will be controlled by blowdown or removal of a portion of the water from the system. This blowdown will be used as a source of makeup water for the limestone flue gas desulfurization system. Shock chlorine addition will be used for bacterial growth control within the system.

III.B.1.d. Flue Gas Treatment Facilities:

Fly ash resulting from the burning of coal will be removed from the flue gas with the use of high-efficiency electrostatic precipitators located after the air heater. High efficiency (99% approximate) electrostatic precipitators will maintain fly ash emissions below emission and opacity standards.

An electrostatic precipitator removes fly ash particles from the flue gas by applying three fundamental steps: (1) electrical charging of suspended fly ash particles, (2) collection of the charged particle in an electric field, and (3) removal of the precipitated ash from the collecting electrodes and disposal. The main components of the electrostatic precipitator required to accomplish these three steps are: the discharge electrode system, the collector electrode system, the rapping system and the dust hoppers. Other important components include the gas distribution system and the precipitator shell.

The discharge electrode system consists of a rigid-type assembly in the gas stream suspended from insulators. These wires are connected to the negative pole of the high-voltage rectifier equipment and produce a high-voltage direct-current corona. This charges the

suspended fly ash particles. The particles under the influence of the strong electrical field then migrate to the collecting electrodes (positive polarity).

The collector electrode system consists of an assembly of plates on which the dust is precipitated. The collecting plates and discharge electrodes are alternately spaced and provide both charging and collection of particles in a single stage.

The removal of the precipitated particles from the collection plates is performed by a system of impact rappers. The rappers impact the plates setting up oscillations that shake the collected material loose. It then falls into the dust hoppers. The dust hoppers store the collected ash for removal from the precipitator prior to disposal on site.

The precipitator will include inlet and outlet gas distribution systems to permit uniform distribution of the gas through the precipitator. Gas distribution devices will include perforated plates, or screens, or baffles as required. The flow pattern will be verified by a model study.

The precipitator shell will be constructed of reinforced steel plate. Insulation and lagging will be applied to maintain internal temperatures.

Sulfur dioxide formed during the combustion process will be removed by a flue gas desulfurization (FGD) system following the electrostatic precipitators. The proposed FGD system will be either of the nonregenerable type using a limestone slurry as the absorbing media, or a regenerative type which produces sulfur as a by-product.

The limestone FGD system works on the principle of gas absorption accompanied by chemical reaction. The absorbing media is a limestone slurry. An absorption tower and related equipment provide thorough contact between the flue gas and the slurry to promote interphase diffusion of the two materials. Once the sulfur dioxide is absorbed in the liquid a number of irreversible chemical reactions take place, resulting in the formation of calcium sulfite and sulfate. Since the process is nonregenerable, a portion of the spent slurry (reacted limestone) is constantly purged from the process and additional limestone is added. A simplified process flow diagram for one absorption tower is shown in Exhibit 3.

The limestone preparation equipment grinds limestone rock to a size of 90 percent through 200 mesh (approximate) which is mixed with water into a slurry of approximately 30 percent suspended solids by weight. The wet grinding is done in a rotating cylindrical vessel (ball mill) partially filled with steel spheres. The ball mill discharge is pumped to an elevated classifier where the larger particles are separated and returned to the mill. The slurry product drains by gravity to the limestone slurry storage tank for use in the system.

In the absorption tower, the limestone slurry is sprayed, usually countercurrent to the gas flow, to provide a high rate of mass transfer of the sulfur dioxide gas into the slurry. The absorption tower utilizes a high-pressure spray and/or various designs of internal packing, plates, or venturi arrangements to maximize the gas-liquid interfacial area. Although the particular tower design has not been selected at this time, the maximum tower capacity will probably be a gas flow equivalent to approximately 100 MW of power generation. Therefore, each boiler will be equipped with six absorption towers providing a high degree of reliability and turn down.

Each absorber tower drains to a hold tank with recycle pumps, mixers, and associated piping, instruments and controls necessary for the scrubber operation. The hold tank will be designed for a residence time of at least 10 minutes so that the necessary chemical reactions take place and the calcium sulfite/sulfate precipitate. The suspended solids concentration of the slurry will be controlled by the addition of water to the hold tank. The pH of the slurry will be controlled by the addition of limestone. The recycle pumps will be sized for a high-liquid-to-gas ratio which is important, as is suspended solids and pH control, in minimizing scale formation.

The Missouri Basin Power Project is also investigating various regenerable FGD systems. The details of a non-regenerable limestone system have been covered because it represents current technology and a worst case design criteria for waste disposal.

Systems being investigated of the regenerable type either absorb the sulfur dioxide into a scrubbing liquid (similar to limestone scrubbing) or absorb the sulfur dioxide onto a solid. Unlike the limestone system,

however, the absorbent (or adsorbent) is regenerated by liberating the sulfur in a form that can be further processed to elemental sulfur. Descriptions of the regenerable processes are presented in the Appendix.

In any event, the FGD systems will comply with all rules, regulations and decisions of the Wyoming Department of Environmental Quality. To meet this end, the MBPP intends to install a limestone or regenerable FGD system which will come on line with the boilers.

III.B.1.e. Material Handling Facilities:

Coal will be delivered from the mine operation to the plant site by unit trains. Unloading at the plant site will be of the rapid, high-speed methods. Coal from the receiving hoppers will be conveyed to the coal yard for storage or to the three active storage silos. Coal can be reclaimed from the yard by mobile equipment, fed to the reclaim hopper, then conveyed to the active storage silos or to the crusher house. From the active storage silos, the coal is conveyed to the transfer house to the crusher house and then to Units 1, 2 and 3.

An emergency reclaim hopper will be provided to insure a continuous supply of fuel in event of an outage by the normal live reclaim equipment and to allow reclaim of fuel from dead storage.

The active handling points will be enclosed as necessary to trap fugitive dust and to insure proper operation of the equipment.

Exhibit 9 details a schematic of the coal handling facilities.

The coal handling system for the Laramie River Station has the flexibility to accommodate a coal-blending operation. This provides a safety factor in the event a coal shipment has a high sulfur content which would result in the possibility of the Wyoming SO_2 emission standards being exceeded.

High sulfur coal could be blended with low sulfur coal stored at the plant at three alternate locations (see Exhibit 9). Alternate 1: coal being delivered from unit trains can be blended with reclaimed coal from the yard via the reclaim hopper. Alternate 2: coal can be blended at the active storage silos. The silos can be unloaded consecutively or simultaneously to give an 80:20, 50:50 or whatever desired blend. Alternate 3: coal conveyed from the active storage silos to the transfer house

can be blended with coal from the storage yard via additional reclaim hoppers.

Limestone will be delivered to the site in bulk and will be stored in open stockpiles and silos.

III.B.1.f. Waste Disposal:

All solid wastes generated by the operation of the Laramie River Station will be disposed on site. Bottom ash will be stored in the ash pond. The waste sludge from the limestone scrubber (calcium sulfite, calcium sulfate and limestone) will be partially dewatered, combined with fly ash and disposed by landfill methods. Filter backwash sludge containing iron oxides, products of coagulation chemicals and suspended solids will be used as scrubber makeup. Waste from the demineralizers will be piped to the ash pond for ash sluice makeup.

III.B.1.g. Sanitary Waste Treatment System:

Sanitary wastes resulting from construction of the Laramie River Station will be treated by a package treatment plant with the effluent piped to an on-site evaporation pond. As the construction force dwindles the evaporation pond will be phased out. The effluent from the package sewage treatment plant will be piped to the bottom ash disposal pond for makeup for the ash sluice system. This design concept is a recent change which was made after the Environmental Analysis for the Laramie River Station, Burns & McDonnell, 1975, was printed.

III.B.1.h. Grayrocks Reservoir:

The primary source of water for plant operation will be the proposed Grayrocks Reservoir located east of the plant site as shown in Exhibit 1. The dam for the reservoir will be constructed across the main stem of the Laramie River about 10 miles upstream of its confluence with the Platte River. The reservoir is expected to have a normal surface area of 3,547 acres and a normal storage capacity of 104,100 acre-feet at the normal high water level elevation of 4,404 feet.

The dam will be a zoned earthfill structure. The upstream slope will be protected with riprap and the upstream valley floor will be covered with an impervious blanket to limit seepage.

The design of the dam will include an outlet works, a principal spillway and an emergency spillway. The outlet works will be

designed to release the maximum amount of water needed by the power plant and downstream users under the lowest conditions of the reservoir. The principal spillway will be constructed of reinforced concrete and will include provisions for energy dissipation. The emergency spillway will be designed to satisfy the Maximum Probable Thunderstorm requirements.

A pump station will be constructed at the dam site and will pump water back to the plant site.

For a detailed discussion of the proposed water supply facilities see the Engineering Feasibility Report on the Grayrocks Dam and Reservoir (J. T. Banner and Associates, Inc., 1975).

III.B.1.i. Wells:

A portion of the plant water will be pumped from wells located at the Johnson Ranch approximately five miles northwest of Wheatland. The water from the Johnson Well Field will be piped directly to the plant site and will be used to supplement flows in the Laramie River. The reader is referred to the Preliminary Investigation of the Availability of Ground Water, Johnson Ranch (J. T. Banner and Associates, Inc. 1974), for a detailed discussion.

III.B.1.j. Water Treatment System:

The water treatment facility will consist of separate equipment for treatment of cooling tower makeup and potable water for plant services and demineralizers (see Exhibit 6, Water Flow Schematic).

Water from the on-site water storage pond will be treated for removal of hardness and silica. This will provide the most effective use of available water and allow operation of the cooling towers at higher concentrations. This precludes large quantities of blowdown and thus discharge of process waste water.

The potable water supply will be tapped off the pipeline from Grayrocks Reservoir before the on-site storage pond and kept separate from the cooling tower make-up water. Potable water will be treated to meet Public Health Standards.

The main features of the water treatment system will be the raw water pump station, the solids contact basins, the chemical feed system, the sludge recycle system, and the finished water pump station.

The raw water pump station will consist of multiple pumping units. These pumps will take water from the raw water storage and lift it into the treatment plant. Separate units will provide raw water for miscellaneous plant processes and fire protection.

The heart of the treatment plant will be the solids contact basins. Each basin entails a three-step treatment process. Water will first be introduced into a rapid mixing zone where it will be combined with treatment chemicals and recycled sludge. In the next compartment the process water will be flocculated. This area will be mixed also, but not to the degree occurring in the first compartment. Coagulants and coagulant aids will be added at this point. The final compartment will be an upflow clarifier to facilitate liquid-solids separation.

From the solids contact basins the cooling water will go to a ground level storage tank. The feasibility of filtration of the contact basin effluent is currently being investigated. Some acid will be added ahead of the storage tank to stabilize the water and prevent scaling in the tank.

The water treatment chemicals will consist of quick lime, ~~dolomitic lime~~, soda ash, ~~magnesia,~~ and ferric ~~sulfate~~ chloride. The lime products and the soda ash will be delivered in rail cars. The chemicals will be unloaded and conveyed pneumatically to storage silos. From the silos, the chemicals will be slaked and fed as required. The magnesia and ferric sulfate will be delivered by either rail or truck; they will be conveyed to storage silos by mechanical means.

III. SITING APPLICATION:

C. Operations of the Laramie River Station:

subsection 1

DIVISON III:
Section C:

III. Siting Application:

III.C. Operations of the Laramie River Station:

III.C.1. Life of the Facility:

III.C.1.a. Time Span of the Facility:

As proposed, the Missouri Basin Power Project will consist of three 500 MW (net) units placed in service in early 1980, mid-1980, and mid-1983 respectively. Projected commercial life for each unit is 35 years. This extends to the year approximately 2015 for three units. The proposed plant site will be used for power generation purposes for this period. The projected energy allocations are shown in Table 4.

At the end of this 35-year period, the units themselves can be retired, removed, replaced or modified for further generation purposes for an additional number of years. Specificities regarding the final disposition of the site and units will not be known for several years. Conditions which will have a major effect on final disposition of all facilities would include fuel availability, price, large scale expansion or scale diminishment of demand, etc.

III.C.1.b. Life of Grayrocks Reservoir:

The proposed Grayrocks Reservoir will be used for its intended purpose for the life of the units it will serve, some 35 years through the year 2015. Disposition of the reservoir at the end of this period will be dependent on judgments concerning the steam-electric generation units. The reservoir need not be removed if the generation complex is removed but its primary use could be shifted to another, such as recreation, irrigation, etc. The time span of the reservoir is indefinite.

Table 4

FINAL CAPACITY ALLOCATIONS

Allocation, MW

Participant	East	West	Total	Allocation, %
Tri-State G&T	0	362	362	24.13
Basin Electric	0	634	634	42.27
Missouri Basin	247	0	247	16.47
Heartland Consumers	42	0	42	2.80
Lincoln Electric	200	0	200	13.33
Wyoming Municipals	0	15	15	1.00
Total	489	1,011	1,500	100.00

Installation Schedule

	Commercial Operation Date
Unit 1	January 1, 1980
Unit 2	June 1, 1980
Unit 3	June 1, 1983

Table 5
ENERGY CAPABILITIES OF MBPP

	1979		1980		1981		1982		1983		1984		1985		1985-2015*	
	(GWH) Summer	(GWH) Winter	(GWH) Summer	(GWH) Winter	(GWH) Summer	(GWH) Winter	(GWH) Summer	(GWH) Winter	(GWH) Summer	(GWH) Winter	(GWH) Summer	(GWH) Winter	(GWH) Summer	(GWH) Winter	(GWH) Summer	(GWH) Winter
Tri-State G&T Assoc., Inc.		436.0	872.0	872.0	872.0	872.0	872.0	872.0	1308.0	1308.0	1308.0	1308.0	1308.0	1308.0	1308.0	1308.0
Basin Electric Power Co-op.		671.0	992.0	1487.0	1323.0	1487.0	1323.0	1487.0	1654.0	2230.0	1654.0	2230.0	1654.0	2230.0	1654.0	2230.0
Wyoming Municipal Power Agency		16.7	33.4	33.4	33.4	33.4	33.4	33.4	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Missouri Basin Municipal Power Agency		266.0	532.0	532.0	532.0	532.0	532.0	532.0	801.0	801.0	801.0	801.0	801.0	801.0	801.0	801.0
Heartland Consumers Power District		44.0	88.0	88.0	88.0	88.0	88.0	88.0	133.0	133.0	133.0	133.0	133.0	133.0	133.0	133.0
Lincoln Electric System		394.0	539.0	538.0	645.0	675.0	671.0	828.0	595.0	625.0	655.0	684.0	714.0	744.0	714.0	744.0
TOTAL		1827.7	3056.4	3550.4	3493.4	3687.4	3519.4	3840.4	4541.0	5147.0	4601.0	5206.0	4660.0	5266.0	4660.0	5266.0
+5% TRANSMISSION LOSSES		91.4	153.2	177.5	174.7	184.4	176.0	192.0	227.1	257.4	230.1	260.3	233.0	263.3	233.0	263.3
TOTAL STATION OUTPUT		1919.1	3209.2	3727.9	3668.1	3871.8	3695.4	4032.4	4768.1	5404.4	4831.1	5466.3	4893.0	5529.3	4893.0	5529.3
+10% PLANT USAGE		191.9	320.9	372.8	366.8	387.1	369.5	403.2	476.8	540.4	483.1	546.6	489.3	552.9	489.3	552.9
TOTAL GENERATION		2111.0	3530.1	4100.7	4034.1	4258.9	4064.9	4435.6	5244.9	5944.8	5314.2	6012.9	5382.3	6082.2	5382.3	6082.2

** Maximum generation will remain the same throughout the remaining life of the station which is expected to be 35 years.*

III. SITING APPLICATION:

C. Operations of the Laramie River Station:

subsection 2

DIVISION III:
Section C:

III.C. Operations of the Laramie River Station:

III.C.2. Transmission Lines:

III.C.2.1. Proposed On-Line Life:

As noted previously in III.C.1., Operations of the Laramie River Station, the purpose of the proposed Laramie River Station will be to meet the participants' projected load growths. The proposed transmission lines will serve the same load projections and will suffice for at least the life of the generating units themselves.

Parameters affecting final disposition of the facilities include those previously annotated for the generating units. At this time, no expansions are planned for these transmission facilities.

III. SITING APPLICATION:

C. Operations of the Laramie River Station:

subsection 3

DIVISION III:
Section C: (continued)

III.C.3. Materials Analysis:

Air: Oxygen is required in combination with heat and fuel to yield sufficient temperature to produce steam. Air is the source of oxygen for the boiler furnace. The boilers for the Laramie River Station are balanced draft, meaning the force draft (F.D.) and induced draft (I.D.) fans work in unison to provide proper air for combustion. The ambient air is drawn into the F.D. fans, forced through the air heaters and to the boiler furnace for combustion. Exhibit 5 details the air flow from the inlet, F.D. fans, to the outlet, the stack. Indicated air volumes are for nameplate ratings of 570 MW.

Combustion Air to the Air Heater	1,148,296 acfm
Products of Combustion @ Stack	1,747,538 acfm

Exhibit 5 shows the flow of air through plant, with respect to the major equipment.

Water: The theoretical water consumption for the Laramie River Station is shown in Exhibit 6. The average demand for water is ~~16.89~~ 16.05 MGD, with a maximum demand of ~~25.02~~ 24.18 MGD. The major water requirement is due to evaporative losses in the system.

The primary source of water supply for the plant will be from the proposed Grayrocks Reservoir. The quality of this water is illustrated by chemical composition in Table 6_. At this time, the reservoir has not been constructed, and therefore the chemical breakdown is only an approximation based on the Laramie River water quality. Laramie River water quality was compiled by the EPA STORET Computer.

From the Feasibility Report on the Proposed Grayrocks Dam and Reservoir, J. T. Banner and Associates, Inc., 1975, it can be found that the average annual flow in the Laramie River near Fort Laramie was 79.8 MGD for the years 1933 to 1973. This flow will supply both the plant's needs and the water rights of others downstream. However, as discussed in the report mentioned above, there are periods of low flow in the river. When this occurs, other sources of water will be required.

Table 6
WATER QUALITY VALUES

Parameter	Values in mg/l except pH Laramie River*	Grayrocks Reservoir**
pH	8.0	8.0
Ca	72.7	(1.20) 87
Mg	23.9	(1.15) 27.5
Na	50.6	(1.10) 56
K	5.0	(1.15) 5.8
CO_3	0-0.6	(1.18) 0-0.7
HCO_3	237.0	(1.18) 280
SO_4	167.0	(1.10) 184
Cl	17.8	(1.10) 19.6
NO_3	1.8	(1.15) 2.1
Boron	0.08	(1.15) 0.09
Fe (total)	0.11	(1.15) 0.13
SiO_2	27.7	(1.14) 31.6
Total Hardness	281.0	(1.18) 332
N. C. Hardness	84.7	(1.18) 100
Total Alkalinity	196.0	(1.17) 229
Dissolved Solids	597.0	(1.13) 670.0
Suspended Solids	130.0	50±

**Mean values from 73/03/08 STORET printout for Laramie River @ Fort Laramie for years 1965-1972.*

***High values from 11/12/74 computer printout of reservoir inflow/outflow study for years 1952-1973.*

DIVISION III:
Section C: (continued)

The foremost source will be the proposed Grayrocks Reservoir. The dam for the reservoir will be located in Sections 5 and 6, Township 25 North, Range 65 West, on the main stem of the Laramie River about 10 miles upstream from its confluence with the Platte River. The reservoir is expected to have a normal surface area of 3547 acres and a normal storage capacity of 104,100 acre-feet.

Other sources available are the Wallace water rights, which are in the Boughton Ditch, upstream on the Laramie River, 3,850 acre-ft/yr and the Johnson Ranch wells, 5,000 acre-ft/yr ~~Both sources are expected to provide 5,000 acre-feet per year, or 4.46 MGD.~~

The chemicals consumed in the water treatment plant will be as follows:

~~Dolomite~~	~~7457 tons/year~~
Lime	9125 ~~7142~~ tons/year
Soda Ash	2,555 ~~1800~~ tons/year
Ferric Sulfate	771 tons/year
Sulfuric Acid	580 ~~2571~~ tons/year

The chemicals consumed in the Demineralizer will be 257 tons/year of sulfuric acid and 243 tons/year of liquid sodium hydroxide.

Coal: Coal will be the fuel for the steam-electric generating units at the proposed Laramie River Station. This coal will be obtained from the large deposits of sub-bituminous coal located in the Powder River Basin in eastern Wyoming.

In June of 1974, Basin Electric Power Cooperative and Tri-State Generation and Transmission Association, two of the six participants in the project, incorporated Western Fuels Association, a nonprofit corporation, under the laws of the State of Wyoming. Mr. Kenneth Holum of Washington D.C., a resources consultant to the project, was retained as manager of the Association. A principal reason for creating Western Fuels was to make certain that a dependable supply of coal would be available to the Laramie River Station.

Since its creation, Western Fuels has contracted with the Sunoco Energy Development Company for 60 million tons of low sulfur coal from the Cordero mine south of Gillette. Western Fuels has also been investigating other coal properties in the Powder River Basin. Exhibits 7 and 8 show the locations of these properties.

Western Fuels will provide approximately 216.6 million tons of coal for the life of the facility.

Transportation and delivery of the coal from the mining operations to the generating station will be accomplished by unit train. Delivery will be made via the Burlington-Northern Railroad or its wholly-owned subsidiary, the Colorado and Southern Railroad.

A complete analysis of typical Powder River Basin Coal is provided in the following table.

Table 7

COAL ANALYSIS
POWDER RIVER BASIN COAL

	Range (lbs/lb)	
	Minimum	Maximum
Sulfur	.16	1.4
Ash	3.5	13.0
Btu	7700	8860

Average Analysis Complete	%
Carbon	.4763
Hydrogen	.0347
Nitrogen	.0066
Sulfur	.0063
Ash	.0803
Oxygen	.1199
Moisture	.2758
Btu	.8125

A complete analysis of the trace elements in typical Powder River Basin Coal is provided in Table 8 . The fate of trace elements during combustion is discussed in Section III.D.2.

Coal Consumption: The consumption of coal at the Laramie River Station will vary as the turbine load varies. At nameplate rating, 570 MW, the coal consumption for each boiler is 322.3 tons per hour, based on coal with a heating value of 8125 Btu/lb of coal

Once the coal is delivered to the plant site, samples will be taken to determine Btu and sulfur content. Once this is determined, the required mix of coals will be conveyed to the crusher, where it is pulverized and sent to the boiler.

Table 8
TRACE ELEMENT ANALYSES

Quantitative Data (~~ppm~~ ppm)

Element	Wyodak Coal (As Received Coal Basis)
Antimony	0.00 to 0.03
Arsenic	0.8 to 3.0
Cadmium	0.0 to 3.5
Copper	0.0 to 2.4
Fluoride	0.0 to 95.0
Lead	0.0 to 2.01
Lithium	0.0 to 2.8
Mercury	0.00 to 0.06
Selenium	0.00 to 0.05
Thorium	0.0 to 5.0
Uranium	0.9 to 60.0
Zinc	2.30 to 14.5

Semi-Quantitative Data* (~~ppm~~ (%))

Element	Wyodak Coal (As Received Basis)	
Barium	Trace	to 0.1
Beryllium	Not Detected	
Boron	Trace	to 0.01
Chromium	Not Detected	to Trace
Cobalt	Trace	
Gallium	Trace	
Lanthanum	Not Detected	to Trace
Manganese	Trace	to 0.01
Molybdenum	Trace	
Nickel	Trace	to 0.01
Niobium	Not Detected	
Scandium	Not Detected	to Trace
Strontium	Trace	to 0.01
Titanium	Trace	to 0.01
Vanadium	Trace	
Ytterbium	Not Detected	
Zirconium	Not Detected	

**Analysis performed on ashed sample.*

The design flexibility in the coal handling system will enable the operators to blend the sulfur and Btu content of the coal so the flue gas desulfurization systems can reduce the SO_2 emissions to meet the Wyoming standard. A schematic diagram of the coal handling system is shown in Exhibit 9.

Fuel Oil: Fuel oil for the plant will be NO. 2 fuel oil, delivered by rail tank cars. Space has been allocated for up to 1,000,000 gallons of on-site storage. This capacity will provide ample on-site storage of fuel oil for startup, low-load flame stability, plant auxiliary heat and building heat.

Auxiliary heat requirements will be supplied by an auxiliary boiler. This boiler will be operated only during startup and for space heating when the main boiler(s) are off line. The flue gas off this boiler will be ducted to the dual lined stack serving units 1 and 2. All emissions will comply with Wyoming standards.

A maximum expected annual fuel oil consumption has been calculated to be 1,146,000 gallons.

In determining the worst case fuel oil requirements, the following assumptions were made. The first assumption was that the auxiliary boiler would supply 15 days of space heating during the winter. In such a case, there would be a demand of 400,000 gallons of fuel oil to heat the plant control buildings. The second assumption was that the plant would be forced to shut down 12 times during the year. This would call for 12 cold starts for a total of 346,000 gallons per year. The third assumption would call for 400,000 gallons of fuel oil per year for flame stabilization. Although the normal fuel oil usage is unpredictable, a million gallons of storage capacity will allow the plant to operate during long periods when fuel oil is unobtainable.

Limestone: Limestone will be used as the absorbant in the flue gas desulfurization system. In the limestone system, raw limestone is fed from storage tanks into a crusher, or mill, where it is ground to a fine powder and mixed with water to form a slurry. The flue gas, after

passing through an electrostatic precipitator to remove the particulates is then passed into a scrubber tower. In this tower, the limestone slurry and the flue gas are brought into contact. A chemical reaction occurs between the SO_2 in the gas and the calcium carbonate ($CaCO_3$), ($CaSO_3$) and calcium sulfate ($CaSO_4$). The cleaned flue gas continues on through the scrubber, to a demister, where any entrained water is separated from the gas. The gas then exits the scrubber and passes out the stack.

The spent slurry, containing the reaction products $CaSO_3$ and $CaSO_4$, falls through the scrubber into a slurry hold tank where continued reactions between the SO_2 and the $CaCO_3$ occur. The limestone slurry is originally fed into the hold tank and from there the slurry is pumped into the scrubber. Actually then, the slurry which contacts the flue gas contains both $CaCO_3$ and reaction products. This combination is necessary for proper operation of the scrubber.

Spent slurry is continuously drained from the hold tank as the limestone slurry is fed in, maintaining the proper pH and liquid level in the tank. This spent slurry, containing $CaCO_3$, $CaSO_3$ and $CaSO_4$ is transferred to a clarifier-thickener where the solids in the mixture settle out. These solids are then flushed to a disposal system while the clarified water is brought back into the scrubber system.

The amount of limestone used in the system is a function of the boiler load and the type of coal used. Using projected boiler loads and based on an average Powder River Basin coal, the limestone usage would be 134,067 tons/year.

At the present time, a limestone source has not been selected. However, two possible sources have been contacted. Limestone could be supplied by the Guernsey Stone Company, located in Guernsey, Wyoming and/or the Colorado Lien, located in Ft. Morgan, Colorado. It is anticipated that limestone will be delivered by rail.

III. SITING APPLICATION:

D. Laramie River Station Discharges:

subsection 1

DIVISION III:
Section D:

III.D. Waste Material:

III.D.1. Estimated Discharges:

Although various sources of waste water will be created due to the operation of the Laramie River Station, there will be no discharge of process waste water into the Laramie River. The zero discharge system uses pretreatment of the cooling water makeup and recovery of the blowdown. The blowdown and other waste water will be recycled wherever it is practical to do so. All waste water is disposed of in evaporative ponds and no process waste leaves the plant site. Thus, no deterioration of water quality in the Laramie River will occur.

III.D.1.a. Inventory:

Makeup water to be used for all plant systems will be piped from the reservoir to the plant site and stored in the on-site water storage pond. Exhibit 6, Schematic of Water Flow shows the various uses of water.

Condenser Cooling Water: Makeup water for the condenser cooling system will be treated in the plant water treatment plant allowing the system to operate at approximately 12 concentrations. The cooling tower blowdown will be routed to the blowdown holding pond for use as makeup in the limestone flue gas desulfurization system. An emergency holding pond will also be provided for use when the FGD system is inoperative. In addition, the blowdown can be recycled through the storage pond when the FGD system is inoperative.

Ash Sluice Water: Water for transporting bottom ash will be recycled from the ash pond back to the sluice system for reuse.

Demineralizer Water: The water used for steam generation must be of high purity to prevent scaling and fouling of the boiler, steam lines, turbine and accessories. To reach this level of purity, water of good quality is demineralized through the use of acid-base ion-exchange equipment. Periodically, the exchange media must be regenerated through the use of acid and basic solutions. The waste products of regeneration are dissolved salts of the regeneration agents, typically of high concentrations. The demineralizer waste will be routed to an ash pond.

Boiler Blowdown: Although demineralized water is being introduced to the boiler, impurities in boiler feed water still exist. To

prevent a buildup of these impurities, a small percentage is continually withdrawn from the system. This water has a TDS concentration on the order of 100 mg/l. The boiler blowdown will be recycled to the on-site storage pond.

Flue Gas Desulfurization: The water flow scheme for the FGD system is based on a wet limestone scrubbing process. Water needed for the FGD system will be obtained from the cooling tower blowdown. The water either saturates the flue gas or is contained in the waste product.

Filter Backwash Water: Water for domestic demineralizer purposes will be treated prior to use. Coagulation for silica removal followed by filtration is likely. Water discharged from the backwash of filters will contain sediment composed of suspended solids, including iron oxides, and products of the coagulation chemicals. The backwash water will be drained to the ash pond for settling and recirculation through the ash handling system.

Sanitary Wastes: The plant design includes a packaged treatment plant to handle all sanitary wastes.

Floor and Equipment Drains: Floor drains will be located throughout the plant. Wastes collected by these drains will be routed through an oil separator where waste oil will be skimmed from the surface and stored for collection. The remaining flow will be delivered to the ash pond for use in the ash handling system.

Plant Site Drainage: Surface water runoff from controlled areas of the plant site will be directed to a runoff retention pond. This is the same retention pond used for runoff during construction. The pond will be constructed and the runoff will be treated to comply with all Federal and state regulations.

Runoff from the uncontrolled areas of the plant site will follow the natural drainage system.

III.D.1.b. Effects of Effluents on Receiving Waters:

The impact of effluents on the hydrology of the Laramie River will be negligible since the plant is designed for zero discharge.

III. SITING APPLICATION:

D. Laramie River Station Discharges:

subsection 2

III.D.2. Estimated Emissions:

The operation of the proposed Laramie River Station will result in the emission of flue gas into the atmosphere. With the application of flue gas cleaning equipment, stack emissions of particulate matter, sulfur dioxide and nitrogen oxides, will be minimal. Through the use of tall stacks, these emissions will be widely dispersed and no adverse effects are anticipated. A complete discussion of the meteorology, pollutant concentrations, wind direction and velocity, temperature ranges and precipitation can be found in the Environmental Analysis for the Laramie River Station, (Burns & McDonnell, 1975) and Section III.K.14.

Emissions Standards:

State of Wyoming Regulations:

Sulfur Dioxide .....0.2 lb/mmBtu heat input (applicable to new units with heat input of 250 mmBtu/hr or greater)

Nitrogen Dioxide.....0.7 lb/mmBtu heat input

Particulates.....0.1 lb/mmBtu heat input

Visible Air Contaminants.....20 percent opacity from single new source.

Federal Standards:

Sulfur Dioxide:

Maximum 2-hour average ....1.2 lbs/mmBtu heat input

Nitrogen Dioxide:

Maximum 2-hour average ....0.7 lb/mmBtu heat input

Particulates:

Maximum 2-hour average ....0.10 lb/mmBtu heat input

Visible Emissions: .....Not greater than 20 percent opacity, except that 40 percent opacity shall be permissible for not more than 2 minutes in any hour.

Compliance: Sulfur dioxide emissions will be controlled with an FGD system and will be a maximum of 0.2 pounds per million Btu heat input to the steam generator at all loads. Nitrogen oxide emissions generated by the combustion process will be controlled by proper boiler design and operation and will be a maximum of 0.7 pounds per million Btu at all loads. Fly ash emissions will be controlled by an electrostatic precipitator designed to meet emission standards of 0.1 pounds per million Btu during all boiler operations. Visible emissions of particulate matter will be limited to 20 percent opacity.

III.D.2.a. Air Quality Standards:

State of Wyoming Regulations:

Sulfur Dioxide:

Annual Arithmetic Mean ..... 60 $\mu g/m^3$*

24-hour concentration (not to be exceeded more than once per year) .....260 $\mu g/m^3$

3-hour concentration (not to be exceeded more than once per year) .....1300 $\mu g/m^3$

Nitrogen Dioxide:

Annual Arithmetic Mean ..... 100 $\mu g/m^3$

Total Settleable Particulates

30-day period in residential areas includes 1.7 grams/m^2 background ..... 5 grams/m^2 per month

30-day period in industrial areas includes 1.7 grams/m^2 background ..... 10 grams/m^2 per month

Total Suspended Particulates

Annual Geometric Mean ..... 60 $\mu g/m^3$

24-hour concentration (not to be exceeded more than once per year) ..... 150 $\mu g/m^3$

Suspended Particulates, soiling index

Annual Geometric Mean ..... 0.4 cohs*/1000 lineal ft

Federal Standards:

	Primary Standards	Secondary Standards
Sulfur Dioxide ($\mu g/m^3$)		
Annual Arithmetic Mean	80	--
24-hour concentration not to be exceeded more than once per year)	365	--
3-hour concentration (not to be exceeded more than once per year)	--	1300
Nitrogen Dioxide ($\mu g/m^3$)		
Annual Arithmetic Mean	100	100
Suspended Particulates ($\mu g/m^3$)		
Annual Geometric Mean	75	60
24-hour concentration (not to be exceeded more than once per year)	260	150

* $\mu g/m^3$ = micrograms per cubic meter.

cohs = coefficient of haze.

Compliance: To comply with the federal and state ambient air quality regulations, the Laramie River Station will employ the flue gas cleaning equipment, as described in Section III.B.1. and two 600-foot high stacks. These significantly reduce the impact of the plant's operation on the air quality in the vicinity of the site. It was necessary to predict the ground level concentrations of air pollutants to determine the impact of the operation. The Air Quality Display Model (AQDM) was used to predict annual arithmetic mean concentrations, and a short-term dispersion model (using the same equations as the AQDM) was used to predict concentrations up to 24 hours in duration. The effects of the surrounding terrain on the anticipated ground-level concentrations of sulfur dioxide were also predicted using the terrain model (C8M3D) developed by the Office of Air Quality Planning and Standards of the U.S. Environmental Protection Agency. Descriptions

of these models are available in the Environmental Analysis for the Laramie River Station (Burns & McDonnell, 1975).

Particulate: Table 9 lists maximum predicted ground-level concentrations, background concentrations and applicable regulations for particulates. The calculated concentrations are the maximum concentrations plus the expected background levels.

Nitrogen Oxides: The maximum annual concentration calculated for nitrogen oxides is very insignificant when compared to the 100 micrograms per cubic meter which is the Wyoming and Federal standard. The maximum calculated concentration is 1.56 micrograms per cubic meter. Although no annual background levels are known for nitrogen oxides around the plant site, it is concluded that the background concentration would be very low. This is supported by four 10-day ambient air tests conducted by Burns & McDonnell in which all the short-term nitrogen oxide samples taken had low concentrations.

Sulfur Dioxide: Table 10 gives the maximum calculated concentrations, background concentrations and applicable regulations. The background concentrations are the maximum concentrations measured during the four ambient air tests conducted by Burns & McDonnell. The maximum calculated concentrations are the maximum calculated for each type of diffusion.

Trace Elements: The emission of trace elements in the form of particulate matter will not significantly affect the ambient air quality. The quantities of trace elements present in the coal to be used in the Laramie River Station are shown in Section III.C. The elements can be divided into two groups. Group One would contain those elements with a boiling point greater than the furnace temperature and thus remain as solids or liquids during combustion. Group Two would consist of those with boiling points less than the furnace temperature and will volatilize during combustion.

Most trace elements remain as particulate matter and, hence, are collected in the particulate collection devices. (Northern Great Plains Resource Program, 1974 and Kaakinen et. al., 1975). These trace elements present in the coal to be used at the Laramie River Station are

Table 9

MAXIMUM CALCULATED SUSPENDED PARTICULATE CONCENTRATIONS, BACKGROUND AND APPLICABLE REGULATIONS

	State and Federal Regulations	Maximum Calculated Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Calculated plus Background Concentration ($\mu g/m^3$)
	Based on 0.1 lb/mmBtu Heat Input			
Annual Arithmetic Mean	60	0.2	26.1	26.3
24-Hour Concentration	150	2.5	95	97.5

Table 10

MAXIMUM CALCULATED SULFUR DIOXIDE CONCENTRATIONS, BACKGROUND AND APPLICABLE REGULATIONS

	Maximum Allowable Concentration (State or Federal Standards)	Maximum Calculated Concentrations ($\mu g/m^3$)			Background Concentration ($\mu g/m^3$)	Maximum Calculated Concentrations plus Background ($\mu g/m^3$)		
		Normal Diffusion	Fumigation	Plume Trapping		Normal Diffusion	Fumigation	Plume Trapping
	Based on 0.2 lb/mmBtu Heat Input							
Annual Arithmetic Mean	60	0.4	*	*	Negligible	0.4	*	*
24-Hour Concentration	260	5	*	69	Negligible	5	*	69
3-Hour Concentration	1300	15	166	220	Negligible	15	166	220

**Fumigation and plume trapping being of relatively short duration do not apply to these time periods.*

antimony, molybdenum, thorium, uranium, luthanium, titanium, vanadium, colbalt, nickel, scandium, copper, boron, chromium, gallium, manganese, lead, and barium whose boiling points are greater than the approximate maximum 1500° C. furnace temperature. (See Table 11.) These elements would remain in solid form and be retained in the furnace ash and/or collected in the precipitator which will have efficiency of removal of 99.5%. These trace elements will be returned within the plant and this will not affect the environment.

The trace elements with lower boiling points are highly volatile and undergo sublimation. (NGPRP, 1974 and Kaakinen et. al., 1975.) These elements present in the coal that will be used at the Laramie River Station are strontium, lithium, zinc, cadmium, and arsenic. (See Table 11.) It is theorized that these trace elements will vaporize in the furnace and then condense or adsorb onto the fly ash. The temperature of the flue gas entering the precipitator is 141° C. so these trace elements will have condensed. These trace elements will be removed in the precipitator ash and thus have no affect upon the environment.

Kaakinen et. al. (1975) noted that the majority of the mercury and selenium were unaccounted for in the ash mass balances of their experiment. NGPRP (1974) and Billing et. al. (1973) suggest that as much as 90% of the mercury in the coal escapes in the gaseous form. They suggest that these, along with sulfur, do not completely condense and pass through the particulate control devices in the vapor state. They further suggest that these elements are collected in a wet scrubber. These elements are then removed with the scrubber sludge. (NGPRP, 1974 and Billing et. al., 1973). The mercury and selenium that is removed will not affect the environment. No adverse effects are anticipated from the mercury emission because as quoted in the Federal Registry (1975), "The Agency previously investigated mercury emissions from coal-fired power plants and determined that these sources do not emit mercury in such quantities that they are likely to cause the ambient mercury concentration to exceed one microgram per cubic meter."

There are only small amounts of the trace elements present in the coal and the major proportion of the trace elements will be retained

Table 11

BOILING AND MELTING POINTS OF TRACE ELEMENTS IN COAL ANALYSIS*

Element	Melting Point (°C)	Boiling Point (°C)
Molybdenum	2617	4612
Thorium	1750	4790
Uranium	1132	3818
Lanthanum	920	3454
Titanium	1660	3287
Vanadium	1890	3380
Cobalt	1495	2870
Nickel	1453	2732
Scandium	1539	2832
Copper	1083	2567
Boron	2300	2550
Chromium	1857	2672
Gallium	30	2403
Manganese	1244	1962
Lead	327	1740
Antimony	631	1750
Strontium	769	1384
Barium	725	1640
Lithium	181	1347
Zinc	420	907
Cadmium	321	765
Selinium	217	685
Arsenic	817	613
Mercury	−38.87	357

* *Handbook of Chemistry and Physics, Chemical Rubber Co., Cleveland, Ohio, 1971.*

within the furnace ash, precipitator ash, and the scrubber sludge. It is felt that no adverse effects will occur within the area of influence of the Laramie River Station.

Summary: The emissions and resulting ground level concentrations, will be insignificant and will have a negligible effect on the air quality of the area. Emissions will be below Wyoming and federal standards. Ambient air concentrations have been projected to be below Wyoming and federal secondary standards. There will be no danger to public health and safety, human, animal or plant life as a result of these emissions. They cannot be termed a public nuisance nor will they endanger recreational facilities.

III.D.2.b. Monitoring Programs:

Ambient Air Monitoring: Prior to plant operations, four continuous air monitoring programs (October 10-20, 1973; April 4-19, 1974; July 15-25, 1974; January 23-February 2, 1975) were conducted in the Wheatland-Torrington, Wyoming area by Burns & McDonnell personnel.

The program was designed to determine background ambient air concentrations of SO_2, NO_2 and particulate matter. Wind direction and wind speed were recorded to determine the local air patterns and to correlate observed concentrations. The test sites chosen for the ambient air tests are considered to be representative of the Wheatland-Torrington study area. Prior to the first ambient air test of October 1973, the exact location of the plant site was not known. The ambient air testing stations (Exhibit 10), therefore, encompass the same general area as that of the area siting study. Each of the four ambient air tests were conducted in the same study area in order to acquire comparable data representative of the seasonal changes.

Results from the four tests are similar. Sulfur dioxide and nitrogen dioxide ground level concentrations were far below the standards for each test. All values for coefficient of haze were below regulating standards. The average daily values measured for suspended particulate matter at each test site for each test were also below the standards.

Ambient air monitoring after the plant goes into operation will include a permanent monitoring station for sulfur dioxide located

downwind of the plant relative to the prevailing wind. A mobile sampling unit will be used to measure short-term concentrations of pollutants in the surrounding area.

Emission Performance Tests: Performance tests will be conducted and a written report furnished to the Environmental Protection Agency. The tests will be performed within 60 days after achieving maximum load, but not later than 180 days after initial startup. The tests will be conducted while the facility is operating at or above the maximum steam production rate at which it will be operated and while fuels or combinations of fuels representative of normal operation are being burned. The Wyoming Air Quality Division and Environmental Protection Agency will be given 10 days notice prior to tests so an observer can be present. Test results will be sent to these regulatory agencies and will be approved by a registered engineer (Federal Register, No. 247).

Continuous Emission Monitoring: Continuous emission monitoring will be installed per federal regulations. This will serve three purposes: first, it can assure compliance with applicable emission standards; second, it will be used to control air pollution control equipment performance parameters so as to guarantee compliance while minimizing operating costs; and third, it is possible that the monitor can be used to control boiler parameters so as to prevent excessive undesirable incomplete combustion products.

Monitoring instruments to be installed will provide continuous monitoring of opacity, O_2, SO_2, and NO_2.

As required by the Environmental Protection Agency (Federal Register, Thursday, December 23, 1971) the owner will maintain a file of all emission measurements. The daily records and monthly summaries will be retained for at least 2 years.

III. SITING APPLICATION:

D. Laramie River Station Discharges:

subsection 3

III.D.3. Waste Disposal:

The operation of the Laramie River Station will generate various solid waste materials, mainly combustion products collected by the gas cleaning equipment. Solid wastes will also be collected as a result of the plant's water treatment systems.

III.D.3.a. Inventory:

The solid products of combustion will account for the largest portion of solid wastes produced by the plant. Over the life of the plant, the three units will produce, assuming an average ash content of 8.03%, approximately 56.5 tons of ash per hour. Approximately 20% (11.3 tons per hour per 3 units) of the ash will be collected as bottom ash while the remaining 80% will become fly ash. Electrostatic precipitators will collect most of the fly ash and a maximum of 0.1 lb. fly ash per million Btu (.57 tons per hour per 3 units) will be emitted into the atmosphere.

Solid waste will be produced by the flue gas desulfurization system which will remove an average of 7.75 tons of SO_2 gas per hour per 3 units, based on 0.63% sulfur and 8,125 Btu per pound coal. If a wet limestone system is selected, approximately 19.03 tons of calcium sulfate (dry basis) will be produced per hour per 3 units. If a regenerable system is selected, approximately 3.88 tons of elemental sulfur per hour per 3 units will be produced.

Solid wastes will also be collected from the plant intake water and wastewater treatment systems. These wastes will include filter backwash sludge, sanitary wastes, and residue from the wastewater evaporative ponds. Waste oil will also be separated from wastewater and stored for collection.

III.D.3.b. Method of Disposal:

All solid wastes generated by the operation of the Laramie River Station will be disposed on site. Bottom ash will be stored in the ash pond. FGD sludge wastes will be dryed or dewatered and disposed by sanitary landfill methods. Filter backwash sludge containing iron oxides, products of coagulation chemicals and suspended solids will be ~~deposited in the ash pond~~ a portion of the SO_2 Absorber makeup. Dissolved solids in other plant wastewater

streams will be ~~concentrated and disposed in the evaporative pond~~ directed into the SO_2 absorber system for ultimate disposal.

The feasibility of by-product utilization of these solid wastes is presently uncertain. However, the plant will be designed to permit future recovery of some of these wastes products. Fly ash will be collected dry so that it could be sold as a by-product. FGD sludge could also be sold if a market develops.

III.D.3.c. Relationship of Disposal Practices to Environmental Quality Criteria:

All of the solid waste disposal areas will be constructed so that no detrimental effects will occur. All waste disposal ponds will be sealed to prevent percolation of toxic or otherwise undesirable materials that would contaminate ground or surface waters. Surface runoff contaminated by waste products will be collected and routed to one of the ~~evaporative~~ waste ponds. Dust control in the various ~~evaporative~~ waste ponds and ~~lagoons~~ will be maintained by regulating the water level. This will cover waste materials that might otherwise be subject to wind erosion. Landfill operations will include procedures to minimize fugitive dust at the working face of the landfill and dust is not expected to be a problem in the FGD sludge waste areas.

There will be no danger to public health and safety, human, animal or plant life as a result of the disposal of these solid wastes. They cannot be termed a public nuisance nor will they endanger recreational facilities.

III. SITING APPLICATION:

E. Construction:

subsection 1
subsection 2

DIVISION III:
Section E:

III.E. Construction:

III.E.1. Construction Schedule:

Construction of the Laramie River Station is scheduled to begin in April of 1976. The construction phase is estimated to extend for seven and one-half years. This includes an overlap in construction of three separate units. The first unit is scheduled for commercial operation in January of 1980, the second unit in June of 1980 and the third unit in June of 1983. Unexpected delays during construction could extend these completion dates; however, all efforts will be made to meet the above schedule and provide the electrical generating capacity needed in the region.

III.E.2. Time of Commencement of Construction:

The initial decision on this Application will require from 41 to 130 days. Considering a filing date in December of 1975, this would yield an approval date between January and April of 1976. Construction will proceed as planned if approval is received within this time period.

III.E.2.a. Contingent Upon Additional Study Being Made:

A decision to submit the Application to additional study can add up to an additional 300 days. For every month during the summer of 1976 that the start of construction is delayed, an equivalent delay will occur for completion of both units one and two; unit three will not be affected. Due to the sequential nature of the plant construction, there is no feasible way to reduce the construction period required for each unit by increasing the work force.

If the start of construction is delayed until October of 1976, costs for the project would increase over 26,000,000.00 dollars in escalation alone. If the start of construction is delayed past October of 1976, construction could not get started soon enough to be productive during the fall. This would require delaying construction commencement until approximately April, 1977. This would put the commercial operation of the units at January, 1981 for Unit 1 and June, 1981 for Unit 2. The completion date for the third unit would still remain at June, 1983. A delay of this length could cost the project 52,000,000.00 dollars in

escalation costs. Delays will result in a shortage of energy and there are no other sources known today to be available. This will result in severe social and economic hardships to the consumers of the Participants.

III.E.2.b. Contingent Upon Extensions to the Additional Study Period:

If this Application is subjected to the two 60-day statutory extensions to the additional study period, it could delay the start of construction into the summer of 1977. Here again, for every month that the start of construction is delayed, a subsequent delay will occur in the completion date of both units one and two. In addition, the construction period for unit three will be delayed to avoid overlap with the peak of the construction for Units 1 and 2.

III.E.2.c. Other Requirements Affecting Construction Schedule:

At this time, the project is awaiting final approval on several permit applications and the loan application to the Rural Electrification Administration. All of the permits are discussed including their status in Section III.G. entitled "State and Federal Permits."

The Rural Electrification Administration is currently preparing the draft environmental impact statement. Once this is completed, the statement will go through a period of review and public hearings. The time required for this process varies but final approval is expected prior to April of 1976.

III. SITING APPLICATION:

E. Construction:

subsection 3

III.E.3 Plant Capital Cost:

To accurately estimate the capital cost of a generating facility, it is necessary to determine the site location, define the items to be included in the proposed construction of the unit, prepare estimates for each of the physical portions of the facility, and finally compile these estimates, along with certain other necessary expenses into the installed capital cost estimate. The details of this estimating procedure are described in this portion of this report. The resulting capital cost estimate for the Laramie River Station is shown in Table 15.

Method of Estimating: To complete the estimate for the proposed generating facility, a number of sources of information were utilized. Since agreements have already been reached for purchase of the turbine generators, steam generators, and certain other equipment, the cost resulting from these agreements have been incorporated in the schedules. Costs for smaller equipment such as boiler and turbine auxiliaries, electrical switchgear, and other items were estimated. These estimates were based on recent actual bids solicited on other generating facilities, or by "proposals for estimating purposes" obtained from manufacturers of the various equipment. These costs were all adjusted to a 1975 dollar value.

Construction contracts were handled in a manner similar to that described for auxiliary equipment above. It should be noted that these estimates are based on the normal productivity of labor which has been experienced in the area, the absence of unusual or prolonged labor interruptions, an adequate labor supply, and the normal contingencies which are expected on the average for construction of this type.

Additional Capital Costs: In addition to the basic equipment and construction costs, certain other costs and allowances must be provided to prepare realistic estimates of final capital costs of a particular facility. These include a contingency fund for unexpected escalation or construction difficulties, engineering fees relative to construction and working capital.

A contingency fund of 10% of the total equipment and labor costs has been added to each estimate. Engineering fees in the amount

of approximately 3% of the total construction costs has also been added. Working capital is an estimate of the initial stock of spare parts, consumable chemicals, office supplies, miscellaneous tools and equipment, startup costs, and other materials. Initial fuel stockpile and operator training expenses are also included in working capital. Additionally, the cost of studies, environmental analysis, project manager's overheads, and costs incurred during the preliminary phases of the project are included in the working capital estimate.

It should be noted that additional funds may be necessary which have not been included in the capital cost estimates of the plant. Interest during construction and escalation can add substantially to the capital cost. If financing is obtained from private sources, additional costs will include financial advisory and bond counsel fees, bond discount, underwriters' fees, trustees' fees, and other expenses incidental to this type of financing.

Cost Analyzed by Time and Type: Table 12 shows the estimated yearly payment schedule for the sum of all major contracts on units 1, 2, and 3 and the other major components of the proposed Laramie River Station. The construction cost of the generating facility was estimated as previously described, but land cost, working capital and contingencies have been removed and only the Wyoming portion of the transmission costs has been included.

Table 13 shows the estimated ad valorem tax base. This was estimated by subtracting the cost of the environmental controls, fire protection, contingencies and design engineering from the total generating station costs. The transmission cost was reduced to the portion in Platte County only. This provides the annual "true value" of the plant in Platte County.

Table 14 shows the estimated use tax base. This was estimated by dividing the contracts into labor and material portions. All the material was assumed subject to use tax and summed in the table. The material for the transmission facilities in Wyoming was used.

The land has already been purchased and a portion of the working capital and design engineering has been spent.

Table 12

WYOMING

Construction Cost in 1975 dollars

($1000)

Calendar Year	Wyoming* Transmission	Reservoir**	Unit 1	Unit 2	Unit 3	Design and Field Engr.	Total
1975						2,165.8	2,165.8
1976	7,663.8		22,133.3	111.7		3,296.8	33,205.6
1977	13,049.3	10,831.9	70,350.9	24,209.1		2,943.2	121,384.4
1978		11,324.9	99,456.2	88,987.4		2,470.0	202,238.5
1979	24,895.0	3,114.7	52,642.5	86,925.0	1,532.7	3,920.7	173,030.6
1980	2,766.1		2,076.4	16,412.2	26,386.4	3,540.0	51,181.1
1981					93,446.6	2,875.3	96,321.9
1982	13,710.0				86,890.0	2,413.0	103,013.0
1983	1,523.3				18,190.7	2,075.2	21,789.2
Total	63,607.5	25,271.5	246,659.3	216,645.4	226,446.4	25,700.0	804,330.1

Cost of transmission lines in Wyoming only.
***Does not include land acquisition or contingencies.*

Table 13

AD VALOREM TAX BASE:

Total Construction Cost Less Environmental Controls, Fire Protection, and contingency in 1975 dollars

($1000)

Calendar Year	Platte Co. Transmission	Reservoir*	Unit 1	Unit 2	Unit 3	Field Engr.	Total
1976	2,926.0		19,633.4	111.7		134.9	22,806.0
1977	4,982.0	10,831.9	67,157.8	23,790.0		333.6	107,095.3
1978		11,324.9	48,890.0	74,537.1		915.7	135,667.7
1979	13,054.3	3,114.7	35,124.9	39,976.4	1,669.0	887.3	93,826.6
1980	1,450.5		3,128.8	10,095.3	30,355.2	298.1	45,327.9
1981					75,625.9	468.5	76,094.4
1982	7,322.7				28.812.3	475.6	36,610.6
1983	813.6				12,089.7	134.9	13,038.2
Total	30,549.1	25,271.5	173,934.9	148,510.5	148,552.1	3,648.6	530,466.7

** The Reservoir is in School District No. 2 and does not include land cost of $2,800,000 or contingencies.*

Table 14

USE TAX BASE:

Material only - Total project in Platte Co. in 1975 dollars

($1000)

Calendar Year	Platte Co. Transmission	Reservoir	Unit 1	Unit 2	Unit 3	Total
1976	1,755.6		16,094.8	111.7		17,962.1
1977	2,989.2	3,791.2	56,178.7	19,334.3		82,293.4
1978		3,963.7	59,885.9	65,538.7		129,388.3
1979	7,832.6	1,090.1	28,073.5	50,004.8	551.0	87,552.0
1980	870.3		630.7	10,340.7	20,934.5	32,776.2
1981					72,073.5	72,073.5
1982	4,393.6				47,406.3	51,799.9
1983	488.2				10,792.6	11,280.8
Total	18,329.5	8,845.0	160,863.6	145,330.2	151,758.9	485,126.2

Table 15

CAPITAL COST ESTIMATE
LARAMIE RIVER STATION
GRAYROCKS RESERVOIR AND
ASSOCIATED TRANSMISSION FACILITIES

(Expressed in 1975 Dollars)

	Station Cost	Unit 1 Cost	Unit 2 Cost	Unit 3 Cost
Land	$1,852,000	$1,852,000		
Equipment Contracts				
Steam Generators	123,503,717	38,802,607	40,588,026	44,113,084
Turbine Generators	53,529,373	17,969,886	17,969,887	17,589,600
Surface Condensers	2,365,640	744,680	744,680	876,280
Condenser Tubing	2,529,070	850,700	832,600	845,770
Closed Feedwater Heaters	3,511,027	1,174,805	1,144,112	1,192,110
Deaerator	967,540	319,080	319,080	329,380
Boiler Feed Pumps	2,377,959	809,084	760,925	807,950
Demineralizers	3,753,932	1,375,946	1,375,946	1,002,040
Circulating Water Pumps	1,804,604	601,711	601,711	601,182
Cooling Towers	6,722,639	2,268,173	2,218,326	2,236,140
Air Compressors	448,860	149,730	149,730	149,400
Miscellaneous Pumps	1,473,480	491,040	491,040	491,400
High-Pressure Pipe	3,596,390	1,213,650	1,186,680	1,196,060
High-Pressure Valves	949,680	320,400	313,280	316,000
Low-Pressure Valves	524,360	176,850	172,920	174,590
Control Valves	524,360	176,850	172,920	174,590
Data Logging	5,569,924	502,644	497,260	4,570,020
Controls & Instruments	3,000,574	1,003,934	993,140	1,003,500
Coal Handling	6,596,939	4,396,659	1,598,240	602,040
Ash Handling	1,954,528	651,464	651,464	651,600
Water Analysis	375,894	125,614	124,320	125,960
Tanks	600,680	201,140	198,880	200,660
Transformers	8,988,980	3,369,780	3,369,780	2,249,420
Power Circuit Breaker	1,589,700	595,350	595,350	399,000
Isolated Phase Bus	1,742,250	584,910	578,880	578,460
Electrical Equipment	6,745,372	2,247,976	2,247,976	2,249,420
Electrical Control Boards	1,787,120	595,580	595,580	595,960
Substation Material	2,383,350	850,150	850,150	683,050
Wire & Cable	3,121,600	1,060,800	1,060,800	1,000,000
Condenser Vacuum Pumps	375,268	125,084	125,084	125,100
Generator Circuit Breakers	1,471,352	490,336	490,336	490,680
Substation Controls	575,160	205,800	205,800	163,560
Subtotal - Equipment	**$255,461,322**	**$84,452,413**	**$83,224,903**	**$87,784,006**
Construction Contracts				
Cranes	422,008	211,120	210,888	
Chimney & Foundation	8,213,827	4,011,000	211,106	3,991,721
Site Preparation	7,102,406	7,102,406		
Structural Steel	17,488,575	6,027,333	5,725,906	5,735,336
Batch Concrete Plant	6,344,104	2,549,947	1,804,557	1,989,600
Substructure	15,013,236	5,092,198	5,092,200	4,828,838
Railroad	2,139,964	2,139,964		
Substation Installation	2,641,364	1,268,427	683,020	689,917

Table 15 (continued)

CAPITAL COST ESTIMATE
LARAMIE RIVER STATION
GRAYROCKS RESERVOIR AND
ASSOCIATED TRANSMISSION FACILITIES

(Expressed in 1975 Dollars)

	Station Cost	Unit 1 Cost	Unit 2 Cost	Unit 3 Cost
Power Plant Structure	$49,982,150	$18,134,125	$15,896,386	$15,951,639
Equipment Erection	16,077,935	5,368,665	5,368,670	5,340,600
Power Piping	52,497,310	17,462,405	17,462,405	17,572,500
Power Wiring	23,980,003	7,999,086	7,999,102	7,981,815
Yard Structures	22,885,593	13,235,269	4,838,324	4,812,000
Painting & Finishes	670,730	225,500	225,502	219,728
Landscaping	515,177	175,477	169,060	170,640
Subtotal - Construction	**$225,974,382**	**$91,002,922**	**$65,687,126**	**$69,284,334**
Subtotal - Land, Equipment & Const.	**$483,287,704**	**$177,307,335**	**$148,912,029**	**$157,068,340**
Contingency	$46,479,996	$16,429,974	$14,329,274	$15,720,748
Engineering	17,200,000	6,185,000	1,845,000	9,170,000
Working Capital	25,540,802	17,075,655	3,847,794	4,617,353
Total - Less Environmental Control	**$572,508,502**	**$216,997,964**	**$168,934,097**	**$186,576,441**
Environmental Control				
Precipitators	$63,238,859	$18,878,335	$19,128,168	$25,232,356
SO_2 Removal System	144,989,760	50,856,892	48,300,868	45,832,000
Water Treatment	1,762,530	1,827,923	465,707	468,900
Waste Treatment	6,011,060	2,002,080	2,002,080	2,006,900
Subtotal	**$216,002,209**	**$72,565,230**	**$69,896,823**	**$73,540,156**
Contingency	$21,992,706	$7,630,379	$7,008,311	$7,354,016
Engineering	8,500,000	2,515,000	2,455,000	3,530,000
Subtotal - Environmental Control	**$246,494,915**	**$82,710,609**	**$79,360,134**	**$84,424,172**
Generating Station Total	**$819,003,417**	**$299,708,573**	**$248,294,231**	**$271,000,613**

Grayrocks Reservoir	
Dam and Reservoir	$12,172,891
Utilities Relocation	1,765,802
Recreational Development	2,358,267
Development of Johnson Ranch Water	1,097,192
Pumping Plant and Pipeline to Power Plant	4,722,090
	$22,116,242
Contingency and Engineering	$3,042,313
Subtotal - Construction	**$25,158,555**
Land Acquisition - Dam and Reservoir	$2,800,000
Purchase of Boughton Ditch Rights	2,073,000
Subtotal - Construction, Land, Water Rights	**$30,031,555**
Project Managers Overhead	251,586
Total Water Supply Program	**$30,283,141**

Table 15 (continued)

CAPITAL COST ESTIMATE
LARAMIE RIVER STATION
GRAYROCKS RESERVOIR AND
ASSOCIATED TRANSMISSION FACILITIES

(Expressed in 1975 Dollars)

Transmission Facilities	
1977 Facilities	
Substations	
Laramie River Station	$1,120,400
Dave Johnston Station	655,000
Story Switching Station	560,100
Subtotal	**$2,335,500**
Transmission Lines	
230 kV Single Circuit	
Laramie River - Dave Johnston	$5,815,100
345 kV Single Circuit	
Laramie River - Story	25,335,800
Subtotal	$31,150,900
1977 Total	**$33,486,400**
1980 Facilities	
Substations	
Laramie River Station (West)	$3,509,600
Laramie River Station (East)	2,832,800
Stegall Substation (East)	5,454,800
Stegall Substation (West)	1,120,500
Sidney Substation (East)	7,976,600
Subtotal	**$20,894,300**
Transmission Lines	
Double Circuit - 345 kV and 230 kV	
Laramie River - Stegall	$12,197,700
Single Circuit 345 kV	
Laramie River - Sidney	17,424,000
Stegall - Sidney	11,180,900
Subtotal	**40,802,600**
Spare Tie Transformer	$1,050,000
Communication Facilities	1,382,300
Major Transmission Maintenance Facilities	471,600
1980 Total	**$64,600,800**
1983 Facilities	
Substations	
Laramie River Station	$4,328,600
Ault Substation	5,887,000
Story Substation	2,237,700
Subtotal	$12,453,300

Table 15 (continued)

CAPITAL COST ESTIMATE
LARAMIE RIVER STATION
GRAYROCKS RESERVOIR AND
ASSOCIATED TRANSMISSION FACILITIES
(Expressed in 1975 Dollars)

Transmission Lines	
345 kV Single Circuit	
Laramie River - Ault	$16,045,300
1983 Total	$28,498,600
Total for Transmission Facilities	$126,585,800
GRAND TOTAL	$975,872,358

III. SITING APPLICATION:

F. Estimated Number of Jobs and Job Classifications:

subsection 1

DIVISION III:
Section F: (continued)

III.F. Estimated Number of Jobs and Job Classifications:

III.F.1. Construction Phase:

The following is a listing of the estimated compensation rates of employees (by job classification) of the contractors and subcontractors that will be involved during the construction phase of the facility. These compensation rates were obtained from the Department of Labor and Statistics, Cheyenne, Wyoming. Base wages including fringe benefits are listed.

Craft	Average Compensation Rate (1975 Dollars)
Laborers	7.15
Teamsters	7.35
Operating Engineers	9.63
Carpenters	9.25
Iron Workers	10.60
Plumbers	9.59
Pipe Fitters	9.62
Boiler Makers	11.17
Asbestos Workers	10.11
Sheet Metal Workers	9.90
Electricians	9.42
Painters	10.46
Bricklayers	9.20
Cement Masons	8.50
Millwrights	10.31
Elevator Workers	9.39
Roofers	8.65

The following tables give the breakdown (in two-month intervals) of the estimated number of employees of the contractors, subcontractors, engineers, applicant's employees, etc., involved during the construction phase. These estimates were developed by Burns & McDonnell, and were based on past experience in power plant construction.

There will be fluctuations in the construction work force of the facility, as can be seen in Exhibit 11. This is primarily due to startup and completion of each specific contract. Climate conditions will not significantly affect construction work force due to the large amount of interior work.

The number of employees utilized in the construction phase of the facility, who do not currently live in the areas of site influence is estimated to be approximately 80%. This estimate was obtained from the Report on the Socioeconomic Impact of the Laramie River Station, Division of Business and Economic Research, University of Wyoming, 1975.

Labor Breakdown Table 16
CONSTRUCTION PHASE

	1976					
	J-F	M-A	M-J	J-A	S-O	N-D
PLANT CONSTRUCTION						
Laborers	–	6	15	24	23	25
Teamsters	–	6	19	10	16	16
Carpenters	–	4	23	16	19	23
Iron Workers	–	–	22	15	15	22
Plumbers	–	–	9	5	7	7
Pipe Fitters	–	–	13	3	2	1
Boiler Makers	–	–	–	–	–	–
Asbestos Workers	–	–	–	–	–	–
S. Metal W.	–	–	–	–	–	–
Electricians	–	3	14	13	14	14
Painters	–	–	–	–	1	2
Bricklayers	–	–	–	–	1	–
Cement Masons	–	–	–	1	2	2
Millwrights	–	–	–	–	–	–
Elevator O.	–	–	–	–	–	–
Roofers	–	–	–	–	–	–
Operating Eng.	–	5	23	29	22	26
Subtotal	–	24	138	116	122	138
GRAYROCKS CONSTRUCTION						
Laborers	–	–	–	–	–	–
Teamsters	–	–	–	–	–	–
Operating Engineers	–	–	–	–	–	–
Carpenters	–	–	–	–	–	–
Iron Workers	–	–	–	–	–	–
Pipe Fitters	–	–	–	–	–	–
Electricians	–	–	–	–	–	–
Cement Masons	–	–	–	–	–	–
Subtotal	–	–	–	–	–	–
MISCELLANEOUS PERSONNEL						
Subtotal	–	5	7	9	10	10
TOTAL	–	29	145	125	132	148

Labor Breakdown Table 16
CONSTRUCTION PHASE

	1977					
	J-F	M-A	M-J	J-A	S-O	N-D
PLANT CONSTRUCTION						
Laborers	98	103	90	67	68	57
Teamsters	65	43	20	15	16	11
Carpenters	71	73	62	63	68	60
Iron Workers	116	130	95	65	55	65
Plumbers	23	24	23	17	14	12
Pipe Fitters	–	–	8	10	9	15
Boiler Makers	–	7	103	166	175	246
Asbestos Workers	–	–	–	–	–	–
S. Metal W.	–	–	–	–	–	–
Electricians	38	52	85	82	73	59
Painters	6	2	–	–	–	–
Bricklayers	–	–	–	–	–	–
Cement Masons	2	5	1	–	1	–
Millwrights	–	–	30	27	27	39
Elevator O.	–	–	–	–	–	–
Roofers	–	–	–	–	–	–
Operating Eng.	131	80	50	42	24	28
Subtotal	550	519	567	554	530	592
GRAYROCKS CONSTRUCTION						
Laborers	–	64	42	41	50	47
Teamsters	–	–	–	–	–	–
Operating Engineers	–	57	30	30	68	70
Carpenters	–	–	14	16	–	–
Iron Workers	–	–	8	8	–	–
Pipe Fitters	–	–	8	8	–	–
Electricians	–	–	7	7	–	–
Cement Masons	–	–	8	8	–	–
Subtotal	–	121	117	118	118	117
MISCELLANEOUS PERSONNEL						
Subtotal	10	10	12	15	16	16
TOTAL	560	650	696	687	664	725

Labor Breakdown Table 16
CONSTRUCTION PHASE
(page 3 of 8)

	1978					
	J-F	M-A	M-J	J-A	S-O	N-D
PLANT CONSTRUCTION						
Laborers	75	117	127	131	120	122
Teamsters	30	38	41	48	51	50
Carpenters	33	84	120	100	66	39
Iron Workers	79	84	78	77	74	72
Plumbers	7	18	22	20	14	14
Pipe Fitters	66	109	130	207	279	344
Boiler Makers	321	348	348	332	385	390
Asbestos Workers	16	16	13	30	33	50
S. Metal W.	16	30	43	49	59	69
Electricians	94	146	169	185	232	281
Painters	–	16	13	8	7	5
Bricklayers	–	–	–	–	–	–
Cement Masons	–	–	3	13	27	27
Millwrights	64	57	62	89	102	127
Elevator O.	–	–	–	–	–	–
Roofers	–	–	15	14	8	–
Operating Eng.	38	69	90	85	61	64
Subtotal	839	1132	1274	1388	1518	1654
GRAYROCKS CONSTRUCTION						
Laborers	49	33	29	35	48	28
Teamsters	–	4	6	6	12	–
Operating Engineers	74	63	21	24	32	42
Carpenters	–	8	14	13	–	–
Iron Workers	–	4	8	6	–	–
Pipe Fitters	–	4	10	10	–	–
Electricians	–	5	11	9	–	–
Cement Masons	–	–	11	9	–	–
Subtotal	123	121	110	112	92	70
MISCELLANEOUS PERSONNEL						
Subtotal	16	18	28	37	37	36
TOTAL	978	1271	1412	1537	1647	1760

Labor Breakdown Table 16
CONSTRUCTION PHASE

(page 4 of 8)

	1979					
	J-F	M-A	M-J	J-A	S-O	N-D
PLANT CONSTRUCTION						
Laborers	119	125	172	204	142	108
Teamsters	45	48	48	42	41	48
Carpenters	33	34	75	70	36	11
Iron Workers	67	58	74	55	40	19
Plumbers	14	15	23	17	5	–
Pipe Fitters	432	450	446	417	402	370
Boiler Makers	328	312	265	168	152	99
Asbestos Workers	67	70	72	72	79	66
S. Metal W.	100	90	86	80	79	79
Electricians	322	394	402	412	400	386
Painters	3	11	43	100	92	73
Bricklayers	–	–	–	–	–	–
Cement Masons	17	8	8	8	4	–
Millwrights	152	160	159	144	111	95
Elevator O.	–	–	8	8	8	11
Roofers	–	–	–	–	–	–
Operating Eng.	61	74	85	89	79	71
Subtotal	1760	1849	1966	1886	1670	1436
GRAYROCKS CONSTRUCTION						
Laborers	28	33	11	–	–	–
Teamsters	–	3	2	–	–	–
Operating Engineers	42	31	9	–	–	–
Carpenters	–	3	2	–	–	–
Iron Workers	–	–	2	–	–	–
Pipe Fitters	–	–	2	–	–	–
Electricians	–	–	2	–	–	–
Cement Masons	–	–	2	–	–	–
Subtotal	70	70	32	–	–	–
MISCELLANEOUS PERSONNEL						
Subtotal	34	34	30	30	24	21
TOTAL	1864	1953	2028	1916	1694	1457

Labor Breakdown Table 16
CONSTRUCTION PHASE
(page 5 of 8)

	1980					
	J-F	M-A	M-J	J-A	S-O	N-D
PLANT CONSTRUCTION						
Laborers	100	92	180	38	29	20
Teamsters	33	–	–	9	8	5
Carpenters	–	5	7	35	27	21
Iron Workers	15	12	–	37	23	24
Plumbers	–	–	–	12	6	5
Pipe Fitters	285	209	56	6	4	5
Boiler Makers	61	25	–	94	72	88
Asbestos Workers	66	39	8	–	–	–
S. Metal W.	71	46	8	–	–	–
Electricians	336	226	152	46	28	21
Painters	76	87	56	–	–	–
Bricklayers	–	–	–	–	–	–
Cement Masons	–	6	8	–	–	–
Millwrights	69	50	3	15	12	14
Elevator O.	15	–	–	–	–	–
Roofers	–	–	–	–	–	–
Operating Eng.	58	61	58	20	17	10
Subtotal	1185	858	536	312	226	213
GRAYROCKS CONSTRUCTION						
Laborers	–	–	–	–	–	–
Teamsters	–	–	–	–	–	–
Operating Engineers	–	–	–	–	–	–
Carpenters	–	–	–	–	–	–
Iron Workers	–	–	–	–	–	–
Pipe Fitters	–	–	–	–	–	–
Electricians	–	–	–	–	–	–
Cement Masons	–	–	–	–	–	–
Subtotal	–	–	–	–	–	–
MISCELLANEOUS PERSONNEL						
Subtotal	12	12	12	12	12	12
TOTAL	1197	870	548	324	238	225

Labor Breakdown Table 16
CONSTRUCTION PHASE
(page 6 of 8)

	1981					
	J-F	M-A	M-J	J-A	S-O	N-D
PLANT CONSTRUCTION						
Laborers	20	31	47	56	48	50
Teamsters	8	10	15	21	20	21
Carpenters	8	22	44	43	26	16
Iron Workers	21	22	29	33	30	29
Plumbers	2	5	8	8	6	6
Pipe Fitters	18	29	48	89	112	141
Boiler Makers	86	91	128	143	155	160
Asbestos Workers	4	4	5	13	13	21
S. Metal W.	4	8	16	21	24	28
Electricians	25	38	63	79	94	115
Painters	–	4	6	4	3	2
Bricklayers	–	–	–	–	–	–
Cement Masons	–	–	2	6	11	11
Millwrights	17	15	23	38	40	52
Elevator O.	–	–	–	–	–	–
Roofers	–	–	5	6	3	–
Operating Eng.	11	19	29	36	27	26
Subtotal	224	298	468	596	612	678
GRAYROCKS CONSTRUCTION						
Laborers	–	–	–	–	–	–
Teamsters	–	–	–	–	–	–
Operating Engineers	–	–	–	–	–	–
Carpenters	–	–	–	–	–	–
Iron Workers	–	–	–	–	–	–
Pipe Fitters	–	–	–	–	–	–
Electricians	–	–	–	–	–	–
Cement Masons	–	–	–	–	–	–
Subtotal	–	–	–	–	–	–
MISCELLANEOUS PERSONNEL						
Subtotal	12	12	15	20	20	20
TOTAL	236	310	483	616	632	698

Labor Breakdown Table 16
CONSTRUCTION PHASE

(page 7 of 8)

	1982					
	J-F	M-A	M-J	J-A	S-O	N-D
PLANT CONSTRUCTION						
Laborers	44	48	70	87	62	47
Teamsters	17	18	20	18	17	21
Carpenters	12	13	31	30	15	5
Iron Workers	25	22	30	23	17	8
Plumbers	5	6	9	7	2	–
Pipe Fitters	161	172	181	177	175	160
Boiler Makers	122	119	108	71	66	43
Asbestos Workers	25	27	29	31	34	29
S. Metal W.	37	34	35	35	35	35
Electricians	120	151	165	175	174	168
Painters	2	4	17	43	40	32
Bricklayers	–	–	–	–	–	–
Cement Masons	6	3	3	4	2	–
Millwrights	57	61	65	61	48	41
Elevator O.	–	–	3	3	4	5
Roofers	–	–	–	–	–	–
Operating Eng.	23	28	34	37	35	30
Subtotal	656	706	800	802	726	624
GRAYROCKS CONSTRUCTION						
Laborers	–	–	–	–	–	–
Teamsters	–	–	–	–	–	–
Operating Engineers	–	–	–	–	–	–
Carpenters	–	–	–	–	–	–
Iron Workers	–	–	–	–	–	–
Pipe Fitters	–	–	–	–	–	–
Electricians	–	–	–	–	–	–
Cement Masons	–	–	–	–	–	–
Subtotal	–	–	–	–	–	–
MISCELLANEOUS PERSONNEL						
Subtotal	20	20	20	18	16	14
TOTAL	676	726	820	820	742	638

Labor Breakdown Table 16
CONSTRUCTION PHASE
(page 8 of 8)

	1983					
	J-F	M-A	M-J	J-A	S-O	N-D
PLANT CONSTRUCTION						
Laborers	47	54	130	97	20	–
Teamsters	16	–	–	30		
Carpenters	–	3	5	–	–	–
Iron Workers	7	7	–	–	–	–
Plumbers	–	–	–	–	–	–
Pipe Fitters	134	122	41	10	–	–
Boiler Makers	29	15	–	–	–	–
Asbestos Workers	31	23	6	–	–	–
S. Metal W.	34	27	6	–	–	–
Electricians	158	132	111	40	–	–
Painters	36	51	40	10	–	–
Bricklayers	–	–	–	–	–	–
Cement Masons	–	4	6	–	–	–
Millwrights	32	29	2	–	–	–
Elevator O.	7	–	–	–	–	–
Roofers	–	–	–	–	–	–
Operating Eng.	26	35	43	19	16	–
Subtotal	557	502	390	206	36	–
GRAYROCKS CONSTRUCTION						
Laborers	–	–	–	–	–	–
Teamsters	–	–	–	–	–	–
Operating Engineers	–	–	–	–	–	–
Carpenters	–	–	–	–	–	–
Iron Workers	–	–	–	–	–	–
Pipe Fitters	–	–	–	–	–	–
Electricians	–	–	–	–	–	–
Cement Masons	–	–	–	–	–	–
Subtotal	–	–	–	–	–	–
MISCELLANEOUS PERSONNEL						
Subtotal	11	10	10	10	10	10
TOTAL	568	512	400	216	46	10

III. SITING APPLICATION:

F. Estimated Number of Jobs and Job Classifications:

subsection 2

III.F. Estimated Number of Jobs and Job Classification:

III.F.2. Applicants Personnel (Administrative, Operating & Maintenance):

The operating personnel for the plant will begin work prior to actual commercial operation of the units. The following is an estimate of the applicant's personnel that will be involved in the operation of the plant while construction is still underway.

Table 17

ESTIMATED APPLICANT'S PERSONNEL

Calendar Year	Jan-Feb	Mar-Apr	May-Jun	Jul-Aug	Sep-Oct	Nov-Dec
1978			1	3	8	17
1979	28	37	70	90	102	105
1980	110	130	150	155	155	155
1981	155	155	155	155	155	155
1982	155	155	155	155	157	167
1983	177	190	190	200	200	200

The following table displays the operating personnel by job title and compensation rate after the units become commercial. The total manpower requirements for operation of Unit 1 will be 96 people. The total for operation of Units 1 and 2 will be 146. A total of 200 people will be required for operation of Units 1, 2, and 3. This estimate of 200 people will remain constant from the time Unit 3 begins operation until the units are phased out.

Table 18

PERSONNEL REQUIREMENTS AND COST ESTIMATES FOR THE GENERATING STATION

(1975$)

	Unit 1 Total Men	Labor Cost	Units 1 & 2 Total Men	Labor Cost	Units 1, 2 & 3 Total Men	Labor Cost
I. ADMINISTRATIVE						
Plant Manager	1	$22,248	1	$22,248	1	$22,248
Plant Superintendent	0	—	1	19,440	1	19,440
Results Engineer	1	17,944	1	17,944	1	17,944
Operations Supervisor	1	17,944	1	17,944	1	17,944
Shift Supervisor	4	61,000	5	76,250	5	76,250
Maintenance Supervisor	1	17,480	1	17,480	1	17,480
Electrical & Instrumentation Supv.	1	17,480	1	17,480	1	17,480
Plant Engineer	1	11,448	1	11,448	1	11,448
Chemical Process Engineer	1	11,448	1	11,448	1	11,448
Office Supervisor	1	11,254	1	11,254	1	11,254
Warehouse Men	2	19,710	3	29,565	3	29,565
Receptionists	1	5,216	1	5,216	1	5,216
Secretary	1	6,237	2	6,237	2	12,474
Custodian	1	8,802	1	8,802	1	8,802
Subtotal	17	$228,211	21	$278,993	21	$278,993
II. OPERATIONS						
Control Room Operators	4	$53,416	8	$106,832	12	$160,248
Assistant Control Room Operators	4	48,840	4	48,840	8	97,680
Equipment Operators	4	46,092	8	92,184	12	138,276
Boiler Attendants	12	133,284	18	199,926	28	310,996
Laboratory Technicians	5	58,655	5	58,655	5	58,655
Yard Operator	3	35,193	4	46,924	4	46,924
Coal Operators	4	46,924	8	93,848	12	140,772
Coal Yard Men	3	31,824	5	53,040	5	53,040
Laborers	4	36,692	7	64,211	10	91,730
Relief Operators	2	22,214	3	33,321	6	66,642
Subtotal	45	$513,134	70	$797,781	102	$1,164,963

Table 18

PERSONNEL REQUIREMENTS AND COST ESTIMATES FOR THE GENERATING STATION

(1975$)

	Unit 1 Total Men	Labor Cost	Units 1 & 2 Total Men	Labor Cost	Units 1, 2 & 3 Total Men	Labor Cost
III. MAINTENANCE						
Welder	2	25,168	3	37,752	5	62,920
Machinist	1	12,584	1	12,584	1	12,584
Lead Mechanic	1	12,584	1	12,584	1	12,584
Mechanic I	5	61,880	10	123,760	16	198,016
Mechanic Helper	7	82,117	12	140,772	18	211,158
Lead Electrician	0	--	1	13,603	1	13,603
Electrician I	2	25,958	3	38,937	5	64,895
Electrician II	4	50,336	7	88,088	9	113,256
Lead Instrument	0	--	1	13,603	1	13,603
Instrument I	2	26,084	3	39,126	4	52,168
Instrument II	4	50,336	5	62,920	7	88,088
Apprentice Instrument	1	11,731	1	11,731	1	11,731
Lead Painter, Insulator & Metalsmith	0	--	1	12,584	1	12,584
Painter, Insulator & Metalsmith	5	57,200	6	68,640	7	80,080
Subtotal	34	$415,978	55	$676,684	77	$947,270
TOTAL PERSONNEL AND COSTS	96	$1,157,323	146	$1,753,458	200	$2,391,226
INDIRECT PERSONNEL COSTS (22%)		254,611		385,761		526,070
TOTAL PERSONNEL COSTS		1,411,934		2,139,219		2,917,296

III. SITING APPLICATION:

G. State and Federal Permits:

subsection 1
subsection 2

DIVISION III:
Section G:

III.G. STATE AND FEDERAL PERMITS REQUIRED BY PROJECT

Permits listed do not include those that deal primarily with the normal business functions of an operating utility.

III.G.1 Permits Granted as of November 14, 1975:

A listing of permits granted as of November 14, 1975 is provided in Table 19.

III.G.2 Permits Not Granted as of November 14, 1975:

A summary of permits not granted as of November 14, 1975 is furnished in Table20 .

Table 19

PERMITS GRANTED AS OF 1-16-76

Permit Required	Application or Petition Submitted to	Date Submitted	Information Required	Status
Permit to Appropriate Surface Water (Grayrocks Reservoir)	State Engineer	4-24-73	Location of dam and reservoir. Design parameters of both.	Permit was granted on 2-11-75. Final Construction plans must be filed for approval prior to start of construction
Permit to Appropriate Surface Water (Water Treatment Tests)	State Engineer	8-26-75	Amount of water required for pilot water treatment plant. Point of diversion from Laramie River and time period during which water is needed.	Temporary permit for a 90-day period granted on 8-28-75. Extension to 12-31-75 granted on 11-3-75.
Permit to Divert Water (Laramie River Pipeline)	State Engineer	4-2-73	Location of point of diversion, means of conveyance and quantity of water diverted.	Granted as Permit Number 24551, Nov. 12, 1975
Permit to Discharge Wastewater (NPDES)	Wyoming DEQ	2-28-75	Amount of water to be used. Point of surface runoff discharge and volume. Water flow diagram.	Permit was granted 12-24-75.

Table 20

PERMITS NOT GRANTED AS OF 1-16-76

Permit Required	Application or Petition Submitted to	Date Submitted	Information Required	Status
Certificate of Public Convenience and Necessity	Wyoming Public Service Commission	9-18-75	Description of the project. Identification of all participants. Financial structure of each participant. Justification of facilities. Compliance statements.	Public hearing held 12-8-75. Awaiting final decision.
Revision of Water Appropriation Permits for Boughton Ditch Water	State Board of Control	1-2-75	Ownership of land and water rights in the Boughton Ditch area. Volume of water involved. Present and future diversion points. Present and anticipated use of water. Location and nature of proposed intake.	Special meeting of the State Board of Control held on 10-30, 31-75. Decision soon to be made public.
Permit to Appropriate Groundwater (Johnson Wells) for Industrial Use (21 wells)	State Engineer	July & August 1973	Results of current well test program including water levels, pumping characteristics, sub-surface geology and water quality.	Permit approval pending results of testing program.
Permit to Appropriate Groundwater (Plant Site) for Industrial Use (5 wells). Only 1 well will be used.	State Engineer	10-4-74	Results of current well observation and test program including water quality, stratigraphy and capacity.	Temporary permit approved on 10-28-75 to allow use of groundwater for construction purposes.
Department of the Army Permit	Corps of Engineers	9-22-75	Descriptive of dam and reservoir. Status of various permit applications. Names and addressess of adjoining property owners.	No response received.
Revision of Water Appropriation Permits for Inundated Area	State Board of Control	2-28-75	Ownership of land and water rights in the area to be inundated. Present and anticipated diversion points and uses of water.	Preliminary petition submitted to State Board of Control. No date established for public hearing.

Table 20 (Continued)

PERMITS NOT GRANTED AS OF 1-16-76

Permit Required	Application or Petition Submitted to	Date Submitted	Information Required	Status
Solid Waste Disposal Permit	Wyoming DEQ	2-28-75	Types, quantities and sources of solid waste. Hydrology and soil conditions of proposed area with exhibits.	Revisions may be required if present regulations are changed.
Construction Permit (Air Quality)	Wyoming DEQ	2-28-75	Fuel, firing characteristics, fuel handling equipment and flue gas cleaning processes.	Supplementary information has been submitted to the Air Quality Division.
National Environmental Policy Act Determination	Rural Electrification Administration	8-22-75	Environmental analysis prepared in accord with guidelines suggested in REA Bulletin 20-21:320-21.	REA currently in process of preparing draft environmental impact statement.
Aeronautical Permit for Chimney	Federal Aviation Administration	Not Submitted	Location and height of chimney.	Application to be submitted when information becomes certain.
Permit to Construct a Public Water Supply System	Wyoming DEQ	Not Submitted.	Related plans and specifications. Number of service connections.	Required information to be submitted when available.
Petition Application for Transfer of Plant Site Water Rights	State Board of Control	2-28-75	Ownership of land and water rights in the area of proposed plant site.	Required information to be submitted when available.
Mining Permit to Excavate Dam Construction Material	Wyoming DEQ	Not Submitted	Location of borrow areas. Description of land use, and reclamation plan.	Application to be submitted when information becomes certain.

III. SITING APPLICATION:

H. Land Use Plans:

subsection 1

DIVISION III:
Section H:

III.H. Land Use Plans:

III.H.1. Zoning Regulations:

As of the date of the application, there are no state or local land use plans other than zoning regulations in effect for the area of the facility. The site of the facility has been rezoned from Class V - Agriculture to Class IV - Industrial. This zoning change took place at the March 5, 1975 meeting of the Board of County Commissioners, Wheatland, Wyoming. The Board approved the measure by a unanimous vote.

III. SITING APPLICATION:

1. Social, Economic and Environmental Impact Studies:

subsection 1

DIVISION III:
Section I:

III.I. Social, Economic and Environmental Impact Studies:

The following studies and reports have been prepared for the proposed project.

IV.I.1. Social and Economic Studies:

1. A Social Impact Assessment of the Proposed Laramie River Station - Platte County, Wyoming Department of Sociology - University of Wyoming - October, 1975.

2. Socioeconomic Impact of the Laramie River Station Division of Business and Economic Research (DOBER) University of Wyoming, 1975.

III.I.2. Environmental Impact Studies:

1. Ecological Report Volumes 1 & 2 - Ecology Consultants, Inc. (ECI), 1975.

2. Environmental Report on Proposed Transmission Line Dr. Morton May and Dr. Robert Lavigne, 1974.

3. Ambient Air Test Volumes I-IV Burns & McDonnell Vol. I, 1973; Vol. II, 1974; Vol. III, 1974; Vol. IV, 1975.

4. Environmental Analysis for the Laramie River Station - Burns & McDonnell, 1975.

5. Environmental Analysis for the Electric Transmission Facilities - Burns & McDonnell, 1975.

6. Environmental Reconnaisance Study - Burns & McDonnell, 1973.

7. Ambient Noise Measurement Report of the Laramie River Station Site - Burns & McDonnell, 1975.

III.I.3. Engineering Studies:

1. Feasibility Study for the Laramie River Station - Burns & McDonnell, 1975.

2. Feasibility Report on the Proposed Grayrocks Dam and Reservoir - J. T. Banner & Associates, Inc., 1973 - Completed and Printed 1975.

3. Regional Siting Study Volumes 1 & 2 - Burns & McDonnell, 1973 - Printed in 1975.

4. Report on the Evaluation of Wet Versus Dry Cooling Systems - Burns & McDonnell, 1974.

5. Investigation of the Availability of Groundwater Johnson Ranch - J. T. Banner & Associates, Inc., 1974.

III. SITING APPLICATION:

J. Alternative Locations:

subsection 1

DIVISION III:
Section J:

III.J. Alternative Locations:

III.J.1. Site Superiority:

A site suitable for location of a coal-fired power plant must meet certain fundamental requirements. The site must have sufficient area suitable for development that will accommodate the plant and its associated storage and disposal facilities. The site must be accessible from existing transportation facilities for delivery of coal and equipment. The site must have access to an adequate and assured quantity of water to operate the plant. These fundamental requirements severely limit the specific locations which may be considered for site location.

Environmental considerations impose a further limitation on site selection because of restrictions placed on air and water pollution and possibly adverse effects that the plant and its associated transmission facilities may have on the local and regional environment.

Each site which meets these fundamental requirements is unique because of its topography, fuel source and method of delivery, source and quantity of water available and location of the site relative to the delivery point of electrical energy. The unique feature of each site reflects in the choice of plant equipment, site layout, site access, and other features, all of which ultimately reflect in the cost of electrical energy delivered from the plant. The object of site selection study must, therefore, be, (1) the selection of an area which demonstrates strong potential for discovery of sites which economically meet the fundamentals of site requirements; (2) the selection of sites within these areas which meet fundamental requirements and appear to be environmentally and economically acceptable, (3) the selection of site or site combinations which demonstrate the lowest cost of delivered energy from the plant to the load center of the participants.

The site selection study of the Missouri Basin Power Project began with an overall study of sites within a 5-state region encompassing the east and west participants in the Missouri Basin Power Project. Initial study began with sites in North Dakota, South Dakota, Nebraska, Montana, and Wyoming. Considerations were given to a number of different combinations of plant sites involving different

fuel locations and different amounts of transmission lines. Sites located in North Dakota were generally mine-mouth sites using lignite as a source of fuel. South Dakota sites generally represented a combination of a site in South Dakota which would be in the eastern load center and the site to be built in the western load center, somewhere in Wyoming or Montana. Alternately, sites in Montana and Wyoming would be located in the western load center and would utilize the Nebraska Public Power District transmission facilities to transmit power to eastern load centers.

Within the study region, 6 general areas were selected for field investigations to locate possible generating sites based on fuel supplies and water resources. Within each of these 6 areas, numerous feasible sites were selected and a comparative analysis prepared, giving weight to the cost of railroad access, water supply facilities, site development cost, and the environmental impact of each site. From this analysis, a prime site was located in each search area. A general map of the region showing more than 70 different sites which were selected for consideration in the regional siting study is given on page 40 of the feasibility study for the Laramie River Station (Burns & McDonnell, 1975).

The results of this study and analysis show that single-plant generating station sites located in either southeastern or northeastern Wyoming afforded the most economical power supply alternative to the participants in the project. Therefore, the remainder of the study of the project sites concentrated in the Wyoming area.

As the plans and studies for the Missouri Basin Power Project continued, lack of a definitive fuel supply forced abandonment of the northeast Wyoming alternative. These alternatives were planned as mine-mouth generating stations. Without a precise location of the mining operation provided by a formal fuel proposal, the generating plant sites could not be selected in the northeast Wyoming area. If an incorrect fuel supply had been assumed, and a site selected on that assumption, it might have become necessary to not only transport fuel from a mine location to a generating plant site, but provide for bulk water supply transmission and a support community as well, thus negating the advantages of a mine-mouth location.

The study therefore, was narrowed down and concentrated in the southeastern Wyoming area in the Wheatland-Torrington vicinity of Platte and Goshen Counties where the possibility existed for the development of an adequate water supply and where transportation from the coal fields was available via the Burlington Northern, Colorado Southern, and Union Pacific Railroads.

At this point in the process, 2 independent studies were conducted. Emphasis is made that these were independent studies; one by Burns & McDonnell Engineering Company, Inc., of Kansas City, Missouri, and the other by Environmental Consultants, Drs. Morton May and Robert Lavigne, of the University of Wyoming at Laramie. The purpose of each of these studies was to select possible plant site locations within the southeastern Wyoming area. The Burns & McDonnell study included both economic and environmental considerations. The study by the University of Wyoming personnel was primarily based on environmental considerations. The University was given an area of 23 miles by 44 miles within which to determine possible plant-site location. The results of both these studies showed that a site located near the Wheatland area in southeast Wyoming was preferred.

In the study conducted by Burns & McDonnell Engineering Company, many feasible sites in the area were reviewed on the basis of detailed map and field studies. In all, some 32 sites were considered in the initial studies and field studies. Cost estimates narrowed the investigation to 4 preferred sites. Exhibit12 , shows the location of all proposed sites and the 4 sites selected for final study in the area.

The sites eliminated from further consideration were dropped for various reasons. Major criteria used in eliminating these sites were (1) their distance from existing railroads, (2) degree of difficulty of construction of the railroad, (3) distance from a dam site, (4) the intervening topography to the reservoir, (5) distance from support communities, and (6) the present land use in the area of the site. It was concluded all sites in this area could be designed to comply with state and federal environmental regulations.

The independent study conducted by Dr. Robert Lavigne and Dr. Morton May, Environmental Consultants from the University of Wyoming, picked some 13 sites in the area which they believed to be potential plant sites. These sites are also shown on Exhibit ~~14~~ 12. While Drs. May and Lavigne chose also to consider some of the same site criteria as Burns & McDonnell in order that the site they selected would be practical, they also chose to concentrate on those factors which would minimize the environmental disturbance due to construction and operation of the project. Major environmental factors which Drs. May and Lavigne considered were the effects of possible water contamination from fly ash and sludge ponds, the drift of stack gasses and particulates and their effect on nearby crops, vegetation, historic sites, the degree of disturbance of natural prairie land by construction and the aesthetics of the project.

Based on their study, Drs. May and Lavigne chose 4 sites in the area as the best sites for construction of the project, as can be seen on Exhibit 12. Two of these sites coincided with sites chosen by Burns & McDonnell, based on economic considerations. Based on considerations of ecological, environmental, economic factors and system operating requirements, the decision was made to locate this project at the Wheatland site.

Complete details on the siting study can be found in the following documents: Regional Siting Study, Vol. 1 and 2, Burns & McDonnell 1975.

III. SITING APPLICATION:

K. Impact Alleviations:

subsection 1

DIVISION III:
Section K:

III.K. Impact Alleviations:

III.K.1. Impact Investigations:

In 1974, the Missouri Basin Power Project commissioned two departments within the University of Wyoming to predict the impact that would be caused by the proposed project. The Department of Business and Economic Research (DOBER) investigated the possible socioeconomic impact. The Sociology Department investigated the possible social impact. Both of these studies have been used extensively in preparing this section on impact alleviation.

III.K.1.a. Population Prediction:

To estimate the impact on the area of site influence, it was necessary to predict the total population influx. According to the University of Wyoming, the total population influx is comprised of five categories.

Category number one is the "Daily Commuter." This group represents current residents of southeastern Wyoming that will commute each day. It is estimated that this will be approximately 20% of the construction work force. This category will not add to the population of the area.

Category number two is the "Weekly Commuter." This group represents residents within 75 to 400 miles of the project who would return home on weekends. It is estimated to be approximately 40% of the construction work force. This category will add one person to the population for each worker.

Category number three is the "Temporary Resident." This group represents workers who temporarily move their families into the area, and is estimated to be approximatley 40% of the construction work force. Each worker in this category will bring an average of 2.3 family members to the area with him, thus adding 3.3 persons to the population of the area.

Category number four is the "Plant Operating Personnel." This group represents the permanent work force that will remain in the area for the life of the plant. This category is estimated to add 2.6 persons per worker to the population.

Category number five is the "Induced Employment." This group represents the persons moving into the area due to the increased activity in the service sector of the economy. This category is also estimated to add 2.6 persons for each new job.

As an example, during 1979 when a peak of 2000 construction workers are expected to be on the job site, there will be an estimated 750 induced jobs, and 120 personnel involved in plant operation. The peak construction work force of 2000 is comprised of 400 daily commuters, 800 weekly commuters, and 800 temporary residents. This corresponds to a total increase in population of 5,710 persons during 1979.

These projections were made by using the peak number occurring during the year as a basis for the entire year. A more detailed explanation of this analysis can be found in the report entitled The Socioeconomic Impact of the Proposed Laramie River Station, Division of Business and Economic Research (DOBER), University of Wyoming, 1974.

III.K.1.b. Task Force:

In mid-1974, staff members of Basin began a series of meetings with local government officials and community leaders from throughout the Wheatland-Platte County area. From this series of meetings, a broadly-based, working "Task Force" evolved. As impact projections were developed, they were brought before this task force for discussion in an effort to arrive at a mutually compatible solution. This task force includes representation from all segments of City and County government as well as the public and private institutions in the area, and is listed below:

PLATTE COUNTY IMPACT ALLEVIATION TASK FORCE

Members

Jack Eddleman, City Council, 1357 Brice Street, Wheatland, WY 82201 (Phone: 322-2611)

John Allen, Chairman, City Planning Commission, 605 Tenth, Wheatland, WY 82201 (Phone: 322-2962)

L. A. Blankenship, Mayor, Glendo, WY 82213 (Phone: 745-4268)

DIVISION III:
Section K: (continued)

Blaine Campbell, Superintendent of Schools, Guernsey, WY 82214 (Phone: 836-2534)

Jim Dunham, City Clerk and Treasurer, 605 Tenth, Wheatland, WY 82201 (Phone: 322-2962)

Chet Frederick, County Planning Commission, Guernsey, WY 82214 (Phone: 836-2489)

Glen Gorman, School Board, Guernsey, WY 82214 (Phone: 836-2511)

Elliott Graves, Platte County Housing Authority, 909 Ninth, Wheatland WY 82201 (Phone: 322-3758)

Jill Holloway, Department of Public Assistance & Social Service, 965 Gilchrist, Wheatland, WY 82201 (Phone: 322-3790)

Ed Hunter, Superintendent of Schools, 611 Ninth, Wheatland, WY 82201 (Phone: 322-2434)

Bill Johnson, School Board, Glendo, WY 82213 (Phone: 735-4354)

Clara Lou Johnson, Platte County Extension Office, Post Office Building, Wheatland, WY 82201 (Phone: 322-3667)

Lawrence Larson, Mayor, Guernsey, WY 82214 (Phone: 836-2353)

Joyce Nolan, Laramie River Conservation Council, Wheatland, WY 82201

Charles Parsons, Jr., Mayor, 605 Tenth, Wheatland, WY 82201 (Phone: 322-2962)

Gary Payne, Mental Health Center, Court House, Wheatland, WY 82201 (Phone: 322-3190)

Don Purcell, County Clerk, Court House, Wheatland, WY 82201 (Phone: 322-2315)

Rick Sanders, P.O. Box 62, Wheatland, WY 82201 (Phone: 322-9638)

Gordon Swedberg, Ministerial Association, 1201 Ninth, Wheatland, WY 82201 (Phone: 322-9084)

David Sneesby, Director, Platte County Joint Planning Council, Court House, Wheatland, WY 82201

Bob Twiford, Chairman, County Commission, Court House, Wheatland, WY 82201 (Phone: 322-3555)

Advisors

Grover Allen, KYCN Radio, 608 Ninth Street, Wheatland, WY 82201 (Phone: 322-3883)

Russ Bovaird, Tri-State G & T Association, Box 530, Wheatland, WY 82201 (Phone: 322-3125)

DIVISION III:
Section K: (continued)

Dan Brecht, YOUTH Organization, Libbey School, Wheatland, WY 82201 (Phone: 322-2433)

Duane Bye, Basin Electric Power Cooperative, 1717 East Interstate Avenue Bismarck, ND 58501 (Phone: 701-223-0441)

Bob Dreher, Platte County Record-Times, 712 Ninth, Wheatland, WY 82201 (Phone: 322-2628)

Lloyd Ernst, Missouri Basin Power Project 1810 Capitol, Cheyenne, WY 82201 (Phone: 635-4261)

Howard Fish, 304 Park Avenue, Wheatland, WY 82201 (Phone: 322-3218)

Tom Finnerty, Southeast Wyoming RC&D, Wheatland, WY 82201 (Phone: 322-3251)

Albert Goertz, Platte County Farm Bureau, Northwest of Town, Wheatland, WY 82201 (Phone: 322-3616)

Bob Grant, President, Stockmens Association, South of Town, Wheatland, WY 82201 (Phone: 322-2923)

Ruth Halde, Services for Seniors, 602 Eighth, Wheatland, WY 82201 (Phone: 322-3424)

Jack Hilderbrand, Merchants Association, 872 Gilchrist, Wheatland, WY 82201 (Phone: 322-3530)

John Jobe, Resident Engineer, Wyoming Highway Department, 68 Sixteenth, Wheatland, WY 82201 (Phone: 322-3558)

Malcolm Johnston, State Health Department, Comprehensive Health Planning, State Office Building West, Cheyenne, WY 82001 (Phone: 777-7466)

Mary Keating, DEPAD, State Capitol, Cheyenne, WY 82201 (Phone: 777-7284)

Joe Lontin, HUD, 1961 Stout Street, Denver, CO 80202 (Phone: 303/837-4061)

Laurel Marker, Comprehensive Health Planning, Box 173, Wheatland, WY 82201 (Phone: 322-3561)

Jack Matthews, Employment Security Commission, Torrington, WY 82240 (Phone: 532-4171)

Leo Menghini, Director of Planning & Programming, Wyoming Highway Department, Box 1708, Cheyenne, WY 82001 (Phone: 777-7473)

Einer Mickelsen, Platte County Sheriff, Court House, Wheatland, WY 82201 (Phone: 322-2331)

Lewis Mossman, Manager, Kan-Neb Gas Co., 709 Ninth, Wheatland, WY 82201 (Phone: 322-3893)

Jack Nixson, Chamber of Commerce, Wheatland, WY 82201 (Phone: 322-2922)

Don Olson, Wheatland REA, P.O. Box 120, Wheatland, WY 82201 (Phone: 322-2125)

Bill Schott, Basin Electric Power Cooperative, 1717 East Interstate Avenue, Bismarck, ND 58501 (Phone: 701-223-0441)

Armand Sedgeley, Community Development Representative, HUD, 1961 Stout Street, Denver, CO 80202 (Phone: 303-837-4061)

Sol Trujillo, Representative, Mountain Bell, 706 Eleventh, Wheatland, WY 82201 (Phone: 322-2251)

Don Weldon, Chief of Police, City Hall, Wheatland, WY 82201 (Phone: 322-2141)

Platte County Commissioners

Melvin Havely, Chugwater, WY 82210 (Phone: 422-3316)

Jim Hughes, Glendo, WY 82213 (Phone: 735-4355)

George Mitchell, North of Town, Wheatland, WY 82201 (Phone: 322-2807)

III. SITING APPLICATION:

K. Impact Alleviations:

subsection 2

III.K. Impact Alleviations:

III.K.2. Scenic, Archeological and Historic Resource Investigations:

Resources addressed in the scenic, historic, archaeological and recreation program have been compiled from the following sources;

1. National Register of Historic Sites - 1972 as updated; U.S. Govt. Printing Office.
2. Wyoming Historic Sites Survey - Wyoming Recreation Commision and Historical Division.
3. Wyoming Historic Preservation Plan - Vol. II - 1973; Wyoming Recreation Commission and Historical Division.
4. Wyoming Official 1975 Highway Road Map
5. Historic Site Surveys - Environmental Report on proposed transmission line - Dr. May and Dr. Lavigne, University of Wyoming.

Personal visits were made with:

1. Wyoming Recreation Commission - Mr. Ned Frost, Chief - Historical Division.

   Mr. Mark Jungi, Historian
2. Platte County Historical Society - Ralph Garret and Ms. Goodrich.
3. Wyoming Recreation Commission - Mr. Paul Westedt, Director
   Mr. Pete McNiff, Planning Division

III.K.2.a. Methodology:

1. All resources in every county affected by plant or transmission construction were inventoried and located.
2. All resources were considered in light of (a) visual impact (or impact on the visual quality at the resource itself), (b) physical impact, and (c) increased visitation impact. If none of the three considerations were judged applicable, the resource was not addressed further.

3. If a resource was considered to be potentially impacted, either visually or physically, it was then classified as either historical, recreational, scenic, archaeological or any combination of the above. All resources determined to be potentially impacted and the method for alleviation are discussed in detail.
4. If any resource was considered questionable as to being impacted, the head of the agency having jurisdiction thereof was contacted and asked to comment as to the necessity of further investigation.
5. Perhaps the most difficult impact to judge was that of increased visitation. It is difficult to determine with any accuracy what proportion of the work force would visit historical sites and which sites they would most likely utilize. Therefore, visits were made with supervisory authorities of various resources in close proximity to the Dave Johnston Power Plant such as Ft. Fetterman and LaPrele Reservoir. Similar calls were also made to North Dakota municipalities and state agencies which may have had resource impact as a result of the Safe Guard Missile program and other similar large construction projects.

Finally, the makeup of the work force was considered. According to the socioeconomic impact report by the University of Wyoming, there will be three work force components.

Component #1 averaging approximately 20% will be southeast Wyoming residents who will commute daily.

Component #2 averaging approximately 40% would be weekly commuters who would live within 75 to 400 miles of the project.

Component #3 averaging 40% would be "Temporary Residents" and would bring 3.3 persons with them.

Thus at the peak of employment estimated at 2,000 personnel, approximately 400 would be Wyoming residents, approximately 800 would be weekly commuters, and approximately 800 would be temporary residents. The population could be expected to increase by some 3,440 plus persons.

For many of these persons, the opportunity to be adjacent to an area rich in Western heritage (such as Ft. Laramie, Register Cliff, etc.) will be a welcome experience. At this point, attitudes come into play relative to historic sites, etc., in that the state parks and national parks encourage visitations. Can one say that visitations then are detrimental in this respect? It is also worthy of note that some officials feel that increased visitation levels have the effect of reducing vandalism at historic sites because would-be vandals are less likely to be alone and undisturbed at a site.

It has been presumed that the work force will be attracted to the same sites that are visited by present residents. Consequently the most frequently visited sites in the Wheatland vicinity are the sites judged most likely to experience visitation.

Recreation areas such as reservoirs, etc., will definitely be impacted and will be addressed in the body of this section.

III.K.2.b. Scenic Resources:

Many of the Scenic resources of this area are closely associated with historical interest. This being the case, only those sites of a more scenic nature will be discussed in this section. Sites that fall primarily into the historic section will be discussed in III.K.3, Archaeological and Historical Resources.

III.K.2.c. Inventory of Scenic Resources:

Register Cliff: Not only a scenic resource, but also of significant historic interest, Register Cliff is a soft, chalky, limestone and sand feature rising approximately 100 feet above the North Platte River Valley. Fur trappers and immigrants on the Oregon Trail carved their initials into this rock. Platte County, Section 7, T26N. R65W. (National Register, State-Owned Property, Wyoming's Historic Preservation Plan, Wyoming Historic Sites Survey.)

Oregon Trail Ruts: Along the North Platte River are wheel tracks cut deep into sandstone ridges by the travel of thousands of immigrants along the Oregon Trail. Platte County, Section 3, T26N, R66W. (National Historic Landmark, State-Owned Property, Wyoming Historic Preservation Plan, Wyoming Historic Sites Survey.)

Medicine Bow National Forest, Laramie Peak and the Laramie Range: Laramie Peak and the Laramie Range were named for a Jacques La Ramie, an early-day trapper. The peak is visible for 100 miles in any direction and remains a dominating landmark for modern travelers. On the Oregon Trail, Laramie Peak symbolized entry into the Rocky Mountains. The Medicine Bow National Forest and Laramie Range are also recreational areas. There are no plans to include Laramie Range and Laramie Peak in federal or State Historic Registers. Total recorded attendance was 49,300 visitor days in 1973. Laramie Peak, Albany County, Townships 25 and 27 North, Ranges 71 and 72 West. (Wyoming's Historic Preservation Plan.)

Ayres Natural Bridge and State Park: The Ayres Natural Bridge (located 10 miles west of Douglas, in Converse County) is the result of water erosion of LaPrele Creek against a natural sandstone barrier. The bridge is 20 feet high and has a 90-foot span at the base. This Bridge was one mile south of the route of the Oregon Trail and was a site known to immigrants. The setting of the bridge is in a natural amphitheater. The area provides a good spot for picnicking. Converse County, Section 16 and 21, T32N, R73W. (State-Owned Property - Wyoming Historic Sites Survey.)

The Gangplank: This scenic geomorphic feature in the Cheyenne vicinity in Laramie County is a unique area where the formations of the tertiary geologic period have escaped disturbance by subsequent geologic activity. In this area, erosional deposits flow undisturbed from their origin in the Rocky Mountain peneplain onto the Great Plains, forming an unbroken gentle slope from the mountains to the plain. A marker is on I-80 west of Cheyenne (Cheyenne vicinity west to the mountains - Wyoming Historic Sites Survey.)

III.K.2.d. Projected Conditions Without Alleviation Plans:

The scenic sites discussed here are expected to remain as they presently exist after the project is constructed. The Register Cliff and Oregon Trail Ruts Sites are screened by topography from any part of the project. The only impact the project might have on these areas is a small increase in the number of visitations each year. The number of visitors directly concerned with the project is not projectable.

Since there will not be any significant impact on these sites, no alleviation measures are necessary.

The Medicine Bow National Forest, Laramie Peak and the Laramie Range are no closer than fifteen miles from the closest part of the project. Except for a possible small increase in the number of visitations each year and the possibility of parts of the project being between a distant viewer and his view of the peak or range, no impact is expected. The sites will remain as they are today.

The Ayres Natural Bridge State Park is approximately one to one and one-half miles from the proposed Laramie River to Dave Johnston Tranmsission Line. It will be possible to see the line from portions of the state park but not from the bridge itself. This visual impact will be alleviated by building the proposed transmission line parallel with and adjacent to two existing transmission lines. Thus, the additional intrusion will be minimal. This state park has not been extensively utilized in the past.

The transmission line ot the USBR substation at Ault will cross the Gangplank from north to south. Because of the flat, gently sloping nature of the area, it will be virtually impossible to conceal the line. The line will, however, be at right angles to the major transportation routes across the Gangplank. This will mean that the visual effect experienced by a viewer because of the lines will be limited in duration.

An important point of increased visitations to scenic resources iis the increased sales of items relating to same, such as souvenirs, food items, books and cards, toys, etc. This will cause an increase in available funds for these resources, thus aiding another tertiary portion of the economy.

III. SITING APPLICATION:

K. Impact Alleviations:

subsection 3

III.K. Impact Alleviations:

III.K.3 Historic Sites in Wyoming:

III.K.3.a. Inventory of Historic Sites:

Cold Springs Pony Express Station: Cold Springs was once a cluster of cold springs mentioned in diaries of immigrants along the Oregon Trail. The springs were a popular camping ground on the trail to California, Utah, and other points in the west. Later the springs were also occupied by a stage relay station for the Overland Stage route and later became a pony express relay station. Goshen County, Marker is in Section 15, T24N, R61W. (Wyomings' Historic Preservation Plan, Wyoming Historic Sites Survey)

Texas Cattle Monument: This is a monument to pioneer cattlemen who passed along the Texas Trail. Not far away from the monument can be seen ruts of the Oregon Trail, making this area a sort of crossroads in the history of overland migration. Goshen County, Section 20, T25N, R62W. There is another monument to the Texas Trail on the north side of the Highway 0880 opposite LaGrange Community Church. The monument commemorates the pioneer stockmen and cowboys who drove their Texas herds across the spot into Central and Northern Wyoming, Goshen County, Section 2, T19N, R61W. (State-Owned Property, Wyoming's Historic Preservation Plan, Wyoming Historic Sites Survey)

Bordeaux Pony Express Station, Grattan Massacre: One of the road ranches or trading posts established by Bordeaux was along the Oregon Trail 9 miles below Fort Laramie at what is known as Bordeaux Bend. James Bordeaux was associated with Fort Laramie almost from its initial establishment. Bordeaux was with John C. Freemont and Francis Parkman when those men made visits to the Fort in the 1840's.

The Bordeaux Station is also famous for the Grattan Massacre that occurred near the site of the station. In this battle of August 19, 1854, 29 soldiers with their officer, Bvt. Second Lieutenant L. Grattan, were killed by Sioux Indians under Chiefs Little Thunder and Sitting Bear. A granite shaft commemorates the battle approximately 1 mile southeast of the site. Goshen County, Section 14, T25N, R63W. (Wyoming's Historic Preservation Plan, Wyoming Historic Sites Survey)

Old Fort Bernard: This was a short-lived, relatively unimportant trading post that was noted in diaries along the Oregon Trail in 1846. At that time, it was owned and operated by two brothers named Richard who were competing with the American Fur Company. After burning in 1846, it was evidently rebuilt by E. A. Tompkins and was still noticed as of 1850. Goshen County, approximately 8 miles southeast of Fort Laramie on the North Platte River. (Wyoming's Historic Preservation Plan)

Fort Laramie: Fort Laramie, or Fort John, or Fort Williams, as it was called during its lifetime, presently is 3 miles southwest of the town of Fort Laramie on a 214-acre site near the confluence of the North Platte and Laramie Rivers. The first fort built was called Fort Williams and was used by fur trappers and the Indians in the 1830's. Later Fort Laramie became an important U.S. Military and government outpost. In the mid 19th Century, it was an outpost of civilization for immigrants who traveled over the Oregon Trail as well as a station for the Overland Stage and Pony Express. Today, it is a focal point for tourists who visit the restored military post. This is an important site connected with many facets of western American history. Goshen County, Sections 20, 21, 28, 29, T26N, R64W. (National Historic Site, National Park Service, National Register, Wyoming's Historic Preservation Plan, Wyoming Historic Sites Survey)

Fort Platte: Fort Platte was built in late 1840 or early 1841 near Fort Laramie, or Fort Williams as it was then known. It served as a rival trading post along the Oregon Trail. The fort was built of adobe by Lancaster P. Lupton on the banks of the North Platte River to the east of Fort Williams. Lupton was the first of several owners of Fort Platte. It was later operated by at least two independent trading companies. In 1845, Fort Platte was abandoned; however, the trade at Fort Laramie remained brisk. Today a monument located 50 yards south of the site of the former Fort Platte commemorates the structure. Goshen County, Section 21, T26N, R64W. (Wyoming's Historic Preservation Plan, Wyoming Historic Sites Survey)

Mexican Hill: Mexican Hill was the location of a dugout where a Mexican once lived. This was one of the earliest homes in the area and was a landmark for travelers to California. Platte County, Section 9, T26N, R65W.

Register Cliff: Register Cliff has previously been discussed in the section on Scenic Resources, Section III.K.2. (National Register, State-Owned Property, Wyoming's Historic Preservation Plan, Wyoming Historic Sites Survey)

Fairbank Smelter: Fairbank Smelter was situated near Guernsey and was a busy smelter in the 1880's. Wagon trains drawn by mules brought coke from a railroad at Cheyenne 110 miles away. Platte County, Section 1, T26N, R65W.

Lucindy Rollins' Grave: Approximately one-half mile west of the North Platte River Bridge in Guernsey, a concrete monument is located which is dedicated to the pioneer women of Wyoming. This also marks the gravesite of Lucindy Rollins. (Wyoming's Historic Preservation Plan, Wyoming Historic Sites Survey)

Oregon Trail Ruts: Along the North Platte River on sandstone ridges, wheel tracks were cut into the rocks by the thousands of immigrants driving along the Oregon Trail, Platte County, Section 3, T26N, R66W. (National Historic Landmark, State-Owned Property, Wyoming's Historic Preservation Plan, Wyoming Historic Site Survey)

Sandpoint Pony Express Station: Sandpoint was a Pony Express station in the late 1850's to early 1860's located near the town of Guernsey.

Warm Springs: Warm Springs is a site often mentioned in diaries of early immigrants on the Oregon Trail. At Fort Laramie, the Oregon Trail divided into two routes, one of them was a ridge road and the other the river road. The two roads ran westerly and joined together again at Warm Springs. There are no plans to include this site in Federal or State Registers. No markers or remnants exist. Platte County, Section 2, T26N, R66W.

The DeBillier-Teschmacher Ranch: Both men were prominent cattlemen in the North Platte River Valley. They came into the state in about 1879. In 1880 they formed the Teshmacher and DeBillier Livestock Company. Teshmacher spent many years in Cheyenne as a member of the territory legislature and for several years was president of the Cheyenne Club. Both men left Wyoming after participating in the notorious "Johnson

County Invasion." The ranch is presently in operation and private ownership. It has not been determined whether any of the original buildings remain or how extensive the ranch is. There are no plans to list the site in Federal or State Historic Registers. Platte, County, Section 17, T25N, R67W.

Jacques LaRamie Monument: The LaRamie Monument is located southwest of Uva on the banks of the Laramie River near the crossing of U.S. Highway 87. At this point, a granite monument has been placed in memory of Jacques LaRamie, a trapper who came to this part of Wyoming in 1815. He was probably killed by Indians about 1820. Several rivers, the fort, a city and a county were named in his honor. (Wyoming's Historic Site Survey)

Bordeaux Station/Hutton Ranch: Bordeaux Station was named after James Bordeaux who, in 1867, built a road ranch and trading post at the junction of Hutton Creek and Chugwater Creek along the Cheyenne Black Hills Road. In 1870, John Hutton bought the trading post from Bordeaux and the post became known as Hutton's Ranch. A small military camp was also once located at the site.

Eagle's Nest Stage Station: Eagle's Nest Station was on the Cheyenne Black Hills Stage road. This was a stage station and stop-over point for travelers. Eagle's Nest derived its name from a 50-foot-high sandstone cliff which bordered the trail. There are no remains and the site is visited infrequently. There are no plans to list the site in Federal or State Historic Registers. Platte County, Section 14, T24N, R66W.

Coffee Ranch: Charlie Coffee was one of the first men to bring longhorn cattle to Wyoming from Texas. Coffee's ranch was on Box Elder Creek 12 miles west of Yoder. There are no plans to include this site in Federal or State Historic Registers. Goshen County, Section 30, T29N, R62W.

Homsley Grave: The grave of Mary Elizabeth Oden Homsley is commemorated by a cement shaft containing a plaque. Mary Homsley was born near Lexington, Kentucky. In April of 1852, Mary, her husband, Ben, and two girls started for Oregon country in a covered wagon. While crossing the North Platte River, the wagon which carried Mary, who was

sick with measles, overturned. Mary became more ill that evening and died the next day. Her husband, Ben, fixed her age and date of death on a crude sandstone marker. Goshen County, Section 20, T26N, R64W. (Wyoming's Historic Preservation Plan, Wyoming Historic Sites Survey)

Sturgis and Lane's Box Elder Ranch: Thomas Sturgis and Gorham Goodell established a ranch in Wyoming's Goshen Hole country in 1873. At a later date, they were joined by William C. Lane and the firm became Sturgis, Goodell and Lane. Sturgis was a prominent figure in the foundation of the Wyoming Stock Growers Association. Today this site is not a tourist attraction as only a dugout remains of the Box Elder Ranch Headquarters (Goshen County, Section 19, T22N, R64W). There are no plans to list this site in Federal or State Historic Registers.

Union Pacific Depot, Torrington: This is a typical rural depot built by the Union Pacific Railroad as a center for transportation in the Torrington area. The buildings will be donated by the railroad company to the City of Torrington, which will utilize it as a museum. (Wyoming's Historic Preservation Plan)

Sites Within the City of Cheyenne: There are numerous sites of historic interest located in the City of Cheyenne. Information regarding these sites can be found in Wyoming's Historic Preservation Plan, Volume 2. (Wyoming's Historic Preservation Plan, Wyoming Historic Sites Survey)

A. H. Unthank Grave: The grave contains remains of a pioneer who traveled the Oregon Trail. A native sandstone headstone marker is enclosed by a pipe-rail fence. A. H. Unthank was originally from Wayne County, Indiana and died July 9, 1840. Converse County, Section 18, T33N, R75W. (Wyoming's Historic Preservation Plan, Wyoming Historic Sites Survey)

LaPrele Station: LaPrele Station was a stage station, Pony Express Station and Transcontinental Telegraph Station, and is located 9 miles west of Douglas. Nearby is a grave and ruins of a well and cellar. All that remains of the station are ruined chimneys of fireplaces of four log cabins where the caretakers lived. Near here also ruts of the Oregon Trail are still visible. The site is not frequently visited. There are no plans to include this site in Federal or State Historic Registers. Converse County, Section 10, T32N, R73W.

Fort Fetterman: Fort Fetterman was established as a military post at the crossroads for the Bozeman Trail and earlier Overland Trails, in July 1867. In 1868, Forts Reno, Phil Curney and C. F. Smith were abandoned and Fort Fetterman became the primary fort in the county. After 1886 most fort buildings were sold and dismantled and moved to other locations, but the site continued as a settlement, becoming part of a ranching operation. Two remaining original fort buildings have been restored and further improvements are presently being made for the benefit of the visitors to the site, Converse County, Section 15, T33N, R72W. (National Register, State-Owned Property, Wyoming's Historic Preservation Plan, Wyoming Historic Sites Survey)

Three-Mile Hog Ranch or Fort Laramie Hog Ranch: Fort Laramie Hog Ranch was established in 1874 by E. Coffey and A. Cuny. This ranch consisted of a trading post, saloon and hotel. The ranch, a portion of which remains, housed saloons, gambling dens, and cubicles or cribs for the prostitutes or hogs as they were called. With the abandonment of Fort Laramie in 1890 the demand for the services provided by the hog ranch subsided. Goshen County, Section 26, T26N, R65W. (National Park Service, National Register, Wyoming's Historic Preservation Plan)

Swan Land and Cattle Company: The Swan Land and Cattle Company was an extremely large cattle outfit which was organized in 1883 by a company based in Scotland. Today, the main ranch headquarters at Chugwater include a number of structures, such as a ranch house, barn, several outbuildings and a store for the cowboys. The cattle company went into bankruptcy in 1887 and was reorganized by John Clay. Platte County, Chugwater. (National Historic Landmark, Wyoming's Historic Preservation Plan)

Oregon Trail Marker (near Wendover): Throughout the 1800's the Oregon Trail was a key factor in the settlement and development of the northwest. Numerous markers and monuments mark the progress of the trail through Wyoming. This particular marker notes the location at which the railroad crossed the trail. The marker is 1½ miles southwest of Wendover in Platte County. The marker is included in the Wyoming Historic Sites Survey along with numerous other markers.

Oregon Trail Monument and LaBonte Stage Station: The LaBonte Stage and Pony Express Station was named for a trapper who appeared in the North Platte River area to hunt in the late 1820's. By 1866 all that remained were ruins of Fort LaBonte. Diaries of immigrants who used the Oregon Trail record that LaBonte Creek was, with its beautiful trees and waters, a welcome relief to those who used the dry trail between Horseshoe and LaBonte. Nearby, to the northwest, is a monument to the travelers and immigrants along the Oregon Trail. The Stage Station Site is not listed, or planned to be listed, on Federal or State Historic Registers. Converse County, 7 miles south of Douglas in Section 4, T30N, R71W. The monument is listed however and is located in Section 25, T31N, R71W. (Wyoming's Historic Preservation Plan, Wyoming Historic Sites Survey).

Camp Marshall: Camp Marshall was built in 1862 to provide military protection for the LaBonte Stage Station. No remnants remain and the site is not planned for inclusion with Federal or State Historic Registers.

Little Box Elder Creek Monument: In 1864, three men named Sharp, Franklin, and Taylor, and one unknown man were killed by Indians where the Oregon Trail crossed Little Box Elder Creek. They were buried 1½ miles southwest of the point near the grave of Mary Kelley who was killed on July 13, 1864. Since U.S. Route 87 is abandoned and obliterated, the monument is down and presently in storage. There are no plans to include the site in Federal or State Historic Registers.

Wyoming Hereford Ranch: Located 6 miles east of Cheyenne, the Wyoming Hereford Ranch is one of the oldest and largest pure-breed cattle-breeding ranches in the United States. The main ranch headquarters is approximately 100 years old and consists of 11 buildings and corrals and herd bull lots. The site is privately owned and not visited much by tourists. The range covers 60,000 acres or range and irrigated land. There are no plans to list the site in Federal and State Historic Registers. Laramie County, Section 6, T13N, R65W.

Pole Creek Ranch: Pole Creek Ranch (approximately 8 miles north of Cheyenne) marks the site of the first stop on the Cheyenne - Black Hills Stage Route. The ranch is presently being operated as a sheep ranch and is under private ownership. It is not as yet determined whether any of the original buildings exist or how extensive the ranch is. The site is included in the Wyoming Historic Sites Survey.

Barrell Hoops Site: The Barrell Hoops Site is located approximately 9 miles southwest of Orin in Platte County. This site is the location where a wagon train was burned by indians along the Oregon Trail. The site is listed in the Wyoming Historic Sites Survey and consists of a 1x1x1½ foot marker.

Elk Horn Station: This site was once a transcontinental telegraph station. A granite marker is located 8 miles west of Glendo in Platte County. The site is listed in the Wyoming Historic Sites Survey.

Other Historic Sites in the Counties Involved With the Project Which Have Not Been Discussed in the Preceding Paragraphs: The sites which were discussed are those sites of historical significance which are close enough to the project site that visitations are possible. A thorough listing of all sites relevant to the counties surrounding the project may be found in Wyoming's Historic Preservation Plan, Volume 2. Further, a discussion of the sites relative to the project can be found in the Report on the Environmental Analysis for the Laramie River Station (Burns & McDonnell, 1975), the Report on the Environmental Analysis for the Electric Transmission Facilities (Burns & McDonnell, 1975) and the Environmental Report on the Proposed Transmission Line (Dr. M. May and Dr. R. Lavigne, 1974).

III.K.3.b. Effects on Historic Resources of Wyoming:

The following will be a discussion of the project's impact on each of the sites discussed and of the mitigating measures taken to reduce the project impacts.

Cold Springs Pony Express Station: Cold Springs Pony Express Station located near Lingle and the commemorative marker located near Torrington in Goshen County are approximately 21 miles away from the nearest portion of the project. That portion of the project which approaches nearest to this site are the transmission lines going from

the Laramie River Station toward Stegall, Nebraska. No impact is expected on this site from the project; therefore, no mitigating measures are necessary.

Texas Cattle Monument: This historic marker is over 18 miles away from the nearest portion of the project, the transmission lines that go to the southeast out of the plant site. No impact is expected on this site and no mitigating measures are necessary.

Bordeaux Pony Express Station - Grattan Massacre: This site is sufficiently far removed, some 17 or 18 miles, from the nearest approach of the project. No impact is anticipated and no mitigating measures are necessary.

Old Fort Bernard: This site is at least 15 miles away from the nearest portion of the project and no part of the project will be visible from this site. No impact is expected for this site and no mitigating measures are necessary.

Fort Laramie: The impact of the proposed project on historic sites has been considered in all phases of the project planning. In particular, attention was given to the impact on the Fort Laramie National Historic Site because of the site's importance in western migration and the history of Wyoming. Potential impacts to the Fort Laramie Historic Site that were investigated include visual impacts, the possible effect of trace amounts of pollutants upon the site and upon the documents stored at the site, and the possible effect of changing of the flow rates of the Laramie River that runs by the Fort Laramie Historic Site. The Laramie River will remain a constant flowing stream. The Missouri Basin Power Project has only a portion of the water rights of the river and must maintain a minimum total flow for downstream water usage. The total flow in the river will always be greater than the natural occurring minimum flow rate. The effects of the project will, therefore, be to level out the flow rate in the Laramie River and make it more constant.

The project will not be visible from the historic site's grounds in any way. The power plant stack will not be visible because of intervening terrain. Emissions of particulate matter, nitrogen dioxide and sulfur dioxide will be limited by compliance with State of

Wyoming and Federal Standards. (See Section III.D.4.) Opacity of the power plant plume will comply with the appropriate standards. Consequently, the visual impact of the plume on the Fort Laramie Site which is 18 miles away will not be of a significant nature. Transmission lines will not be visible from the National Historic Site.

Ground level pollutant concentrations resulting from plant emissions will be substantially below state and national secondary ambient air standards. These secondary air quality standards were designed to protect natural and man-made structures and materials from degradation. Background levels of sulfur dioxide in the area are typically very low. These background levels in combination with the expected plant contributions to ground level pollutant concentrations will remain very low. Therefore, no harm is expected to either the buildings or the documents at the Fort Laramie Historic Site.

One possible favorable effect to the site will be an increase in the number of visitor days at the Fort Laramie Site. The magnitude of this increase is expected to be small compared to the number of visitors the fort typically receives yearly.

Fort Platte: Fort Platte is located just across the Laramie River from the Fort Laramie Site and very little remains of the original structure. Mitigating measures on this site would be the same as for the Fort Laramie Site. Mitigation is accomplished by proper design of environmental systems.

Mexican Hill: It is not expected that the project will have any impact upon this site and, therefore, no mitigating measures were necessary.

Register Cliff: Register Cliff has previously been discussed in Scenic Resources, Section III.K.2.

Fairbank Smelter: The Fairbank Smelter is located just north of the Register Cliff area and impacts upon this site would be similar to those at Register Cliff and, since no impact is expected, no mitigating measures were necessary.

Lucindy Rollins Grave: This site lies along the Oregon Trail near the town of Guernsey and near Camp Guernsey. Intervening topography screens this historic site from view of the plant site and from view of

transmission lines which pass at least six or seven miles to the west of the site. No impact is expected on this site and no mitigating measures were considered necessary.

Oregon Trail Ruts: The Oregon Trail Ruts lie close to the Lucindy Rollins grave and impact and mitigating considerations would be the same for this site as for the Lucindy Rollins grave except for a small increase in the number of visitations each year.

Sandpoint Pony Express Station: This site is located to the west in the hills just outside of the Camp Guernsey Training area. It is six miles to the east of the Dave Johnston transmission line and approximately nine miles to the northeast from the project site. It may be possible to see portions of the stack or the plume from this historic site, but since little remains of the station and visitation is low, the impact of the project on this site is not expected to be significant. No specific mitigating measures were considered necessary for this site.

Warm Springs: The Laramie River-Dave Johnston Corridor passes 1½ miles from this site. An existing line lies between Warm Springs and the proposed line. Visual impact will be minimal. No mitigating measures are necessary.

DeBillier-Teshmacher Ranch: This ranch lies within one mile of the plant site boundaries and within two miles of the area where the plant will be constructed. It is at a higher elevation and is located near the town of Uva. The project would be expected to be visible from this site, including the Dave Johnston transmission line which would pass approximately 1½ miles to the east of the site. The plant itself is expected to be colored in such a manner to be as unobtrusive as possible upon the landscape. The Laramie River Station - Dave Johnston transmission line will be constructed on wood pole structures which appear the least visually apparent in this plains area of any type of structures. Visual impact will be mitigated in this manner.

Jacques LaRamie Monument: This site is located near Highway U.S. 87 two miles from the project boundaries and some three miles from the areas of construction. No impact is anticipated and no mitigating measures are necessary.

Bordeaux Station/Hutton Ranch: The Bordeaux Station is approximately 12 miles to the south of the proposed project site and approximately 6 miles from the location of the nearest transmission facilities. The plant itself may be visible from the site. Visitation of this site is of a limited nature. Appropriate coloration of the plant will mitigate visual impact on this site.

Eagle's Nest Stage Station: The site of this stage station is approximately 8 miles southeast of the plant site and adjacent to one of the transmission corridors. Physical constraints limit the distance that the transmission line can be placed from the site. Should any artifacts be found during construction of the like, appropriate authorities will be consulted. No mitigating measures are considered necessary.

Union Pacific Depot in Torrington: This site is far removed from the area of the project and there should be no impact whatsoever upon this site.

Coffee Ranch: The Coffee Ranch is located more than 21 miles from the plant site itself. It is, however, within 2½ miles of one of the corridors for the transmission line. It would be possible to see the transmission lines in the distance from this site; however, it is not expected that visitor activity will be great. The actual line route within the corridor will be as far from this site as other contraints will allow. No additional mitigating measures are considered necessary.

Homsley Grave: Homsley Grave is located in the area of the Fort Laramie National Monument and the discussion pertaining to the Fort Laramie site area pertains to this site as well.

Sturgis and Lane's Box Elder Ranch: This site is within the proposed corridor for one of the transmission lines. Visual impact will be lessened to the extent possible by locating the line as far from the site as other constraints allow. All care will be taken to assure that construction activities do not in any way damage the site. If any artifacts are found in this vicinity during the archeological survey of the transmission line route, appropriate authorities will be contacted for their recommendations. No mitigating measures are considered necessary.

Sites in Cheyenne: The closest approach of any part of the project to the sites in Cheyenne are the transmission lines, one of which is routed approximately 8 miles to the east and the other approximately 8 miles to the west. All sites in Cheyenne are located well within the city limits and no impact, neither visual or other, is expected on any of the sites located in the City of Cheyenne.

A. H. Unthank Grave: The A. H. Unthank grave is located in close proximity to the Dave Johnston Generating Station and the associated transmission lines that enter and exit from the station. The addition of another transmission line into the Dave Johnston Generating Station will have no significant impact upon the site.

LaPrele Station: LaPrele Station is located within a half mile of the proposed Laramie River-Dave Johnston transmission corridor. At this point the line will parallel an existing line. The remains of the station are not frequently visited and visual impact to tourists should not be significant.

Fort Fetterman: Fort Fetterman is 6½ miles from the proposed Laramie River to Dave Johnston corridor and, because of intervening terrain, the transmission line will not be visible from Fort Fetterman and no impact is expected upon this site.

Three-Mile Hog Ranch: The Fort Laramie or Three-Mile Hog Ranch is located approximately 20 miles from the closest part of the project and the impact should be similar to that described for Fort Laramie.

Swan Land and Cattle Company: The Swan Land and Cattle Company headquarters buildings are located on the east side of the City of Chugwater. The closest approach of any part of the project to the site are the transmission lines from the Laramie River Station to Ault and the transmission line from Laramie River Station to Archer. The Ault transmission line passes approximately 9 miles to the west, while the Archer transmission line will pass no closer than 7 miles to the east. The Ault transmission line to the west will be screened from this site by the City of Chugwater itself and intervening topography. Similarly to the east, the Archer transmission line will be effectively screened from this site by the intervening topography east of Chugwater. No

impact is expected on this historic site.

Oregon Trail Marker (near Wendover): The Laramie River Station-to-Dave Johnston line generally parallels the Oregon Trail to the south and west at distances sufficient to avoid any visual impact. However, the transmission corridor comes very close to the trail at the Wendover marker.

The transmission line will be located within the corridor at as great a distance from the marker as other constraints will allow. If any artifacts or sites related to the trail are found during archaeological survey of the transmission line, appropriate state authorities will be consulted well before construction is begun on the line.

Oregon Trail Monument, LaBonte Stage Station and Camp Marshall: Stage Station, Camp Marshall and Oregon Trail Monument lie within 1 mile of the edge of the proposed Laramie River to Dave Johnston transmission line. Impact of the project transmission lines on these sites should be relatively slight. The final routing of the transmission line within the corridor will be at as great a distance from the site as other constraints will allow. No mitigating measures are considered necessary.

Little Box Elder Creek Monument: The Little Box Elder Creek Monument lies within approximately one-half mile of the proposed Laramie River-Dave Johnston transmission line and approximately five miles to the southeast of the Dave Johnston plant. At this point, the proposed line will be parallel with two existing 115-kV lines presently going into Dave Johnston. Therefore, should the monument be reerected, the additional impact of this third line should be minimal upon the site.

Wyoming Hereford Ranch: The Wyoming Hereford Ranch is located approximately 2 miles southwest of the transmission line route to Archer Substation. There are numerous transmission lines presently existing going in and out of the Archer Substation. The addition of this line will have no noticeable additional visual impact upon the existing buildings of the Wyoming Hereford Ranch.

Pole Creek Ranch: A transmission corridor will pass about two miles from this site. An existing line lies between the site and the proposed line, consequently additional visual impact should be minimal. No specific mitigating measures were considered necessary for this site.

Barrell Hoops Site: The corridor of the Laramie River-Dave Johnston line passes approximately one mile from this site. The line route will be located within the corridor at as great a distance as other constraints will allow. No additional mitigating measures are considered necessary.

Elk Horn Station: The corridor of the Laramie River-Dave Johnston transmission line will pass approximately one mile from this site. The actual line route will be located within the corridor as far from the site as other constraints will allow. No further mitigating measures are considered necessary.

Other Historic Sites: Other historic sites located within the counties involved in the project are not expected to be impacted by any parts of this project, therefore, these other sites were not discussed.

III.K.3.c. Archaeologic Resources of Wyoming:

Prehistoric Indian Village: Evidence of prehistoric man has been found near Guernsey close to the Platte River. Extensive shop sites provide evidence that primitive man had fashioned tools in this area prior to the immigration of early American settlers.

Glenrock Buffalo Jump: Buffalo jumps represent a pattern of food procurement used by prehistoric man for long periods of time in the Northwest Plains. The Glenrock Buffalo Jump has three main features; (1) a large plateau with excellent grass and water extending to the edge of a 40-foot bluff, which serves as the jump-off point, (2) several dry washes below the bluff extending down a steep talus slope, and (3) large quantities of bones and other remains in the soil of the talus slope. Converse County, Section 11, T33N, R76W, (National Register).

Spanish Diggings: The Spanish Diggings is a large area 40 miles long by 10 miles wide whose inclusive boundaries are: north, U.S. Highway 20 between Orin and Lusk; east U.S. Highway 85; south, U.S. Highway 26 and the North Platte River; west, the North Platte River. Parts of 4 counties are contained in this area, Converse, Goshen, Niobrara, and Platte. The term "Spanish Diggings" is probably a misnomer since no records have been discovered of Spaniards having entered this particular area. Spanish Diggings contains quarries which are recognized as having been worked by aboriginal Americans. The site is not listed, or planned to be listed in Federal or State Historic Registers.

III.K.3.d. Effects on Archaeological Sites in Wyoming:

Prehistoric Indian Village: The remains of this village are located near the town of Guernsey and are sufficiently removed from the project that no impacts or effects on the site are expected.

Glenrock Buffalo Jump: Glenrock Buffalo Jump is located to the north and west of the Dave Johnston Generating Station, the terminating point of one of the transmission lines of the project. The jump is approximately 2 miles away from the generating station and on the opposite side from where the transmission lines for this project will come into the station. No impact is expected on this site and no alleviation measures are necessary.

Spanish Diggings: It is difficult to assess exactly what effect the Project might have on this site. While the transmission line does not pass into the presently defined boundaries of the diggings, it is not impossible that related sites might be discovered along the transmission route. An archeological survey will be conducted along the transmission line route once the route is located within the corridor. Any sites discovered in either of these surveys will be dealt with in accordance with recommendations by appropriate authorities.

Project Area: An archaeological survey of the proposed Grayrocks Reservoir was conducted during 1975. The highest site concentration was on top of the hills to the south of the pool area in Section 7, T25N, R65W. A collection of artifacts and flakes was taken from this area and no further work is planned since all cultural material appears to be on the surface with no deposition.

Other small sites were found in the reservoir area which are not recommended for further work. Three sites, however, will require further testing. The first of these is an extensive occupation area on either side of the stream bed in Sections 23 and 24, T25N, R66W. Test excavations are recommended for this site. The State Archaeologist will determine the significance of this site and make further recommendations for possible preservation or salvage. The other two sites that need further work are a human burial in Section 13, T25N, R66W, and the stone circles reported by Metcalf in the proposed plant site area.

Arrangements have been made to salvage these sites early in 1976. For all other reservoir areas, archaeological clearance is recommended with the stipulation that if any archaeological materials are uncovered during the construction of the project that it be reported to the State Archaeological Office as soon as possible.

The archaeological survey of the transmission lines will be conducted once the final routes within the corridors have been selected. At the present time, the corridors occupy several thousand square miles of territory and surveying of this large land area is not practical. Once the final routes within the corridors have been selected, a detailed survey will be made of the routes themselves. Any sites found that could be affected by construction of the transmission lines will be avoided, either by altering the routes slightly or by spanning the site. There will be no impact on any of the sites found other than the visual intrusion of the transmission lines.

III. SITING APPLICATION:

K. Impact Alleviations:

subsection 4

III.K.4. Study of Area Economy:

III.K.4.a. Economic Bases and Trends:

Argriculture is the primary industry in Platte County, employing 24% of the work force in 1970. Employment in this sector has decreased since 1960 when 29% were employed by agriculture. This decline in agricultural employment has been compensated for by an increase in manufacturing and associated residentiary activities including retail trade, professional and retail services. Tables 1-3 and 1-4 in The Socioeconomic Impact of the Laramie River Station, University of Wyoming, Division of Business and Economic Research, (DOBER) 1975, give employment by industry and occupation in Platte County for 1970. Farmers, farm managers and farm laborers make up the largest work force component, followed by service workers and clerical personnel. The 1970 Census showed a 5% unemployment rate for Platte County. Early in 1974, Platte County had a 3.5% unemployment rate and currently the labor market is tight.

The median family income for Wheatland and Platte County are both below the median family income for the State of Wyoming and the United States as a whole. The median values given below are estimates from the Division of Business and Economic Research (DOBER), University of Wyoming.

Estimated Median Family Incomes for 1974	
Wheatland	$ 8,520.21
Platte County	$ 8,276.87
Wyoming	$ 9,922.66
United States	$11,116.00

Tables 21 and 22 show income distribution for Wheatland and Platte County for 1974.

Platte County's 113 retail outlets totaled approximately 14 million dollars in retail trade during 1972, or an average of $125,000 per establishment. This figure was approximately 30 percent lower than the comparable statewide average of $178,000 per retail establishment. Fifty-five (55) percent or approximately one-half of the county's retail establishments are located in Wheatland.

Table 21

DISTRIBUTION OF ESTIMATED FAMILY INCOME FOR PLATTE COUNTY 1974*

Income Range	Number of Families	Percent of County Total	Percent of Wyoming Total
Under $2,000	127	7.07	4.30
$ 2,000 - 3,999	210	11.71	8.44
4,000 - 5,999	255	14.26	10.75
6,000 - 7,999	270	15.09	13.12
8,000 - 9,999	249	13.90	14.10
10,000 - 14,999	485	27.08	31.04
15,000 - 24,999	166	9.29	14.45
$25,000+	29	1.60	3.80
TOTAL	1,797	100.00	100.00
MEDIAN	$8,276.87		$9,922.66

**Division of Business and Economic Research estimates.*

Table 22

DISTRIBUTION OF ESTIMATED FAMILY INCOME FOR WHEATLAND 1974*

Income Range	Number of Families	Percent of County Total	Percent of Wyoming Total
Under $2,000	56	8.15	4.30
$ 2,000 - 3,999	86	12.52	8.44
4,000 - 5,999	87	12.66	10.75
6,000 - 7,999	85	12.37	13.12
8,000 - 9,999	116	16.89	14.10
10,000 - 14,999	179	26.06	31.04
15,000 - 24,999	68	9.90	14.45
$25,000+	10	1.46	3.80
TOTAL	687	100.00	100.00
MEDIAN	$8,520.21		$9,922.66

**Division of Business and Economic Research estimates.*

In 1972, 82 service establishments in Platte County did an average business of $24,300 per year, which was approximately 42 percent below the statewide average of $41,600 per year. Forty-seven (47) of the 82 service establishments are located in Wheatland. Platte County's retail and service trade are given in more detail in Tables 3-2 and 3-4 of DOBER.

III.K.4.b. Economic Projections:

A study was commissioned to assess the economic situation in Platte County. It was entitled Platte County, Wyoming: General Economic Feasibility Study and concluded that, "The economy of Platte County, Wyoming is and has been in a serious decline for quite a few years. This decline is not only real, but very serious relative to the general economic trends of Wyoming and the United States." Platte County's economy is based heavily on agriculture and is tied closely to the national agricultural market. The declining economy is partially a result of marginally low prices for farm products along with increasing costs for farm labor and production materials. As agriculture became less and less profitable, an out-migration of younger people seeking employment elsewhere occurred. Platte County's population declined 33.1% from 1930 to 1970, primarily among the age groups of 15 to 35. This has contributed to the higher median age of 33.3 years for Platte County as compared to 27.2 years for the State of Wyoming. The loss of a youthful labor market is a decided disadvantage when trying to attract new businesses into the area. At the same time, local governments are faced with supporting a larger portion of the population with old age assistance while drawing on a shrinking tax base. The addition of an industry, such as a proposed power plant, will result in an influx of younger people, creating a more normal age distribution. The people of the community will generally benefit in the form of increased income and better public services made available by increased tax revenues. The introduction of an industry unrelated to agriculture will increase diversity in the economy and help stabilize it. The economy will become less dependent on the up and down trends of the national agricultural market for its existence.

The construction of the proposed MBPP facility will bring about a marked increase in employment, population, and income. The effects on the construction period will be temporary. The addition of 200 operating personnel, their families, the induced population and the increased tax bases, will have a long-lasting effect upon the area. Some local residents will be employed during construction and will learn new skills that will be of benefit to local contractors after the completion of the plant. Construction jobs will result in higher incomes for the local residents employed. No employment dislocation or skill obsolesence should occur to local residents. In fact, as a result of learning new skills, local residents' employment opportunities will be increased.

The operation of the plant should bring about changes in the level and distribution of personal income among both current and future residents. Approximately 20% of the permanent work force will be comprised of current residents. The plant's employees will earn in the range of $5,000 to $22,000 per year with a median salary of $12,000 per year in 1975 dollars. Indirect employment will vary considerably but will average approximately $9,000 per year. These pay scales represent a substantial improvement over current employment opportunities in Platte County.

The segment of the population on fixed income will benefit as a net result of the construction of the power plant. This group represents about 17% of the county's population. Fixed income refers to persons receiving either social security, retirement, public assistance or a combination of these. This income, however. is not entirely fixed. Many of the federal and state programs are reviewed annually for a cost of living increase. In addition, food stamp benefits increase as other household expenses rise, and Medicare benefits, which are based on a "reasonable cost", are generally accepted by all doctors to cover their fees.

Local program benefits can also be increased as discussed in The Social Impact Assessment, reported by the University of Wyoming. Some of the recipients of these programs may be land owners in the

Wheatland area, and will benefit from the increase in land value. The demand for goods and services may be greater than the supply during the early portion of the construction period with resultant higher prices. However, the increased sales volume could bring about more economical bulk transportation methods and lower the cost of retail sales and services in the area.

As discussed in a later subsection and Division IV of this Application, the medical services for the county will be upgraded as a result of the project.

Probably the biggest benefit will be the opportunity for lower taxes. The project, once completed, will increase the county's assessed valuation from 30 million dollars to 167 million dollars, while adding only 20% to the permanent population. This could very likely substantially decrease taxes.

Personal income in Platte County was 29 million dollars in 1973 and is estimated to be 35 million dollars in 1975. With the proposed project, income of the residents will reach 57.6 million dollars in 1979. Retail sales in Platte County are currently estimated to be 22.6 million dollars. With the project, purchasing power is predicted to increase to a peak of about 37 million dollars. After the construction of the power plant, the estimated annual payroll of the power plant and the induced employment will be approximately $5,640,000. This results in an increased retail demand of 3.6 million dollars for Platte County.

The report prepared by DOBER showed the retail sales per establishment are generally well below the state average. The businesses, except for gasoline stations, could increase sales volume from 25% to 50%. Gasoline stations are currently above the state average. Eating and drinking places can absorb a 36% increase in sales before reaching the state average. This increase will absorb a great deal of the impact of the construction work force, and would be adequate for the predicted population after construction is completed.

III.K.4.c. Government Structure and Public Services:

The Platte County Board of Commissioners is the county's overall governing body. It oversees appointed officials and boards, imposes

mill levies, and appropriates funds for the various county activities. All towns in Platte County use the mayor-council form of government, which consists of a mayor and four councilmen, all of whom are elected. The county is required by law to assess property; collect property taxes; record deeds and other property documents; and provide public services through public financing, such as: maintain rural roads; give public assistance and law enforcement; and administer the electoral and judicial processes. Public services and assistance are discussed in detail in The Socioeconomic Impact on the Laramie River Station, DOBER and A Social Impact Assessment of the Proposed Laramie River Station, University of Wyoming, Department of Sociology, 1975.

Platte County's most important source of revenue is the property tax. The assessed valuation of all taxable property in the county was $27,455,383 for 1974. The county is required by law to assess a twelve-mill levy against the assessed valuation and distribute it back to the school districts on the basis of the number of classroom units. In addition each school district may levy up to twenty-three mills for operating expenses on property in its district. Municipalities may also levy up to eight mills for all purposes. Payment of public debt and its interest, such as bond issues have no limitations on the amount of tax. Platte County typically operates with revenues and expenditures of about $3,000,000. The town of Wheatland operates on a budget of approximately $600,000 annually. Tables 23 through 25 give Platte County's revenues, expenditures, and a summary of mills levied.

Division IV of this Application details the predicted revenue and expenditures of Platte County, School District 1 and 2 and Wheatland.

Table 23

LOCAL GOVERNMENT REVENUES BY SOURCE
PLATTE COUNTY - FISCAL 1974-75

Source	Platte County[1]	Wheatland[2]	School District No. 1[3]	School District No. 2[4]
Property Tax	$356,920	$3,056	$863,374	$285,604
Gasoline Tax	71,210	48,006	---	---
Sales Tax	53,932	51,025	---	---
Cigarette Tax	1,022	32,034	---	---
Other Taxes	1,446	8,881	---	---
Licenses, Fees, Fines	45,314	52,764	33,649	12,306
Charges for Services	---	456,679	24,750	736
Use of Property & Money	---	---	141,774	32,587
Revenue Sharing	130,954	9,802	---	---
Other Gov't. Sources	---	---	546,270	170,613
Misc. Revenue	782	69,037	2,981	5,370
Totals	$661,580[5]	$731,284	$1,612,798	$507,216

[1] *Kathleen Hopkins, County Treasurer, "Abstract Statement: Statement of Receipts and Disbursements," July 1, 1974 - December 31, 1974; January 1, 1975 - June 30, 1975.*

[2] *James R. Dunham, Town Clerk - Treasurer, "Town of Wheatland Revenues and Expenditures, 1974-5"*

[3] *"General Fund Financial Report," Platte County School District, No. 1. June 30, 1975.*

[4] *"General Fund Financial Report," Platte County School District, No. 2. June 30, 1975.*

[5] *Excludes Special District Revenues.*

Table 24

LOCAL GOVERNMENT EXPENDITURES BY TYPE
PLATTE COUNTY - FISCAL 1974-75

Type of Expenditure	Platte County[1]	Wheatland[2]	School District No. 1[3]	School District No. 2[4]
General Government	$214,251	$130,592	---	---
Law Enforcement	45,557	78,679	---	---
Fire Protection	---	7,889	---	---
Health & Welfare	52,823	---	---	---
Roads & Airports	301,701	105,425	---	---
Sanitation	---	46,530	---	---
Water & Sewer	---	112,708	---	---
Electricity	---	285,001	---	---
Parks & Recreation	---	27,547	---	---
Library	52,181	---	---	---
Education	---	---	$1,612,798	$469,380
Agriculture	10,550	---	---	---
County Fair	25,550	---	---	---
Totals	$661,613[5]	$794,371	$1,612,798	$469,380

[1] *Kathleen Hopkins, County Treasurer, "Abstract Statement: Statement of Receipts and Disbursements," July 1, 1974 - December 31, 1974; January 1, 1975 - June 30, 1975.*

[2] *James R. Dunham, Town Clerk - Treasurer, "Town of Wheatland Revenues and Expenditures, 1974-5."*

[3] *"General Fund Financial Report," Platte County School District, No. 1 June 30, 1975.*

[4] *"General Fund Financial Report," Platte County School District, No. 2 June 30, 1975.*

[5] *Excludes Special District Expenditures.*

Table 25
SUMMARY OF MILLS LEVIED IN PLATTE COUNTY
1975[1]

Source	School District #1	School District #2
School Operating Levy	25.00	25.000
Mandatory School Levy	12.000	12.000
Bonds & Interest	7.340	4.940
School Total	44.340	41.940
State Levy	2,670	2,670
County Levy	12.000	12.000
Weed and Pest	1.000	1.000
District-wide Total	60.01	57.61
Chugwater Levy	3,910	--
Glendo Levy	17.130	--
Wheatland Levy	1.000	--
Guernsey Levy	--	8.000
Hartville Levy	--	8.000
Fire District	1.990	--
Special Levy	.500	.500[2]
Sewer & Water	--	8.000

[1] *Wyoming Property Tax Rates 1974 (Cheyenne, Wyoming: The Wyoming Taxpayers Association, 1974).*

[2] *Covers part of District No. 2*

III. SITING APPLICATION:

K. Impact Alleviations:

subsection 5

III.K.5. Capital Facilities:

In the following portion of this section, except where Platte County facilities involve all communities, Wheatland will be the only community discussed. Wheatland is expected to absorb 85% of the influx of population; consequently, much of the impact attributable to the Laramie River Station will affect Wheatland's ability to meet the forthcoming demand for services. The communities of Chugwater, Glendo, Guernsey and Hartville will receive much less impact. In order to present the smaller communities in Platte County in a clear and comprehensive manner, each will be discussed separately in Section III.K.5.1. The facilities of each individual city will be described at that time.

The negative impacts that are exposed in this section are discussed further, along with the preliminary plans for impact alleviation, in Division IV of this application.

III.K.5.a. Sewer Treatment Facilities:

Present Treatment Facilities: Wheatland's sewage treatment facilities consist of two parallel lagoons which at the present time are indadequate to meet current demand. The lagoons now serve approximately 133 people per acre of lagoon, while the rule of thumb criteria for lagoon treatment of sewage is 100 people per acre of lagoon.

Treatment Facilities Without Alleviation Plans: Wheatland is presently planning to upgrade their sewage treatment facilities by increasing the lagoon system to three parallel cells and installing aeration equipment which would greatly increase the service capacity of the lagoons.

III.K.5.b. Water Treatment and Distribution:

Currently water treatment is two-phase. First, the water is pumped from the wells into a settling basin. After the settling process, it is treated with gas chlorine at the rate of up to 4,000 gal/min. The present water treatment capabilities would be at full capacity in 1979. If the additional population due to the proposed project is included, it is anticipated that the system will require some upgrading or additional equipment prior to operating at full capacity. Therefore, this system is included in the discussion of impact alleviation in Division IV.

The present water distribution system will have to be upgraded to facilitate new housing needs. The current system is at capacity and some areas of the city experience extremely low water pressure. Plans for impact alleviation are discussed in Division IV.

III.K.5.c. Present Solid Waste Facilities:

Wheatland is presently served by a sanitary landfill which is located one and one-half miles southeast of the city limits. The landfill consists of approximately 18.34 acres. To date, only about 20% of the landfill has been utilized. Wheatland has three trucks and four employees which handle collection and maintenance of the facility. Present collections are twice a week for residential at a fee of $2.50 per month. For commercial establishments there is a daily collection, except on Sunday, and fees range from $5.00 to $80.00 per month. There is also unrestricted use of the facility for Platte County residents.

Solid Waste Facilities Without Alleviation Plans: Wheatland's sanitary landfill is large enough to handle the increased volume of solid waste due to the anticipated population increase from the proposed project.

Wheatland will be required to increase the budget for solid waste collection in order to maintain present service levels. Three additional trucks and personnel will be needed during the construction peak. The cost of the additional equipment will be approximately $75,000.

III.K.5.d. Water Supply:

Present Water Supply: The City of Wheatland obtains its water from six deep wells, which are capable of producing an estimated 4,750 gallons per minute (gpm). Wheatland has two storage tanks, one tank holding 1,000,000 gallons and a smaller tank which holds 300,000 gallons.

Water Supply Without Alleviation Plans: The total water requirements for the area served by Wheatland's water supply (except for fire protection) presently is 830 gpm for domestic consumption, 160 gpm for commercial use, and 567 gpm for irrigation purposes for a total of 1,557 gpm. The average daily consumption of water for domestic use is 148 gallons. This figure is based on three people per domestic meter.

Water Supply With Alleviation Plans: With a continuous supply of 4,750 gpm, the present system is sufficient to meet the needs of a

population of 10,000, which is more than adequate to meet Wheatland's projected needs. Consequently, no alleviation plans are necessary.

III.K.5.e. Police Protection:

Existing Conditions of Law Enforcement: In Platte and Goshen Counties, law enforcement is administered by three separate bodies: the county sheriffs' departments, municipal police departments and the Wyoming State Highway Patrol. Currently, there are 8 Wyoming Highway Patrol officers assigned to the 3-county area of Goshen, Platte, and Niobrara Counties. Local county and municipal officials have state highway frequency radios which enable close cooperation between the three law enforcement bodies.

Platte County has two full-time officers, four staff personnel, and one radio dispatched car. Currently, the office operates on a budget of $60,000 ($31,000 for operation and $29,000 for computer hookup to the national crime center).

Current municipal law enforcement personnel and facilities appear to be adequate to meet enforcement needs. The state average of two officers per 1,000 population is met in all towns except Wheatland. Wheatland has a staff of five full-time officers including a chief of police, an assistant chief, and three patrolmen. The Department presently has two radio-dispatched cars and operates on a budget of approximately $70,000 per year. The only detention facility in Platte County is the county jail in Wheatland which has a 36-bed capacity. Table 26 indicates the number of criminal offenses in Platte County.

Projected Conditions of Law Enforcement Without Alleviation: Population increases as a result of the power plant construction will result in increases in criminal activity. However, most of the increase in crime associated with major construction projects involves only minor offenses.

Table 27 shows projections made by the University of Wyoming of law enforcement needs for Platte County with and without the proposed project. Three additional full-time officers, one additional radio-dispatched patrol car, and an increase in the operating budget of $80,400 in 1980 will be necessary to meet state standards at the peak of the projected population increase.

According to University of Wyoming estimate, Wheatland will need to expand its present force by the addition of 10 officers, 3 patrol cars and an increase of the current operating budget from $70,000 to $279,900 at the peak of the projected population increase. Table 28 gives the projected needs for law enforcement for Wheatland.

Table 26
CRIMINAL OFFENSES IN PLATTE COUNTY
1972-1973

	Platte County	
	Number Charged by Police	Number Found Guilty of Offense
Criminal homicide	0	0
Forcible rape	1	1
Robbery	0	0
Aggravated assault	0	0
Burglary (B & E)	4	4
Larceny, except auto theft	3	3
Auto theft	0	0
Other assaults	1	1
Forgery, counterfeiting, fraud, embezzlement	4	4
Buy, receive, possess weapons or stolen property	1	1
Vandalism	0	0
Sex or family violations excluding rape	0	0
Check offenses	0	0
Drug laws	28	23
Liquor laws	21	17
Drunkenness, drunk driving, disorderly conduct	9	9
All other, except traffic	16	14
TOTAL	88	77

Table 27

PROJECTIONS OF LAW ENFORCEMENT NEEDS FOR PLATTE COUNTY FOR THE PERIOD 1976-85

	Population	Officers	Total Staff	Vehicles	Budget[1]
		Without MBP Project			
1976	7,069	3½[2]	5½	2	34,310
1977	7,140	3½	5½	2	33,600
1978	7,212	3½	5½	2	33,880
1979	7,284	3½	5½	2	34,160
1980	7,357	3½	5¾	2	34,430
1981	7,430	3¾	5¾	2	34,700
1982	7,504	3¾	5¾	2	34,960
1983	7,579	3¾	5¾	2	34,210
1984	7,655	4	6	2	34,450
1985	7,732	4	6	2	33,680
		With MBP Project			
1976	8,259	3½	5½	2	30,510
1977	8,990	4½	6½	2	48,100
1978	11,652	4½	7	2	35,880
1979	12,994	6	9	3	75,560
1980	11,717	6¾	10	3	114,830
1981	10,440	6	9¼	3	102,300
1982	10,824	5¼	8¼	3	72,860
1983	10,429	5½	8½	3	83,910
1984	9,175	5¼	8¼	3	88,050
1985	9,192	4¾	7¼	2	62,480

[1] *Based on $5.00 per capita cost. Does not include county cost of $20-25,000 for computer hookup with National Crime Center.*

[2] *Fractional numbers represent part-time employment.*

Table 28

PROJECTED NEEDS OF LAW ENFORCEMENT IN THE WHEATLAND AREA FOR THE PERIOD 1975-85

Year	Police	Total Staff	Physical Space (ft^2)	Vehicles	Budget[1]
		Without MBP Project			
1975	6	7¼	600	2	79,750
1976	6	7½	600	2	81,400
1977	6	7½	600	2	83,050
1978	6	7¾	600	2	84,700
1979	6	8	600	2	86,350
1980	6	8	600	2	88,000
1981	6	8¼	600	2	89,925
1982	6	8½	600	2	91,575
1983	6	8½	600	2	93,500
1984	7	8¾	700	2	95,425
1985	7	9	700	2	97,350
		With MBP Project			
1976	6	7¼	600	3	101,500[2]
1977	8	10	800	3	138,800
1978	9	11½	900	3	160,700
1979	14	17¼	1400	5	240,000
1980	16	20¼	1600	5	279,900
1981	14	17½	1400	5	242,800
1982	12	14¾	1200	4	204,800
1983	12	15½	1200	4	216,200
1984	12	14¾	1200	4	204,200
1985	9	12	900	3	166,900
1986	9	12	900	3	167,000

[1] *Based on 1973, 1974, and 1975 mean cost per capita ($27.50) of police services. Similar figures from regression model for Gillette and Douglas were $25.32 and $21.08, respectively.*

[2] *Based on $35 per capita.*

III.K.5.f. Present Conditions of Fire Protection:

Wheatland's fire department consists of 42 active volunteers, working a total of 2,400 to 2,600 manhours per year and handling approximately 80 calls. The city pays for all gas, oil and housing for the equipment and has purchased two of the trucks. The other equipment was purchased by the volunteers through fund raising drives. The combined city and firemen equipment consists of the following:

1. 1962 International, owned jointly by city and rural fire zone, 750 gallons per minute (gpm) pumper.
2. 1964 International, owned by fire department, 400 gpm pumper.
3. 1968 Ford, owned by city, 1000 gpm pumper.
4. 1969 GMC, owned by fire department, 400 gpm pumper.
5. 1964 Ford Station wagon rescue vehicle, owned by fire department.
6. Fifteen foot boat and five diving tanks for rescue unit, owned by fire department.
7. One older fire truck, rarely used.
8. Enough equipment to equip 5 to 6 men.

Wheatland has a 2500 gpm fire flow capacity. Most of the equipment is housed in a building built in 1932 with a main floor area of approximately 4000 square feet and upper floor area of about 900 square feet.

Platte County has the following equipment located in Wheatland:

1. Tanker, 3000 gallon capacity, 300 gpm pump.
2. Tanker, 1200 gallon capacity, 500 gpm pump.
3. 3 army jeeps each with 300 gpm pump.

Eighteen other items of equipment are scattered throughout the county. The above items are in good condition except for the army vehicles.

Guernsey has a volunteer fire department with 40 members, while Glendo, Chugwater and Hartville have small volunteer units. Both Guernsey and Glendo have new fire trucks.

Projected Conditions of Fire Protection Without Alleviation:

Currently Platte County has sufficient equipment and good dispersal of equipment over the county to give adequate fire protection coverage

to the area. There is equipment available for fire fighting in Chugwater, Glendo; Guernsey, Hartville, Wheatland and throughout rural parts of the county. Wheatland and all other municipalities respond to county calls and lend assistance to one another to assure complete fire protection. Although much of the city and county equipment is not new, it appears to be in satisfactory operating condition and more than meets the requirements of gallons per minute flow for the projected peak population for municipalities or the county. A city with a population of 10,000 people requires a fire flow capacity of 3000 gpm depending on the type and location of its buildings. Wheatland, with a population of only 2,900 people, has a 2550 gpm capacity with city equipment and a 4250 gpm capacity with the addition of the county equipment housed in Wheatland. With the equipment in Wheatland alone, and a population of 7000 people for the entire county, Platte County has sufficient fire flow capacity for its size and population, both current and projected with the construction of the proposed project. However, the building that houses the equipment for the city of Wheatland is currently inadequate and will definitely need to be expanded or a new building constructed. The most likely location for a new building that would serve as a substation would be in the southwest corner of the city, west of the interstate on a through street parallel to the interstate between South and Oak Streets. A substation with 2500 square feet would cost approximately $70,000. Although the present fire fighting equipment would seem sufficient, how efficient it would be is dependent on such factors as the degree of housing congestion, type of building, and conditions of structures. Table 29 presents projected expenditures for fire protection for Wheatland and Platte County with and without the proposed project.

III.K.5.g. Present Conditions of the Platte County Judicial System:

County costs and personnel loads within the judicial system occur at three different levels - county attorney, courts, and operation of the courthouse and jail. Platte County has currently one county attorney who works 11 to 20 hours a week, one full-time assistant and a clerical worker. The present budget for the county attorney is $18,200.

Table 29

PROJECTED EXPENDITURES FOR FIRE PROTECTION FOR WHEATLAND AND PLATTE COUNTY FOR THE PERIOD 1976-85

	PLATTE COUNTY		WHEATLAND		
	Operating[1]	Capital	Stations	Operating	Capital
		Without MBP Project			
1976	$10,000		1	$5,000	
1977	10,250		1	5,200	
1978	10,500	$20,000[4]	1	5,400	
1979	10,750		1	5,600	
1980	11,000	$22,500[4]	1	5,900	$50,000[3]
1981	11,250		1	6,250	
1982	11,500		1	6,500	
1983	11,750		1	6,750	
1984	12,000		1	7,000	
1985	12,500		1	7,250	
		With MBP Project			
1976	$12,000		2	10,300	0
1977	14,000		2	14,100	$70,000[2]
1978	18,000	$20,000[4]	2	16,300	0
1979	20,000		2	24,300	0
1980	19,000	$22,500[4]	2	28,400	0
1981	18,000		2	24,600	$50,000[3]
1982	18,000		2	20,800	0
1983	18,000		2	21,900	0
1984	18,000		2	20,700	0
1985	17,000		2	16,900	0

[1] *Assumes Platte County will continue to assist municipalities with cost of providing rural fire protection.*

[2] *2,500 sq. ft. substation (additional operating costs from 1976 on reflect this additional facility)*

[3] *1,500 GPM pumper, replace worn equipments.*

[4] *2-500 GPM vehicles to replace the three army jeeps.*

Cases are heard by the district court which handles felony cases, and three justice courts which handle misdemeanors and minor offenses. The present budget for the courts is $30,800.

In 1971, a consulting firm was hired to evaluate the current courthouse facility. At that time they recommended either extensive remodeling (approximately $500,000) or the construction of a new facility (1½ million dollars). Most courthouse facilities are currently in poor condition.

Projected Conditions of the Judicial System Without Alleviation: Even without the proposed project a new courthouse or extensive remodeling to the present courthouse will be necessary. In addition, the present part-time county attorney will need to work full time and another full-time assistant will be necessary. The present budget of $18,200 will need to be expanded to $34,000 by 1979.

The three justices of the peace will have to move from part-time to full-time judges. The present budget of $9,800 for the justice courts will need to be expanded to $18,192 by 1979 as seen in Table 30. Justice courts usually generate revenue for the county through fines. The justice courts will probably absorb the costs for the increase in the budget by way of fines.

The present budget of $21,000 for the district court will need to be expanded to $38,982 by 1979.

III.K.5.h. Library Facilities:

Present Library Facilities: The Platte County Library system is currently more than adequate for the population it serves. The system consists of a main library in Wheatland and branch libraries in Guernsey and Glendo. The main library in Wheatland is open seventy-two hours a week. The branch library in Guernsey is open 4 hours a day, six afternoons a week and the Glendo branch is open 3 hours for each of three afternoons a week. The Wheatland staff consists of one full-time librarian, one full-time assistant librarian, one part-time child librarian and two page clerks. The Glendo Library is staffed by one part-time librarian and the Guernsey library by one part-time librarian and two part-time pages. The library system is currently financed by a two mill levy, revenue sharing monies (1976 - $5,000), Wyoming State Library

Table 30

PROJECTIONS OF THE FINANCIAL NEEDS OF THE PLATTE COUNTY JUDICIAL SYSTEM FOR THE PERIOD 1975-85

	Population	District Court[1]	Justice Court[2]	County Attorney[3]	Courthouse and Jail[4]
			Without MBP Project		
1975	7,000	$21,000	$9,800	$18,200	$21,000
1976	7,069	21,207	9,897	18,379	21,207
1977	7,140	21,420	9,996	18,564	21,420
1978	7,212	21,636	10,097	18,751	21,636
1979	7,284	21,852	10,198	18,938	21,852
1980	7,357	22,071	10,300	19,128	22,071
1981	7,430	22,290	10,402	19,318	22,290
1982	7,504	22,512	10,506	19,510	22,512
1983	7,579	22,737	10,611	19,705	22,737
1984	7,655	22,965	10,717	19,903	22,965
1985	7,732	23,196	10,825	20,103	23,196
			With MBP Project		
1975	7,000	$21,000	$9,800	$18,200	$21,000
1976	8,259	24,777	11,563	21,473	24,777
1977	8,990	26,970	12,586	23,374	26,970
1978	11,652	34,956	16,313	30,295	34,956
1979	12,994	38,982	18,192	33,784	38,982
1980	11,717	35,151	16,404	30,464	35,151
1981	10,440	31,320	14,616	27,144	31,320
1982	10,824	32,272	15,154	28,142	32,472
1983	10,429	31,287	14,601	27,115	31,287
1984	9,175	27,525	12,845	23,855	27,525
1985	9,192	27,576	12,869	23,899	27,576

[1] *Based on per capita cost of $3*

[2] *Based on per capita cost of $1.40*

[3] *Based on per capita cost of $2.60*

[4] *Based on per capita cost of $3.00*

Book Donations (1975 - $1,500) and private donations. The County Commissoners appoint a five-member County Library Board of Directors that govern the library system. The members serve three-year staggered terms.

Library Facilities Without Alleviation Plans: The Platte County library system currently has sufficient book stock and facilities to serve double the present population, but would need a larger staff. The linear feet of shelving space (6,950) and total floor space (10,608 square feet) is sufficient for the next ten years, with or without the MBP Project. Unless a larger staff is employed, the increased work load with a limited staff may cause problems for a time. Once the MBP Project is included in the county's assessed valuation, the two-mill levy will provide sufficient funds for an excellent library system and increased staff and salaries. Table 31 contains the projected demands on the library system, as well as the system's projected needs. Additional information can be obtained from The Socioeconomic Impact of the Laramie River Station, Div. of Business and Economic Research (DOBER) University of Wyoming, 1975.

Projected Conditions of the Library System with Alleviation: Any funds needed by the library system during the construction and operation of the proposed power plant, will be obtained through the Platte County Library System two-mill levy. No further alleviation plans appear to be necessary at this time.

III.K.5.i. Health and Hospital Care Facilities:

Present Health Facilities: Platte County has one hospital, which is located in Wheatland. The present number of beds available is 67. The hospital is operated by the Lutheran Hospital and Homes Society. The county provides all new capital improvements and the Lutheran Society provides replacement of existing equipment. Table 32 gives numbers of the health care facilities for Platte County. It shows that the number of hospital beds and nursing home beds will be adequate to meet demand except for a very short period of time during the peak construction period, providing that an addition to the nursing home is built. At the present time some hospital beds are being utilized as nursing home beds.

Table 31

PROJECTED NEEDS OF THE PLATTE COUNTY LIBRARY SYSTEM FOR THE PERIOD 1975-1985 WITH THE MBP PROJECT

	1975	1976	1077	1978	1979	1980	1981	1982	1983	1984	1985
Library System with MBPP[1]											
Book Stock	46,128	47,118	48,155	49,240	50,372	51,457	52,494	53,531	54,521	55,471	56,421
Yearly Book Additions	943	990	1,037	1,085	1,132	1,085	1,037	1,037	990	950	950
Reference Calls	11,939	14,086	15,333	19,873	22,162	19,984	17,806	18,461	17,787	15,648	15,678
Patronage Calls	4,950	5,840	6,357	8,240	9,189	8,286	7,383	7,654	7,375	6,488	6,540
Attendance	29,852	35,221	38,338	49,691	55,414	49,968	44,522	46,160	44,475	39,127	39,200
Research Projects	288	340	370	479	535	482	430	445	429	377	378
Story Time	4,424	5,359	5,903	7,900	8,899	7,938	6,826	5,978	6,939	5,978	5,978
Special Services	890	957	1,019	1,136	1,207	1,150	1,093	1,117	1,104	1,048	1,055
Inter-Library Loan Requests	248	293	319	413	460	415	370	383	369	325	326
Full-Time Staff	2	2	3	4	5	4	3	3	3	3	3
Part-Time Staff	6	7	7	10	11	10	9	10	9	7	7
Staff Hours/Week	200	220	260	360	420	360	300	320	300	260	260
Total Budget with MBPP	58,618	61,215[2]	79,330	108,354[3]	129,892	121,424	111,458	122,321	124,729	122,631	129,990
Total Budget without MBPP	58,618	61,215[2]	64,888	68,782	72,908	77,283	81,919	100,214[4]	106,230	112,604	119,360
Cost Difference	0	0	14,442	39,572	56,984	44,141	29,539	22,104	18,499	10,027	10,630

[1] *Projections for the library system "without MBPP" were not included because they were negligable.*
[2] *Actual budget for 1976.*
[3] *New Computer Checkout System $1,124.*
[4] *New Full-Time Staff Member $13,382.*

Table 32

PROJECTIONS OF HEALTH CARE FACILITY NEEDS FOR PLATTE COUNTY FOR THE PERIOD 1975-1985

Facility	Existing 1975	Needed currently to meet Wyoming Standards	Needed by by 1980 to meet Wyoming Standards	Needed by by 1985 to meet Wyoming Standards
Hospital Beds	43	30	57	38
Nursing Home Beds	24	27	50	33
Clinics and Offices	2	NA[1]	3[2]	3[2]
Ambulances	4	NA[1]	6[2]	5[2]
Stand-by Vehicles	1	NA	4[2]	3[2]

[1] *NA - Data not available*

[2] *Figures furnished by Consumer Medical Committee, Platte County.*

Plans are currently under consideration for the construction of a sixteen bed addition to the nursing home, improvements to the hospital recovery room, emergency room and for an auxiliary power plant for the hospital. The cost of these improvements and additions will be approximately $600,000. These additions to the hospital and nursing facilities would be adequate to cover the increase in population through 1980-81.

The physicians to population ratio in Platte County is very low, 1:2,333; this is compared to a ratio of 1:1,043 in Wyoming. Due to the shortage of doctors, county medical personnel estimate that as much as 70% of the county's residents presently travel outside the county to receive treatment for serious medical disorders. This migration should slow when the additional physicians are found to staff the hospital. Platte County currently has three General Practitioners. The hospital board is now actively seeking two additional General Practitioners, one Doctor of Internal Medicine, a Pediatrician, Obstetrician, and a Psychiatrist. The addition of these medical personnel would greatly improve the quality of health care in the county. A surgeon has already joined a Wheatland medical office. The following Tables 33, 34, and 35 show the current and projected number of health care personnel and facilities along with the ratios of personnel to population.

Platte County Hospital is currently understaffed with registered nurses (RN's) and licensed practical nurses (LPN's). There is a need for four additional RN's and six more LPN's. The recruitment committee of the hospital board is seeking the additional RN's and LPN's that are needed to bring the number of nurses up to the Wyoming Standards. There are a number of unemployed RN's and LPN's in the county but there is a shortage of these persons who are seeking employment.

Table 33

PLATTE COUNTY AND WYOMING HEALTH MANPOWER RATIOS 1974

Description	Platte County*	Wyoming**
Physicians	1:2, 333	1:1, 043
Dentists	1:3500	1:2, 148
R.N.'s (employed)	1:583	1:241
L.P.N.'s	1:500	1:738
Pharmacists	1:1,750	1:1, 235
Optometrists	1:7,000	1:8, 541
School Nurses	1:3,500	1:4, 270
Public Health Nurses	0	1:7, 705
Veterinarians	1:1,400	1:2, 882

**Division of Business and Economic Research estimates.*

***Wyoming Office of Comprehensive Health Planning, Division of Health and Medical Services, Wyoming Health Profile, 1974.*

Table 34

PROJECTIONS OF MEDICAL HEALTH PERSONNEL NEEDS FOR PLATTE COUNTY FOR THE PERIOD 1975-1985

	Existing 1975	Needed currently to meet Wyoming Standards	Needed by by 1980 to meet Wyoming Standards	Needed by by 1985 to meet Wyoming Standards
Physicians - Total	4½	7	11	8
Family Practice; General Practice	3	3	5	3
Internal Medicine	0	1	2	1
Obstetrics & Gynecology	0	1	1	1
Pediatrics	0	1	1	1
Anesthesia	--[1]	--	--	--
General Surgery	1[2]	1	1	1
Psychiatry	0	0	1	1
Registered Nurses	12	27	54[3]	38
Licensed Practical Nurses	15	9	16	12
Full-Time Ambulance Personnel	1	2	4	3
Emergency Medical Technicians	92[4]	NA	150	100
Dentists	2	4	6	5
Pharmacists	3	5	9	6
Optometrists	1[5]	1	2	1
Sanitarians	0	1	2[6]	1
Public Health Nurses	0	1	2[6]	1

[1] *An anesthesiologist is now available on a part-time basis thorugh a private office in Torrington. This party has assured the hospital that additional anesthesist services will be furnished on demand. Thus, we have not projected a need for a permanent anesthesiologist.*
[2] *A surgeon has already declared his intention of joining a Wheatland medical office by late 1975, early 1976.*
[3] *As noted in the text, we do not see how 54 RN's could be employed in the county.*
[4] *Figures for ambulance personnel and emergency medical technicians were furnished by the Platte County Consumer Medical Committee.*
[5] *Wheatland presently has a part-time optometrist who will probably become full-time as demand increases.*
[6] *We indicate the need for an additional temporary sanitarian and public health nurse during this period.*

Table 35

PLATTE COUNTY AND WYOMING HEALTH CARE FACILITY RATIOS 1972*

Description	Platte County	Wyoming
Hospitals	1:6, 500	1:12, 660
beds	1:151	1:211
1973 % occupancy	50%	52.36%
Nursing care facilities	1:6, 500	1:16, 112
beds	1:260	1:241
1973 % occupancy	100%	94.3%
Personal care facilities	0	1:35, 447
beds		1:1, 218
1973 % occupancy		95.27%
Pharmacies	1:3, 250	1:3, 811
Clinical labs	1:6, 500	1:11, 816
Dental clinics	1:3, 250	1:2, 645
Mental health centers	1:6, 500	1:22, 154
Ambulances	1:1, 300	1:3, 344

**Wyoming Department of Health and Social Services, Division of Health and Medical Services, Wyoming Medical Facilities: Planning and Construction, 1972.*

Platte County presently has no shortage of Dentists, Pharmacists, and Optometrists. The only period in which a shortage appears likely to develop is during the peak construction period. A dental office has recently opened in Wheatland which will help offset the shortage.

Platte County has five ambulances and one back-up vehicle. There is currently no shortage in vehicles. During the peak of the construction two additional ambulances and three stand-by vehicles will be needed to offset the increase in the population. The only need in the area of emergency treatment is for additional Emergency Medical Technicians (EMT's). Currently there are ninety-two EMT's in Platte County; an additional fifty-eight EMT's will be needed by 1980 to meet the Wyoming standards. The current shortage of physicians requires a high number of EMT's be recruited. If the shortage of physicians is resolved the need for EMT's will be reduced.

The Platte County Joint Planning Office is planning to establish a city/county health department. The implementation of a program of this type would be very desirable since it would offset the medical needs of the county especially during the peak construction period. The health department would be involved in preventing health and sanitary problems through the use of specific programs of public education and inspection of public facilities. Through these programs, many potentially hazardous situations can be avoided, thus reducing the load on primary health care facilities. Currently one public health nurse and one sanitarian are needed to comply with the Wyoming standards. The sanitarian program was approved by the Platte County Government and is scheduled to begin in November, 1975. An additional temporary public health nurse and sanitarian will be needed during the peak construction period due to the sharp increase in the counties population over a short period of time.

The Platte County Hospital currently has one stationary and one portable diagnostic X-ray machine. These X-ray machines are capable of X-raying bone structure and soft tissue. The hospital has no

Table 36

PROJECTED CAPITOL AND OPERATING EXPENDITURES ACCRUING TO PLATTE COUNTY GOVERNMENT FOR MEDICAL FACILITIES AND SERVICES FOR THE PERIOD 1976-85[1]

	Capital Expenditures									
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Nursing Home and Hospital Improvements (Bond Issue - 1976)	474,000									
New Ambulance(s)	15,000		15,000							
Stand-by Vehicles	8,000	6,000		6,000						
New Hospital Addition					700,000[2] (Bond Issue)					

	Operating Expenditures									
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
City/County Health Department	27,000	27,000	42,000[3]	42,000	42,000	42,000	42,000	30,000	30,000	30,000

[1] *No expenditure figures are given for Platte County without the MBPP because they would be essentially zero.*

[2] *This figure is simply a gross estimate as no definite plans for expansion have been formulated at this time.*

[3] *Increase reflects the addition of a second sanitarian and public health nurse for the five year peak-period.*

special therapeutic equipment. The hospital has no specialist on its staff who would need or use such equipment. As the hospital increases its staff as planned, any needed equipment could be purchased.

The cost of the additions to the hospital, nursing home and ambulances could be paid from Platte County funds. The state and county will share on a 50/50 basis the cost of the sanitarian program.

Projected Health Facilities With No Alleviation Plans: The Hospital Board Recruiting Committee is actively seeking medical personnel to fulfill the needs for quality health care. The hospital board has plans for several additions and improvements to that facility. Wheatland's Hospital can handle the increased need for beds and services if these added personnel are attracted to the area. The impact of the MBPP on the quality of medical care can be favorable since it will enable the hospital to make improvements in its facilities and staff.

III.K.5.j. Platte County Mental Health Center:

The Mental Health Center in Platte County is a part of a larger organization serving four counties in southeast Wyoming. The office in Wheatland opened two years ago and it is the main source of mental health service available to the residents of Platte County. The Wheatland office is currently adequately staffed. With the addition of one Psychiatrist to the staff of the county hospital, the current shortage of trained medical personnel in this area would be alleviated.

III.K.5.k. Social Services:

The Department of Public Assistance and Social Services (D-Pass) for Platte County is located in Wheatland. The office has recently been remodeled and has 1,320 square feet of space which is adequate for the projected needs to 1985. Increases in services and assistance will occur due to plant construction in those areas dealing with children, family counseling and transients. Other services available include aid for senior citizens, child care, education programs, and employment services. The workload of the D-Pass office will increase dramatically by 1978-1979 and will then decrease a little each year until 1985 when it should stabilize again. Finances for the program will not pose a problem for the city or county governments as the major portion comes from state and federal funding currently and will be wholly assumed by them in 1979.

Table 37

PLATTE COUNTY BRANCH OF THE SOUTHEAST WYOMING MENTAL HEALTH CENTER PROJECTED CHANGES IN STAFF, ALCOHOLISM PROGRAMS AND BUDGETS FOR THE YEARS 1975 to 1985

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Without MBPP											
Total Population	7000	7069	7140	7212	7284	7357	7430	7504	7579	7655	7732
Professional Staff	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½
Support Staff	1	1	1	1	1	1	1	1	1	1	1
MHC Budget	57600	61056	64719	68603	72719	77082	81707	86609	91806	97314	103153
Alcoholism Program	0	12000	12720	13483	14292	15150	16059	17022	18044	19126	20274
Total Budget	57600	73056	77439	82086	87011	92232	97766	103731	109850	106440	123427
With MBPP											
Total Population	7000	8259	8990	11652	12994	11717	10440	10824	10429	9175	9192
Professional Staff	2½	3½	4½	4½	4½	3½	3½	3	3	3	3
Support Staff	1	2	3	3	3	3	6	6	6	5	5
MHC Budget	57600	89676	124270	131630	126596	126596	134192	142243	150778	159825	169414
Alcoholism Program	0	70000	39326	41686	44187	46838	49648	52627	55785	19126[1]	20274
Total Budget	57600	159676	163596	173412	183817	173434	183840	194870	206563	178951	189688
Cost Difference	0	86620	86157	91326	96806	81202	86074	91139	96713	72511	66261

All costs include a six percent year year inflation rate.

All fractional numbers represent part-time employment.

[1] *Halfway House closes.*

DIVISION III:
Section K:

III.K.5.1. Other Communities:

The following information was gained through direct communication between the Missouri Basin Power Project and local leaders. Much information was also obtained from the Platte County Joint Planning Department Staff in a joint effort to alleviate any impact.

Chugwater: Chugwater is located 20 miles south of the proposed plant site, and currently has a population of about 190 people.

An additional 40 to 50 hook-ups for water and sewage could be handled. This would serve the demands for at least 100 to 125 additional residents. The city owns a dump area with room to expand, but does not operate it as a sanitary landfill. Trash is collected once a week.

There are presently several lots within the city limits suitable to meet future needs for housing. Chugwater has a small volunteer fire department with a new, well-equipped ambulance. Currently Chugwater employs one patrolman and is not expected to need any more.

Chugwater has the potential of absorbing a minimum of 40 new housing units (approximately 100 people) on the existing utilities. Other Chugwater community facilities can adequately handle this increase in population. No adverse impact is expected from such increased population. Population increases greater than this number are considered unlikely. No mitigating measures are deemed necessary for the town of Chugwater.

Glendo: Glendo is approximately 20 miles north of the plant site. The current population now stands at 300 people.

Significant impact has already occurred due to an overflow of people from the Douglas area. Glendo is in the first phase of an EPA application to upgrade the present sewage system so that it can handle around 450 people by 1977. The water system was designed for 350 people, but presently needs upgrading. Glendo owns and operates a sanitary landfill and collects the residential and commercial trash. There is adequate room for expansion of the landfill.

Some lots within the city limits are available. Glendo has a small volunteer fire department with a new fire truck and good equipment. Local officials feel this equipment will be adequate for the anticipated growth. One full-time patrolman is currently employed, and

officials are in the process of hiring an additional man.

Glendo has the potential for absorbing a maximum of 20 new housing units (approximately 50 people) on the existing utilities. The present water supply is the limiting growth factor in Glendo. If plans to upgrade the water systems are initiated, Glendo will have the potential of absorbing a maximum of 60 new housing units (approximately 150 people) at that time. Population increases greater than this number are considered unlikely. All other community facilities are adequate to handle such an increase with the exception of those items discussed in Division IV.

Guernsey: Guernsey lies about 10 miles to the northeast of the plant site area. The currently population now stands at 800 people.

The present land area and utilities will accommodate approximately 50 mobile homes. This would serve the demands for at least 125 additional residents.

In an area of 123 acres to the west of Guernsey called "The Acres" an additional 360 single-family homes or 560 mobile homes could be developed. If this area was annexed by Guernsey, present water and sewage facilities would become inadequate. Total development of this area would require the addition of one well and a 100,000-gallon storage tank. Present lagoon facilities would have to be upgraded with additional aeration capabilities. An additional trunk sewer line would be necessary at $250,000. Guernsey operates a sanitary landfill which officials feel has plenty of available space.

Guernsey has a volunteer fire department consisting of about 40 members. They have one new fire truck and their equipment is generally in good condition. Guernsey has three patrolmen and one patrol car.

Guernsey has the potential of absorbing a maximum of 50 housing units (approximately 125 people) on the existing utilities with the present land area. Population increases greater than this number as a result of the proposed project are considered unlikely. All other community facilities are adequate to handle such an increase with the exception of Division IV.

Plans are currently being developed for annexation of "The Acres." Funding for necessary improvements are discussed in Division IV.

Hartville: Hartville is located approximately 12 miles northeast of the plant site. It currently has a population of about 250 people.

Hartville presently has trouble meeting demands for water supply. An effort to procure the necessary equipment and conduct geological studies for the development of an additional well is underway. Once a well is drilled and the water is available, no problem will exist for current residents or the expected influx of population. Except for water supply, local officials feel all facilities should be quite adequate.

Hartville has two older fire trucks that will eventually need replacing with or without the project. There is not an excess of housing within the city limits, however there are locations within the limits where additional housing can be constructed.

Hartville has the potential of absorbing a maximum of 20 new housing units (approximately 50 people) if current plans to upgrade the water supply are completed. Population increases greater than this number are considered unlikely. All other community facilities are adequate to handle such an increase with the exception of those items discussed in Division IV.

III. SITING APPLICATION:

K. Impact Alleviations:

subsection 6

III.K. Impact Alleviations:

III.K.6. Recreational Resources:

Recreational resources of this area can be generally divided into two categories. One is the potential for recreation in the form of hunting and fishing on both public and private lands. The other is the use of established recreation facilities at specific sites including parks and reservoirs.

Existing recreational sites in the area include lakes and reservoirs, state parks, and municipal parks. These sites provide for a wide range of recreation activities including fishing, boating and water sports, camping, picnicking and athletics. All major recreational sites in the area are listed below by type as they presently exist.

III.K.6.a. National Forests:

Medicine Bow National Forest: Recreational facilities include campgrounds, trails for hiking, horseback riding and 2-wheel motor vehicles, winter skiing, and streams for fishing. Total attendance was 49,300 visitor days in 1973 (DOBER, 1975).

III.K.6.b. State Parks:

Glendo State Park: Located on the North Platte River, thirty miles northwest of Guernsey, Glendo State Park consists of 12,500 acres of water and 11,500 acres of land. Facilities for recreation include boat rental, fishing equipment, bait, guides, lodging, food and groceries. Swimming, camping, picnicking, canoeing, sailing, water-skiing and fishing are popular recreational activities. Total attendance was 81,000 in 1973 (DOBER, 1975).

Guernsey State Park: Two miles north of Guernsey on the North Platte River, Guernsey State Park contains 2,386 acres of water and 6,800 acres of land. Facilities are available for tent and trailer camping, picnicking, swimming, boating, water-skiing and fishing. Total attendance was 79,000 in 1973 (DOBER, 1975).

III.K.6.c. Lakes and Reservoirs:

A number of small lakes and reservoirs in the area are also available for recreational use. Most of these have fishing, boating and water sports facilities and many offer campgrounds and picnic areas. In this category are the following:

Festo Lake	- 3 miles northwest of Wheatland
Wheatland Reservoir No. 1	- 5 miles southwest of Wheatland
Glomill Reservoir	- 20 miles southwest of Torrington
Hawk Springs Reservoir	- 25 miles south of Torrington
Sinnard Reservoir	- 18 miles south of Torrington
Goshen Hole Reservoir	- 11 miles south-southwest of Torrington
Bump-Sullivan Reservoir	- 15 miles south-southwest of Torrington
Springer Reservoir	- 14 miles southwest of Torrington
Packer Lake	- 14 miles southeast of Torrington
Rock Lake Reservoir	- 5 miles southwest of Wheatland
Johnson Reservoir	- 3 miles north of Wheatland
Johnson Reservoir	- 40 miles southwest of Wheatland

III.K.6.d. Municipal Parks:

In the Wheatland area, Lewis City Park and North Park provide residents accommodations for picknicking and camping. There is also a nine-hole golf course located in the Lewis City Park which presently hosts a man's and a woman's golf league. Pioneer Park and City Park provide similar recreation resources in Torrington, and Fort Laramie and Hawk Springs each have a municipal park. Guernsey has a city park with swimming and camping facilities. There is a nine-hole golf course located near the campground. The municipal parks in the area also provide for some tent and trailer camping.

III.K.6.e. Projected Conditions Without Plans:

Platte County and surrounding areas are well endowed with outdoor recreational facilities and should provide adequate capacity for increased utilization. The recreational resources listed previously are not expected to experience any lasting impact from the project. The increases in population of the area due to the project will be mostly short-term in nature and will be centered near the plant site in the town of Wheatland and in Platte County. For this reason, the recreation resources will experience some increases in use due to the influx of project personnel. This increased use will probably be most notable for the

municipal parks and for indoor activities such as bowling and movies during the winter months. After the project is completed, the utilization of recreation resources will return to near the present levels.

III.K.6.f. Projected Conditions With Alleviation Plans:

Since the impact of the project will be mostly temporary, and the increase in visitation and utilization of recreational areas will be spread over the many sites available, no measures are necessary to alleviate the impact of the project on recreational resources. These resources will remain the same after the project has been completed as they are at the present time.

III. SITING APPLICATION:

K. Impact Alleviations:

subsection 1

III.K.7. Housing:

III.K.7.a. Present Housing Facilities:

The current housing situation in Platte County is tight. There are relatively few single-family dwellings available for sale or rent, and virtually no apartments in Wheatland. The University of Wyoming conducted a survey of the housing conditions in Wheatland in August 1974, and could find only four units for sale or rent. In September 1974, a rental survey of Guernsey, conducted by the Farmers Home Administration showed no units for rent. The distribution of rental units in Platte County is shown in the following table.

Table 38

DISTRIBUTION OF RENTAL UNITS BY AMOUNT OF MONTHLY CONTRACT RENT IN PLATTE COUNTY 1970*

Rental Range	Percent of Platte County Rentals	Percent of Wheatland Rentals	Percent of Guernsey Rentals
Under $60	64.5	57.4	67.2
$60-90	30.5	35.0	32.8
$100-149	5.0	7.6	0.0
$150+	0.0	0.0	0.0

**U.S. Department of Commerce, Bureau of the Census, 1970 Census of Population; Summary Tapes, First Count.*

The vacancy rate for Platte County, according to the 1970 Bureau of Census, is low. The vacancy rate for owner-occupied units is 1.6% for the state and .6% for Platte County. The vacancy rate for rental units is 8.5% for the state and 3.1% for Platte County. While Wyoming experienced a 7% increase in the total number of housing units between 1960 and 1970, Platte County experienced a 2.6% decrease. The following table was composed from estimates made by the Division of Business and Economic Research, University of Wyoming.

Table 39

ESTIMATED DISTRIBUTION OF HOUSING STOCK BY TYPE
IN PLATTE COUNTY
1975

	Platte Co		Wheatland		Guernsey	
	(No.)	(%)	(No.)	(%)	(No.)	(%)
Single unit	2053	84.6	772	77.7	231	82.2
Multi-units	193	7.9	133	13.4	24	8.5
Boarding houses	28	1.2	10	1.0	6	2.2
Mobile homes	153	6.3	78	7.9	20	7.1
Total	2427	100.0	993	100.0	281	100.0

The value of housing in Platte County is relatively low; however, current land values in the area have risen dramatically in the past 3 to 6 months and are approaching $3,000 to $5,000 per acre in Wheatland. The following table was taken from the 1970 Census, Detailed Housing Characteristics, Wyoming for Platte County.

Table 40

DISTRIBUTION OF ESTIMATED VALUE
OF OWNER-OCCUPIED HOUSING IN PLATTE COUNTY
1970[1]

Value Range	Percent of Platte County Housing[2]	Percent of Wheatland Housing[2]	Percent of Guernsey Housing[2]
Under $10,000	45.4	36.8	47.7
$10,000 - 19,999	39.3	43.3	46.5
$10,000 - 34,999	13.7	17.6	5.8
$35,000+	1.6	2.3	Negligible

[1] *U.S. Department of Commerce, Bureau of the Census, 1970 Census of Population: Summary Tape, First Count.*

[2] *One-family homes on less than 10 acres.*

III.K.7.b. Projected Housing Facilities With No Alleviation Plans:

The population increase due to the construction of the Laramie River Station will increase the need for trailer sites and rentals suitable for family living. The demand for these types of accommodations is expected to peak at fairly high levels during 1979 and decline to very low levels after construction is completed. At the present time there are fewer than 25 vacant trailer sites in Wheatland. If a great number of additional trailer sites were developed to handle the peak construction period, many vacancies would result as the work force declines. A similar situation exists with respect to multiple family dwellings. Although a number of families would come to the area looking for rental units, demand would decline dramatically after the construction peak is passed. Entrepreneurs may not be willing to invest significant amounts of capital in the construction of apartment dwellings unless assured of continuing use of the facility. Some temporary residents, termed weekly commuters, would want relatively cheap sleeping accommodations, such as bachelor quarters. Unless some developers made special plans for the building of such facilities, demand for the bachelor quarters would go unanswered. Other weekly commuters would bring campers, vans, motor homes and small trailers and expect to find a place to park them during the work week. They would compete with trailers for the few existing trailer sites.

If no plans were made in advance for the supply of single-family dwellings, a problem could exist. There is a considerable amount of land within the city limits which is currently zoned for the construction of single-family units; however, it is doubtful that the local construction force could keep up with the rushing demands. The construction of the power plant will be directly competing for laborers and other skilled workers in the local labor market. This will reduce the number of local workers available for housing development. The projected demand for all housing can be found in Table 41 .

Without alleviation plans, any development would have to be done by private investors without any assistance from the Missouri Basin Power Project. Under those circumstances, it is doubtful that adequate housing would be provided. It is likely that most demands for housing, such as apartments and bachelor quarters, would go unanswered. The demand for single-family units would probably exceed the local construction force's abilities. Only the orderly development of the needed housing before the peak demand period will solve this problem. Preliminary plans to alleviate this impact on local housing are discussed in Division IV of this Application.

Table 41

PROJECTED HOUSING NEEDS FOR INCOMING POPULATION*

Type of Housing	Peak During Year									
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Single family dwelling units	90	180	330	420	430	410	410	440	420	420
Multiple dwelling units	60	100	250	330	270	200	210	190	120	110
Mobile homes, trailers	200	290	780	1,050	740	430	490	360	50	30
Campers, vans, motor homes	30	50	120	130	80	40	60	40	0	0
Boarding rooms, motel rooms, campsites	30	50	120	130	80	40	60	40	0	0
TOTAL UNITS	410	670	1,600	2,060	1,600	1,120	1,230	1,070	590	560

**Division of Business and Economic Research estimates.*

III. SITING APPLICATION:

K. Impact Alleviations:

subsection 8

III.K. Impact Alleviations:

III.K.8. Transportation:

III.K.8.a. Roads:

One of the outstanding attributes of the county is its transportation network, particularly Interstate 25 and U.S. 26. Interstate 25, which is being completed, runs through the county on a north and south axis linking Wheatland and several smaller communities with Cheyenne and Casper. Guernsey is on U.S. 26, an excellent highway connecting Interstate 25 with U.S. 85 and Goshen County. These two highways will offer good access to and from the Wheatland area. Currently, Platte County roads are used by bus, truck, and automobile transportation. Bus service is provided by Continental Trailways busline which serves Wheatland, Chugwater and Glendo. Bus service is provided twice daily with connections to Cheyenne and Casper. A number of local, statewide, and national commercial enterprises utilize the road system in Platte County (primary usage being interstate highway 25). Local users include Sam Huckfeldt & Son-Livestock, Rumsey Transfer & Storage, Sale Creek Freightways, and Basin Engineering. Local truck traffic is currently heavy, but the completion of I25 should provide more than adequate capacity.

Present Conditions of Existing Roadways: Platte County has about 140 miles of primary roads (I25, U.S. 87 and U.S. 26, and Wyoming Highway 34) and about 330 miles of secondary highways (1600N, 1600S, 1600, 1602, 1603N-E, 1604, 1607, 1608, 1100, 1400, 03 from Chugwater and 03 from Wheatland). The primary roads are considered to be in good condition. All are two-lane except for the four-lane I25. These roads, primarily oil and dirt, are subject to heavy wear from agricultural trucks and machinery and thus require heavy annual expenditure on the part of the county government for maintenance.

For clarity, the existing roads around the plant site referred to in this section will be defined as shown in Exhibits 13 and 16 and as follows:

1. Road A - Existing county gravel, graded and drained road that begins at the northeast corner of Section 32 and goes generally west parallel to the south project property line until it reaches old U.S. Highway 87. Road A is currently in poor condition.

2. Road B - Existing county farm-to-market road which connects Wheatland to the Guernsey-Ft. Laramie-Torrington vicinity. This road generally parallels the southern edge of the proposed reservoir area; then turns south and lies adjacent to and parallels the one-mile eastern edge of the project property. Then the road turns west for 1 mile and lies adjacent to and parallels the south property line of the project. At the northeast corner of Section 32, the road runs south for 1 mile and then turns west until it intersects old U.S. Highway 87.
3. Road C - Old U.S. Highway 87 between Road A and Road D
4. Road D - The east-west gravel, graded and drained road connecting Road C with Interstate 25.
5. Road E - The road that would be constructed from the North Wheatland exit west one mile to provide access to the North Wheatland Interchange from the west.
6. Road F - Fairview Road from Road C to Interstate 25.
7. Interstate 25 - From the South Wheatland Interchange to the Fairview grade separation.

Highway I-25 is all new construction conforming to defense access highway specifications. All connecting roads from I 25 to Old Highway 87 are hard surfaced and adequate for present local traffic.

For maintenance purposes, the Wyoming Highway Department has identified the junction of Road C with the North Wheatland interchange connector as milepost 000. The Highway Department recommends resurfacing and isolated reconstruction of Road C for a distance of 3.9 miles north of milepost 000.

Priorities assigned this segment indicate that this work should be accomplished in from one to five years. From this point near milepost 004 to milepost 007 there is a need to widen under the statewide priority system. This is of a low priority, however, in that this portion ranks 300± out of 400+ priorities. From milepost 007 to 012.4 the state recommends resurfacing and isolated reconstruction on a priority basis of 375± on the statewide priority system.

Road B one mile south of the plant site is in good condition for the first three to four miles. This is the area where the county map indicates that the road is serving approximately seventeen farm units. The road condition generally deteriorates as the road progresses east to the point of minimal grading north of the proposed dam site.

Exhibit 14 shows traffic counts measured in average daily trips for roads in the plant site area.

Projected Conditions of Existing Roadways Without Alleviation: Should the proposed plant be built with no alleviation plans followed, the increased traffic, especially truck transportation, would have a negative effect on the existing roads in Platte County. Increased population in the area would bring about heavier traffic and increased maintenance services, especially to those secondary roads already subject to heavy wear from agricultural equipment. The cost estimates for maintenance on existing roads and bridges for Platte County, associated with increased population and usage due to plant construction is estimated to be $150,000.00 per year. Exhibit 15 demonstrates the projected daily traffic flow for the roads in the plant site area due to plant construction employment.

The local municipalities, due to the increased population and subsequent increased traffic, would have added congestion and maintenance costs for existing streets. These communities will have to undertake upgrading of existing streets and construction of new streets to accommodate population increases. Wheatland would be the most affected municipality, absorbing about 85% of the increased population (DOBER estimates). Wheatland currently has about 18 miles of city streets, all of which are paved. Without the construction of the proposed project, an estimated 1.8 miles of new streets would be needed to meet increased population. However, with the construction of the proposed project, some existing streets would need upgrading and 15 miles of new streets would have to be constructed. The new streets will require a capital outlay of approximately 2.25 million dollars, most of which will be paid by developers of new housing projects. The city will also

be faced with some increase in maintenance costs. A potential problem with traffic flow could arise, necessitating additional traffic lights and signs.

Without upgrading the existing roads in the plant site area, construction traffic would have to use paved Road B, as graveled Road A would not be able to withstand extensive travel by heavy equipment and increased traffic. Utilization of Road B as it exists now would create undue hardship on the seventeen families living along it. The heavy use would require extraordinary maintenance during construction and would possibly necessitate rebuilding before or after construction.

Predicted Conditions of Existing Roads With Alleviations: To keep traffic flow at a minimum through Wheatland, it is important that the North Wheatland Interchange be utilized to the maximum extent possible. Using this exit, heavy equipment and truck traffic will be diverted from city streets, minimizing heavy loads and maintenance costs. Traffic would then turn north on Road C (Old Highway 87) to Road A which runs east to the plant site. To minimize the impact on the residents of the plant site area, Road A will be upgraded and utilized to avoid increased traffic on Road B. Several reasons exist for using Road A. Currently, seventeen farmhouses are situated on Road B and many sit close to the road edge. If Road B were used, widening would be necessary, requiring the purchase of 75 feet of right-of-way and necessitating the relocation of, or severe damage to, a minimum of five homes. Road B is also an established farm-to-market road and is used by school buses. Only five houses are located on Road A and two families would possibly have to be relocated. Road A is only sparsely traveled and is not used by school buses. By using Road A for construction traffic, relocation of families would be minimal, and traffic and school routes would be able to move normally without interference or possible danger to school children.

The cost estimate for upgrading Roads A and D will range from $350,000 to $400,000.

Funding and revenues available are discussed in DIVISION IV.

III.K.8.b. Railroads:

Currently Wheatland and Platte County are served by the Colorado and Southern Railway, a wholly owned subsidiary of the Burlington-Northern Railroad. The Colorado and Southern owns 712 miles of track and serves Colorado, New Mexico and Wyoming. The line serving Wheatland is 123 miles long and runs in a north-south direction through Platte County. The line begins at Cheyenne, 96 miles south of Wheatland and ends at Wendover, Wyoming, 27 miles to the north. At Wendover, the line joins A Burlington Northern line which runs 8 miles southeast to Guernsey and then continues 32 miles to Torrington before entering Nebraska. West of Wendover, the Burlington Northern line runs through Douglas and Casper before turning north and into Montana. The existing Colorado and Southern line passes approximately one mile west of the proposed powerhouse. Exhibit 34 shows the existing Wyoming railroad system.

Present Conditions of Existing Railroads: Currently, the Colorado and Southern has two scheduled stops in Wheatland each day when supply cars are left off and empty cars are picked up. A northbound train arrives in Wheatland at 2:00 a.m. and a southbound train arrives at 1:30 p.m. An average of two other unscheduled trains each direction pass through Wheatland each day.

Projected Conditions of Existing Railroads Without Alleviation: Regardless of the proposed power plant and the consequent development in Platte County, rail traffic through the area should appreciably increase in the next two to five years as a result of unit trains carrying coal from the Powder River Basin to consumers to the south. As the Powder River Basin is further developed, unit trains will use the Colorado and Southern Railway more often. An average of 10 trains each direction for each day is expected in the future. Increased rail traffic will cause traffic congestion at some rail-road intersections which will eventually necessitate the construction of additional under or overpasses. These will be built and maintained at the expense of the Colorado and Southern Railway. Traffic congestion and crossing hazards will be expecially prevalent in Wheatland where auto traffic is the heaviest.

Coal will be delivered to the proposed power plant by way of railroad from the Powder River Basin. Unit trains with coal cars having a 100-ton capacity will be used. Since the trains will be coming to the plant from the north, where there are few roads to be crossed, Wheatland will not be affected. Very little traffic congestion could be attributed to trains servicing the power plant. To carry the unit trains from the existing Colorado and Southern tracks to the power plant coal-handling system, a railway spur will be constructed. The spur will consist of approximately 34,000 feet of track and will be constructed as a loop around the coal storage and loading facilities to aid in rapid handling. Exhibit 4 shows the railraod spur design and position relative to the power plant facilities.

The change in railroad usage attributed to the power plant should not affect residents or expenditures in Platte County. Any rail improvements or developments will be financed by the Colorado and Southern Railway.

Projected Conditions of Existing Railroads with Alleviation:

No alleviation plans are being considered for railways. Over or under-passes at busy railroad crossings may eventually be needed even without the proposed project.

III.K.8.c. Air Service:

No facilities for commercial services exist at the Wheatland Airport at the present time. The nearest commercial services are in Cheyenne, approximately 70 miles south, which is serviced by Frontier and Western Airlines. Other airfields exist in Guernsey (25 miles northeast), Medicine Bow (65 miles west), Torrington (45 miles east), and Laramie (70 miles southwest).

Present Conditions of Wheatland Air Service: Wheatland is served by the Phifer Field Airport on the east side of the city, as shown in Exhibit 18. The airport is presently administered by a joint City/County Airport Board consisting of five members. Currently, 39.18 acres are utilized as well as 5.5 acres of private land on which stands 14 privately-owned hangars. The runway is 4124 feet long and 75 feet wide and runs in an east-west direction. The runway has a 314-foot displaced threshold on the western end giving a 3810-foot effective length when landing from the east. It has a 300-foot displaced threshold on the east end giving a 3824-foot effective length when landing from the west. The runway surface is a granular base with one to two inches of asphalt surfacing which shows signs of deterioration. The existing apron area is a bituminous surfaced area approximately 75 feet by 275 feet and serves also as a taxiway to hangars and fuel pumps. A tie-down area approximately 200 feet by 275 feet adjacent to the apron can accommodate 20 aircraft at this time. Low intensity lighting exists at the field with lighting units located at the edge of the runway. A lighted wind cone and a beacon are part of the lighting system. The runway is marked with a center line and threshold bars.

Total operations at Phifer Field for 1974 was estimated at 8600 annual operations. Currently 18 aircraft are based at Phifer Field which is above the national average. This, however, is typical of areas of the nation which are more sparsely populated. In communities with no commercial air transportation, the need is answered by a higher ratio of privately-owned aircraft.

Projected Conditions of Wheatland Air Service Without Alleviation: In a study of the present airport, Thomas and Lockwood, Consulting Engineers, made projections for the number of based aircraft and total

operations for Phifer Field. These projections are used in Exhibits 19 and 20, and are based on past history. Much of the following information is quoted directly from their report to the City of Wheatland. These projections are based on an anticipated five percent annual increase for the initial period through 1985 and three percent thereafter. Also incorporated into this projection is the impact associated with the development of the power plant. The impact of the power plant construction adds an additional three percent based aircraft at this airport for the first three years. This will be due to the increase in population and the increase in income level in the area. The number of based aircraft may decrease at the end of the construction period when construction employees leave the area. The majority of based aircraft will be of the single-engine type with an addition of some light twin aircraft.

Total operations at Phifer Field are expected to have a very sizeable increase in the future. Estimates of activity in the past reveal total operations in 1970 at approximately 4500; increasing to approximately 8600 in 1974 or an increase of 15 percent per year. If no construction was intiated, it could be expected that total operations at the airport would increase from seven to ten percent per year. This would be representative of the activity in areas such as Wheatland and Platte County. The power generating facilities in the area will have an effect on the number of operations. An estimate of airport utilization atrributable to the project is 26 to 36 operations per week. It is anticipated the post-construction operations for this particular industry would decrease to ten to fourteen operations per week. Based on history, industrial growth, economic considerations and population projections, Exhibit 20 was prepared showing the total annual operations.

Aircraft are generally grouped by performance into five classes: A, B, C, D and E. Table 42 lists these classifications of aircraft types.

Table 42
CLASSIFICATION OF AIRCRAFT TYPES

A	BAC VC 10 Boeing 707, 720, 747 & 2707 series Convair 880 & 990 deHavilland Commet Douglas DC-8 Series Sud-Aviation Caravelle	D	Aero Commander Beech Bonanza & Debonair Beech 50 Twin Bonanza Beech Queen Air Beech Travel Air Cessna Skyknight deHavilland Dove Piper Apache Piper Aztec
B	BAC 111 BAC Vanguard Boeing 727, 737, & DC-9 Bristol Brittannia Convair 240, 340, 440, 640 Douglas DC-6, DC-7 Series Fairchaild F-227 Lockheed Constellation Lockheed Electra Lockheed JetStar	E	Aeronca Champion Beech Musketeer Cessna 140, 150, 170 180, 210 Series deHavilland Beaver (L-20) Mooney M20
C	Jet Commander Beech 18 Series de Havilland 125 Douglas B-26, DC-3 Fairchild F-27 Grumman Gulfstream Lockheed Lodestar, Lear-Star Series Nord 262 North American T-39 (Sabre Liner) Potez 840		

FAA AC 150/5060-1A – AIRPORT CAPACITY CRITERIA USED IN PREPARING THE NATIONAL AIRPORT PLAN – July 8, 1968, Department of Transportation, Federal Aviation Administration.

Present usage of Phifer Field is by aircraft in the D and E Classes with some Class C. It is estimated the present use is 40 percent Class E, 55 percent Class D and 5 percent Class C. It is not anticipated this aircraft mix will be appreciably altered during the time period covered by this study.

The airport capacity of Phifer Field is not a problem at the present time nor is it expected to be a problem during the period of this study. FAA AC 150/5060-1A, Table 1, Appendix 1, Page 1, gives a value of 90,000-150,000 annual operations capability for a single runway. This is based on less than 10 percent of the aircraft using the airport exceeding 12,500 pounds gross weight. Using criteria for runway capacity as set forth in FAA AC 150/5060-1A, Appendix 2, Page 20 and applying an aircraft mix of 95 percent Class D and E and 5% Class C and an exit rating of 5, the result is 74 VFR operations per hour. It is estimated that the peak hourly VFR demand at this airport will not exceed twenty-four operations; thus, there should be no problems in runway capacity.

Projected Conditions of Wheatland Air Service With Alleviation: Since airport capacity is not a problem at Phifer Field, the construction of the power plant and related facilities should not cause any adverse effect. Only normal maintenance and improvements on facilities necessary to keep pace with normal growth would be needed, therefore no alleviation plans will be necessary. The increase in Wheatland residents may increase the demand for commercial service which would require an expansion of the current facilities. The City and County are presently evaluating the feasibility of such an expansion.

III. SITING APPLICATION:

K. Impact Alleviations:

subsection 9

III.K. Impact Alleviations:

III.K.9. Land Use at the Site Location:

Most of the Wheatland area was rolling grassland prior to the first homesteading in the late 1870's. The majority of the soils in the area are best suited for rangeland; however, approximately 40 percent of the land is adaptable for crops. Soils on the irrigated land have a potential for supporting any crop that will do well at this altitude (4550 feet) and requires less than 120 days to mature. Soils on approximately 30 percent of the area are considered to be suitable for dry cropland, although there are small portions within fields where soils are shallow and slopes are steep. In terms of area there are three major types of land utilization in the region. These are cropland, upland range, and stream side vegetation.

III.K.9.a. Agricultural Uses:

Cropland: Utilization of land for crop production is very important to the economy of the Wheatland area. Because of the limited rainfall that occurs in the area, the primary factor that determines what types of crops are grown is whether or not the land is irrigated. Several factors determine whether or not a tract of land can be irrigated. The principal factor is the availability of adequate water, and hence the position of the tract relative to streams or aquifers is important. The alkalinity or salinity of a soil is another factor that may determine whether irrigation may be beneficial for the particular area. If the previously-mentioned conditions are not extreme, salt and alkali-tolerant plants may flourish in these soils.

The second most important factor is slope. Steep lands cannot be effectively irrigated, due to erosion and excessive runoff. For this reason, a large scale contour map is of more use than a soil association map in delineating areas which can be irrigated. Other factors limiting the use of irrigation in certain areas are poor drainage and inadequate soil depth.

Approximately 10 percent of the area is used for irrigated crops. The major crops are sugar beets, beans, corn, potatoes, alfalfa, native grasses for hay or pasture, oats, barley or wheat. In most years natural

moisture is adequate for plant needs until near the end of June. Successful irrigation farming depends on maintaining fertility, controlling erosion, and maintaining the soil structure. Wind erosion is considered to be a most serious hazard and all land left bare by the harvesting of row crops must be protected by rough tillage or by the use of crop residues.

The principal dryland crops are small grains, mainly winter wheat, barley, oats, grasses and alfalfa. The most common cropping system is alternating the grains with summer fallow. Most of the dry cropland is composed of soils of a light texture that are vulnerable to the severe soil blowing conditions of the winter months. Wind strip-cropping was begun during the drought of the 1930's and continues to the present time. Some soils need the additional protection provided by stubble mulching and surface ridging.

Diversion ditches and grassed waterways are employed to dispose of excess water from sudden downpours with a minimum of erosion. Single row field windbreaks are used in several areas to provide wind protection and to prevent snow accumulation. The conservation and efficient use of moisture provided by normal precipitation is needed to obtain satisfactory production.

Rangeland: Livestock and livestock products account for more than half the agricultural income of the area. About 60 percent of the Wheatland area is utilized as rangeland. This land is mainly found in upland areas which are too rocky or steep for cultivation and in areas of shallow unproductive soils. Forage common to this area includes short grasses and a few small shrub species. Most of the ranches are cow-calf operations in which the calves and some yearling steers and heifers are sold in the fall. There are only a few sheep ranches.

Only half the herbage can be safely grazed during the growing season because plants must retain enough vigor to survive and a vegetation cover is necessary to prevent erosion. Preventing over grazing requires constant attention to achieve even distribution of livestock. The even

distribution is achieved through the judicious spacing of a sufficient number of watering places and by placing salt and other mineral supplements in lightly grazed areas. Grazing is also controlled by fencing to prevent animals from feeding on the same pasture during the same season in consecutive years. This program of deferred grazing reduces the possibility of killing off either the warm season grasses or those that thrive best in the spring and fall.

A program that includes range seeding, development of adequate and properly spaced watering places, brush control and deferred grazing is necessary to maintain and improve rangeland. Depending on the type of soil involved and the degree of care provided, 40.1 acres of rangeland in this area will support a cow-calf unit for a year.

III.K.9.b. Compliance With Land Use Plans:

The Participants have complied with all local ordinances and land use plans. The Board of County Commissioners has rezoned the plant and dam site for "industrial use." The regional Resource Conservation and Development Project Plan for southeastern Wyoming (Converse, Platte, Laramie and Goshen Counties), the single regional plan for this area lists as one of its project objectives the "Establishment of new high quality business and industry." (Source document, Southeastern Wyoming Project Plan - Resource Conservation and Development, Soil Conservation Service, et. al., 1974, page 60.)

The proposed Laramie River Station will represent a significant investment by the Missouri Basin Power Project not only in terms of dollars, but in maintenance and enhancement of the area in which it is located. The full adherence to and compliance with stringent environmental regulations, along with a commitment to help alleviate potential negative impacts arising from the proposed action, should qualify the Missouri Basin Power Project as "high-quality business and industry," as listed previously.

The Southeastern Wyoming Project Plan Objectives and Major Policies are presented hereafter.

Resource Conservation and Development Project Objectives

1. An informed public dedicated to the conservation and development of the resources in the area.

2. Conserve the resource base of the Project through:
   a. Supporting a vigorous on-going planning process with participation from all governmental units, agencies and public.
   b. A planned program to make the area as free as possible of the hazards and damages of floods and erosion.
   c. Development and protection of quality habitat for all desirable species of fish and wildlife.
   d. Well-managed woodlands.
3. Improve income, job opportunities and the social well-being of the Project's people by:
   a. Proper utilization of the soil resource.
   b. Establishment of new farm enterprises.
   c. Expansion of existing farm enterprises.
   d. Establishment of marketing facilities.
   e. Increase promotion of the agricultural industry.
   f. Improved utilization and marketing of woodland products.
   g. Constructing impoundments and water-based recreation developments.
   h. Retention of existing industries.
   i. Establishment of new high quality business and industry.
   j. Stimulating development of sound income producing recreation areas.
4. Improve essential community services by:
   a. Developing rural water systems.
   b. Developing rural sewage systems.
   c. Providing low income housing.

Resource Conservation and Development Major Policies

1. Expand public recreation facilities to meet needs.
2. Develop a continuing program of two-way communication with all concerned agencies and groups to maintain an atmosphere of mutual cooperation and understanding.
3. Measures to foster project - wide conservation and development will be continually sought from individuals, groups and communities and local governmental agencies.
4. This program is open-ended; additional measures will be included as adopted by the executive committee.

5. The executive committee will solicit technical and financial support for resource measures from individuals and from government at local, county, state and federal levels.
6. Promote watershed protection and flood prevention to reduce flooding and develop water supplies for fish, wildlife, agriculture, domestic and recreational uses.

It is the intent of the Missouri Basin Power Project to fully cooperate with and support, to the extent possible, these objectives and policies.

III.K.9.c. Compatibility With Nearby Land Utilization:

Since the project is being designed with stringent emission controls, the neighboring land utilizations of agriculture and livestock ranching may continue unaffected. There are no projected changes to the nearby land uses, such as residential, mining or recreation uses evident at this time.

III.K.9.d. Alternative Uses for the Proposed Site Location:

Agricultural Uses: The major portion of the plant site has been used for native range, although a quarter of a section of pasture-land has been receiving sprinkler irrigation. Steep terrain, the Laramie River and its banks, and rocky outcrops on portions of the plant site will not allow agricultural utilization of the 2710 acres involved for other than it has been used in the past.

Industrial Use: Little industry exists in the area of the proposed plant site and, recruitment procedures notwithstanding, little potential exists for new industry to settle in the area. The site itself, however, is adaptable to any industry possessing similar requirements as the proposed electric generating station. Any such industry could be assumed to have a greater impact on the environment.

Residential Use: Little reason exists for residential utilization of the proposed plant site area. If the proposed power project were not built at this location, the area itself could be used for homesites. However, areas nearer the town of Wheatland would offer more advantages, such as closeness to services and main transportation routes.

Open Space Use: The proximity of the site location to other recreational resources, the lack of services for campers, and the lack of large water areas for aquatic sports effectively negate the possibility of resort or recreational use of this area.

Additional Land Use Trends: Because of the rural location, lack of economically mineable mineral resources, lack of new or existing industrial expansions, and the historically agricultural aspects of this area, no future land use trends applicable to this area have become evident.

Additional water made available by the proposed Grayrocks Reservoir to the Corn Creek Irrigation District will make an additional 15,000 acres of land irrigable in the region.

III. SITING APPLICATION:

K. Impact Alleviations:

subsection 10

III.K.10. Education Facilities:

Present Education Facilities: Platte County contains two separate school districts. District 1 includes schools in Wheatland, Glendo and Chugwater. District 2 includes schools in Guernsey and also serves Hartville, Sunrise and surrounding areas. Enrollment figures for the 1974-1975 school year for Districts 1 and 2 are given in Tables 43, and 44. Pupil-per-teacher ratios and expenditures per pupil are given in Table 45.

In Wheatland a new high school has been built to replace the school that burned down in 1972. This high school, completed during 1975, presently operates under capacity. The junior high in Wheatland has space available to hold an additional 144 students if all available space is utilized for classrooms. The elementary school has little, if any, capacity for handling additional students.

Glendo and Chugwater in District 1 have schools which include grades 1-12. School officials estimate that each community could house approximately 50 additional students in their current junior and senior high school physical facilities. The elementary schools in both towns are at full capacity now. They each combine the first and second, the third and fourth, and the fifth and sixth grades with only one teacher assigned to each classroom.

District 2 (Guernsey) has physical facilities to house another 75 students if they were evenly distributed across the grade levels.

Present Salaries and Curriculum: The present salary ranges for teachers and administrators is presented in Table 46.

The present curriculum offered is presented in Table 48.

Projected Increase In Enrollments and Impact If No Alleviation Plans are Followed: The majority of the impact will occur in District No. 1, especially in the Wheatland school system. The study entitled "A Social Impact Assessment of the Laramie River Station" by the University of Wyoming estimated Wheatland will absorb approximately 85 percent of the influx of school-age children. Table 47 gives the projected school enrollments for the Wheatland school system for the period 1976-85. It is anticipated that peak impact would occur during the 1979-

80 school year when approximately 1,322 additional students might be enrolled, an increase of over 100 percent from current enrollment figures. The long-term enrollment increase attributable to the permanent operation of the plant is approximately 420 students.

If nothing were done to alleviate the impact on the present school system, Wheatland's current elementary facilities could not accommodate the increased enrollment that would result from construction of the plant. Similarly, elementary schools in Glendo and Chugwater could not accommodate the expected increase in enrollment.

The need for additional classroom space in Wheatland Junior High (grades 7-8) would not be as great as in the elementary grades, but the existing facilities would be overcrowded. The new high school facility, which will be available for occupancy during the 1975-76 school year, will have facilities for 25 classrooms and three all-purpose rooms. If no new classroom space were made available, there would be an average of 25.4 purpils per classroom by the 1979-80 school year, declining to an average of 20.0 by 1985. Projected enrollment can be seen on Table 47 for Wheatland's primary and secondary schools. Increased enrollments in Wheatland's schools would also require the school system to hire more teachers.

The District 2 School System in Guernsey could house approximately 75 additional students with the present physical facilities. It is anticipated that during the peak construction period, approximately 62 to 75 additional students would enroll in the Guernsey school system. Thus, current physical facilities in Guernsey would be adequate. Several additional teachers may be needed to keep the student-per-teacher ratio as it is, but money will be available for this from the school tax levy on the Grayrocks Reservoir.

These impacts and associated preliminary alleviation plans are discussed further in DIVISION IV of this application.

Table 43

PUBLIC SCHOOL ENROLLMENT BY LOCATION FOR DISTRICT #1 PLATTE COUNTY 1974-1975*

Grade	Wheatland	Glendo	Chugwater
Pre-Kindergarten	0	0	0
Kindergarten-6	--	--	--
1-6	540	--	--
1-8	--	79	62
7-8	175	--	--
9-12	340	50	31
Special Education	--	--	--
TOTAL	1,055	129	93

**Office of Superintendent of Schools, Unified School District Number 1, Wheatland, Wyoming.*

Table 44

PUBLIC SCHOOL ENROLLMENT FOR DISTRICT #2 (GUERNSEY) PLATTE COUNTY 1974-1975[1]

Grade	Number of Students Enrolled	Percent of Students Enrolled	Percent of Wyoming Students Enrolled[2]
Pre-Kindergarten	0	0	.1
Kindergarten	172	50.3	50.0
7-8	57	16.6	16.9
9-12	114	33.2	31.4
Ungraded	--	--	.3
Special Education	(28)[3]	(8.2)[3]	1.3
TOTAL	343	100.0	100.0

[1] *Office of Superintendent of Schools, Unified School District Number 2, Guernsey, Wyoming.*

[2] *Wyoming State Department of Education, Division of Management Information Services, "Wyoming Fall Enrollment by Schools as Reported September 7, 1974" (October, 1974).*

[3] *Included in K-12 totals.*

Table 45

TEACHERS AND EXPENDITURES IN DISTRICTS #1 AND #2 PLATTE COUNTY 1973-1974[1]

Description	Wheatland	Glendo	Chugwater	Guernsey	State
Number of F.T.E.[2] teachers	52.9	12.5	11.0	27.0	4,985.3
Pupil/teacher ratio	19.1	11.0	9.8	13.9	18.5
Expenditure per pupil	$1,175	$1,175	$1,175	$1,473	$1,163

[1] *Wyoming State Department of Education, Division of Management Information Services, "Wyoming School Districts–F.T.E. Teachers, Enrollment, Schools as Reported September 7, 1974" (October, 1974).*

[2] *F.T.E. = full-time equivalent*

Table 46

PROFESSIONAL SALARIES PLATTE COUNTY SCHOOL DISTRICT NO. 1

Position	No. in Position	Lowest Salary	Highest Salary
Central Administration	1		$24,000.00
General Administration	6	$14,000.00	$18,200.00
Elementary (1-6) Teachers	34	$ 8,400.00	$11,850.00
High School Teachers (Includes Library & Guidance)	58	$ 8,400.00	$12,770.00
Exceptional Programs	5	$ 8,400.00	$ 9,320.00

Table 47

SCHOOL DISTRICT NO. 1 SCHOOL POPULATION PROJECTED FOR THE PERIOD FY 1977 TO FY 1986

WHEATLAND SCHOOLS	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Grades Kindergarten - 6										
Without MBPP[1]	601	613	782	797	813	831	849	865	885	905
Increase due to MBPP	112	178	499	661	531	382	410	362	214	203
Subtotal	713	791	1,279	1,458	1,344	1,213	1,259	1,227	1,099	1,108
Grades 7 - 8										
Without MBPP	188	192	195	200	204	207	212	216	221	225
Increase due to MBPP	52	83	200	264	212	153	165	145	86	82
Subtotal	240	275	395	464	416	360	377	361	307	307
Grades 9 - 12										
Without MBPP	381	389	397	404	412	420	430	437	446	455
Increase due to MBPP	78	124	299	397	319	229	246	217	129	122
Subtotal	459	513	696	801	731	649	676	654	575	577
Wheatland Total	1,412	1,579	2,370	2,723	2,491	2,222	2,312	2,242	1,981	1,992

[1]*Projections for normal increase (without MBPP) for Wheatland schools were based on the assumption of a 2 percent increase per year.*

[2]*Elementary enrollment increases significantly in 1978-79 due to the proposed addition of kindergarten classes in School District No. 1. It was assumed that approximately 150 new kindergarten students would enroll in the first year.*

Table 47 (Continued)

SCHOOL DISTRICT NO. 1 SCHOOL POPULATION PROJECTED FOR THE PERIOD FY 1977 TO FY 1986

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
CHUGWATER & GLENDO SCHOOLS										
Grades Kindergarten - 8										
Chugwater										
Without MBPP*	64	65	66	67	68	69	69	71	72	72
Increase due to MBPP	6	9	22	29	24	17	18	17	10	9
Subtotal	70	74	88	96	92	86	87	88	82	81
Glendo										
Without MBPP	84	86	87	89	90	92	93	95	95	97
Increase due to MBPP	6	10	21	28	24	17	18	17	10	9
Subtotal	90	96	108	117	114	109	111	112	105	106
Grades 9 - 12										
Chugwater										
Without MBPP	33	34	34	35	36	37	37	38	38	39
Increase due to MBPP	3	4	10	13	10	7	8	7	4	4
Subtotal	36	38	44	48	46	44	45	45	42	43
Glendo										
Without MBPP	56	57	58	60	61	62	63	65	66	67
Increase due to MBPP	3	4	10	13	10	8	7	7	4	4
Subtotal	59	61	68	73	71	70	70	72	70	71
Chugwater & Glendo Total	255	269	308	334	323	309	313	317	299	301
Grand Total School District No. 1	1,667	1,348	2,678	3,057	2,814	2,531	2,625	2,559	2,280	2,293

**Projections for normal increase (without MBPP) were based on the assumption of 1 percent increase per year.*

Table 48

CURRICULUM OF WHEATLAND HIGH SCHOOL*

CREDITS REQUIRED

Academic Diploma		Vocational Diploma		Certificate of Attendance
80		80		Less than 80 but more than 50
44 must be in academic subjects		44 must be in vocational subjects		
Language Arts	12	Language Arts	8	
Social Studies	8	Social Studies	4	At least 8 full semesters in high school attendance.
Science	8	Science	4	
Math	8	Math	4	
Including:		Including:		Including:
Eng. I & II		Eng. I & II		Eng. I & II
U.S. History		U.S. History		U.S. History
Gen. Math or Alg. I		Gen. Math or Alg. I		Gen. Math or Alg. I

CLASSES OFFERED

Course Title	Duration of Course	Credit
Vocational Agriculture		
Ag. I	Full Year	4
Ag. II	Full Year	4
Ag. III & IV	Full Year	8
Welding	Full Year	4
P.E., Health, Drivers Education		
Driver's Education	Semester	2
Health	Semester	2
Freshman-Sophomore Girl's P.E.	Full Year	4
Advanced Girl's P.E.	Full Year	4
Freshman-Sophomore Boy's P.E.	Full Year	4
Advanced Boy's P.E.	Full Year	4
Physical Conditioning and Weight Training	Full Year	4
Science		
Basic Science	Full Year	4
General Biology	Full Year	4
Advanced Biology	Full Year	4
Human Physiology	Semester	2
Human Anatomy	Semester	2
Science for Living	Semester	2
Projects in Science	Sem-Yr.	**
Chemistry	Full Year	4
Physics	Full Year	4
Home Economics		
General Home Economics	Full Year	4

Table 48 (continued)
CURRICULUM OF WHEATLAND HIGH SCHOOL*

Course Title	Duration of Course	Credit
Home Economics (continued)		
Home Economics II	Full Year	4
Home Economics III	Full Year	4
Marriage and Home	Full Year	4
Bachelor Survival	Full Year	4
Mathematics		
General Math	Full Year	4
Algebra I	Full Year	4
Algebra II	Full Year	4
Geometry	Full Year	4
Trigonometry	Semester	2
Advanced Algebra	Semester	2
Business Education		
Typing I	Full Year	4
C.O.P./Typing II	Full Year	4
Shorthand I	Full Year	4
Shorthand II	Full Year	4
Accounting I	Full Year	4
Advanced Accounting	Full Year	4
Office Simulation	Sem.-Yr.	**
Basic Business Math	Full Year	4
Business Law	Full Year	4
Social Studies		
American Political Behavior I	Semester	2
American Political Behavior II	Semester	2
Physical Geography	Semester	2
World Cultures	Semester	2
United States History	Full Year	4
Comparative Governments	Semester	2
Modern U.S. Foreign Policy	Semester	2
Sociology	Semester	2
Anthropology	Semester	2
Social Skills for Living	Semester	2
Western Civilization	Semester	2
Economics	Semester	2
Industrial Arts		
General Shop	Full Year	4
Metalworking	Sem.-Year	**
Graphic Communications	Full Year	4

Table 48 (continued)
CURRICULUM OF WHEATLAND HIGH SCHOOL*

Course Title	Duration of Course	Credit
Industrial Arts (continued)		
Woods I	Full Year	4
Cabinet Making	Full Year	4
World of Construction	Full Year	4
Drafting I	Full Year	4
Drafting II	Semester	2
Industrial Plastics	Semester	2
Small Engines	Semester	2
Electricity	Full Year	4
Electronics	Semester	2
Cooperative Occupational Education	Semester	2
Fine Arts		
Art I, General Art	Full Year	4
Art II, Painting and Drawing	Full Year	4
Art III, Ceramics and Sculpture	Full Year	4
Art IV, Independent Study	Full Year	**
Band	Full Year	3
Chorus	Full Year	1
Language Arts		
English I	Full Year	4
English II	Full Year	4
Literature of the West	Semester	2
The Media & You	Semester	2
Journalism	Semester	2
Journalism II	Semester	2
Poetry and Contemporary Literature	Semester	2
Mythology	Semester	2
Classical Literature	Semester	2
American Literature	Semester	2
English Literature	Semester	2
Creative Writing	Semester	2
Literature and Philosophy	Semester	2
Basic English Grammar	Semester	2
Advanced Composition	Semester	2
Communications	Semester	2
Communications II	Semester	**
Short Stories	Semester	2
Basic Speech	Semester	2
Forensics	Semester	2
Public Speaking	Semester	2
Non Fiction	Semester	2

Table 48 (continued)
CURRICULUM OF WHEATLAND HIGH SCHOOL*

Course Title	Duration of Course	Credit
Language Arts (continued)		
Drama	Full Year	4
Advanced Drama	**	**
Novels	Semester	2
French I and French II	Full Year	4
Spanish II	Full Year	4

**Wheatland grade and junior high schools are accredited but curriculum is not available.*

***Course duration and/or class credit to be contracted with instructor.*

III. SITING APPLICATION:

K. Impact Alleviations:

subsection 11

III.K. Impact Alleviations:

III.K.11 Geology:

The area considered for the plant site lies in the Great Plains physiographic province, which parallels the Front Range of the Rocky Mountains from Texas to the Canadian line. The rocks which underlie the entire province are sedimentary in origin and in areas very near the Rockies such as the Wheatland-Goshen Hole area, can be separated into two series based upon the degree of folding.

The thick blanket of rock units, older than the Cretacious, which were originally flat-lying units, participated in the Rocky Mountain uplift and were upthrown near the Front Range to near vertical angles. The ends of these folded beds were truncated and leveled by erosion. Subsequent erosion of the mountain massif resulted in deposition over the area immediately east of the Rockies, and these newer deposits form the second series; the broad, apron-like sheets of rock which are found directly beneath the surface throughout the unglaciated portions of the Great Plains. These beds are relatively flat-lying, but have slight dips between 3° and 8° to the east. They are composed essentially of sandstone and shale which are not highly resistant to erosion. All rock outcrops in the Wheatland-Goshen Hole area are of younger series except for an exposure of Cretaceous rocks caused by erosion of the Goshen Hole.

The geological formation underlying the plant site is a member of the Arikaree Group of Miocene age. This formation consists of white, massive, soft tuffaceous sandstone and white marl in the upper portion with a lower section of coarse-grained arkosic sandstone and conglomerate. The bedrock is capped by unconsolidated layers of quatenary gravels that form discrete terraces in the Wheatland Flats area. Exhibit 21 is a map of the general geologic conditions at the plant site.

Significant depths of alluvial materials are found in that portion of the plant site that encompasses the Laramie River floodplain. These deposits of recent geological time are characteristically composed of sand and gravel, with some silt and clay lenses and scattered cobbles and boulders.

Bedrock at the site is the arikaree sandstone. The amount of

cementation (by calcium carbonates) in the deposit varies from moderately well cemented to uncemented. The thickness of the arikaree is believed to be over 200 feet, although no borings have penetrated to that depth (site observations by Burns & McDonnell personnel).

Preliminary subsurface investigations have been completed and, pending verification by load tests, a conservative design consisting of independent footings or mats found on over-excavated recompacted fill will be used. Smaller, lighter structures which are not critical with regard to movement or alignment will be supported by shallow spread footings. The powerhouse structure will be entirely above finish grade. The ground floor, slightly above finish grade elevation, will have only minor penetrations for elevator pits and condensate pumps. All other equipment will be located above that level.

III.K.11.1 Seismic Activity:

As shown on Exhibits 22 and 23, the very low cumulative strain release and seismic risk characteristics of the Platte County area are also typical of the surrounding portions of Nebraska, Colorado, and Wyoming.

Examination of data from the National Earthquake Information Center in Boulder, Colorado indicate earthquake potential in the project area is minor. During a 20-year period from 1954 to 1974 only 26 seismic events are on record within a 150-mile radius around the project site. Most of these events originated either in the Yellowstone Park area or in the Denver area. Records dating back to 1894 are available, although probably not complete. Only five additional events are recorded between 1894 and 1954 for the same 150-mile radius. Only four events could be found above V on the Modified Mercali Intensity Scale. It is generally considered that damage is caused by earthquakes above V.

The seismicity of the area is not expected to change in the next 100 years, although it is possible that an earthquake exceeding VI could occur. It does not appear that the seismic events are directly related to the Wheatland or Whalen fault systems. Future seismic disturbances are expected to produce low-magnitude acceleration with intensities of V or less on the Modified Mercali Scale. The entire MM scale is shown on the following table.

The strain release of an earthquake is proportional to the square root of its energy release. The seismic risk of an area is based on the distribution of MM intensities, the strain release in the area since 1900, and the association of strain release patterns with geological features believed to be related to seismic activity.

MODIFIED MERCALLI INTENSITY (DAMAGE) SCALE OF 1931
(Abridged)

I. Not felt except by a very few under especially favorable circumstances.

II. Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.

III. Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibration like passing of truck. Duration estimated.

IV. During the day felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, doors disturbed; walls make creaking sound. Sensation like heavy truck striking building. Standing motorcars rocked noticeably.

V. Felt by nearly everyone, many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.

VI. Felt by all, many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.

VII. Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motocars.

VIII. Damage slight in specially designed structures; considerable in ordinary substantial buildings with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in

small amounts. Changes in well water. Persons driving motorcars disturbed.

IX. Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shift off foundations. Ground cracked conspicuously. Underground pipes broken.

X. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked, rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.

XI. Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.

XII. Damage total. Waves seen on ground surface. Lines of sight and level distorted. Objects thrown upward into the air.

The three-state region in the vicinity of the plant site is designated as a "Zone 1" area, defined by the Coast and Geodetic Survey as a region where minor damage could occur, but where earthquakes are not expected to be of great intensity.

III.K.11.2. Fault Conditions:

General fault conditions in Platte County begin approximately 8 miles southeast of Wheatland and extend northeasterly to approximately 20 miles north-northeast of Fort Laramie in Goshen County. These concealed faulting areas do not enter the area of the plant site, however, do enter the area of the proposed reservoir. No structural problems are expected from fault induced stresses in this area.

Projected Conditions With Alleviation Plans: The entire project will be designed in accordance with current safety and engineering criteria to withstand the forces encountered in a Zone 1 area. Consequently, no damage is expected to occur to the building, structures, dam and appurtenances during earthquake episodes as described.

III. SITING APPLICATION:

K. Impact Alleviations:

subsection 12

III.K. Impact Alleviations:

III.K.12. Soils and Subsurface Site Development Conditions:

Soils in the area of the plant site are of two distinct types. Nearly level, well-drained, deep, sand, loam, and clay soils have developed in flood-deposited material in the Laramie River bottom. Loam, gravel soils, with earth gravel at depths of 10 to 40 inches are found on the flat, rolling terraces and outwash plains. Surface material consisting of wind-blown fine sand and silt varies from 3 to 10 feet in depth over the site. The upper foot of this material is loose, but density increases below that depth. The deposit, in part, is cemented by calcium carbonates.

Beneath the wind-blown materials lies a strata of terrace gravels and sand representing stream deposition during a former erosion cycle. This material, which ranges in size from fine sand up to particles 4 inches in diameter, is 6 to 12 feet thick over the site. Some carbonate cementation was observed in this material.

Soils in the plant site and reservoir areas have developed on various geologic materials which slope gently eastward and cover the area. Generally, these are: (1) bedrock; sandstone, siltstone and shale, (2) alluvium; deposits in the present and ancient stream beds and (3) wind-blown silts and sands transported to and laid down as a veneer over portions of the area.

In terms of total area, soils developed on wind-blown silt (loess) occupy the greatest area. This is true through the unglaciated portions of the Great Plains. This material was deposited as a result of the great amounts of rock debris and meltwater runoff which accompanied continental and mountain glaciation. Figure 24 details the soils common to this area.

Tests to determine the permeability rates at the lagoon location on the proposed plant site show a range of 378 inches per day in densely packed soils to approximately 48,000 inches per day in loose gravel areas. A median approximation of an unpacked area would be 2000 to 3000 inches per day.

The surface soils will be removed during construction phases of the project. Minimal rainfall will alleviate some erosion problems and

construction water is available to wet the ground if dusting becomes a problem. A runoff retention pond will be built to collect and settle sediment from construction runoff as set forth by EPA. Since all excavated soil will be used at other locations around the plant site and since all disturbed areas will be utilized for the plant in one fashion or another (ponds, structures, roadways, etc.), little negative impact is expected from disturbing the soils.

Chemical concentrations of the soils (from four random samples in the area) may be found in the following table.

Table 49

RESULTS OF STANDARD SOIL ANALYSES AND ATOMIC ABSORPTION SPECTROPHOTOMETRY ON SOIL SAMPLES TAKEN IN THE VICINITY OF THE LARAMIE RIVER STATION

Vegetation Plot	Element									
	N	P	K	S	Mn	Na	Al	Fe	Cu	Mg[1]
Plant Site										
0	0.55%	.02%	2.08%	.02%	.02%	1.37%	5.6%	2.1%	144 ppm	0.48%
N1	.43	.02	2.47	.02	.02	1.36	5.9	1.9	none detected	.44
N2	.51	.03	2.14	.02	.02	0.96	5.6	2.0	30 ppm	.46
S1	.53	.05	2.14	.02	.03	1.31	6.2	2.3	130	.55
S2	.77	.04	2.26	.02	.03	1.62	6.3	2.6	110	.64
E1	.47	.04	2.20	.02	.02	1.42	5.8	2.2	20	.54
E2	.66	.03	2.16	.04	.03	1.27	6.2	2.5	110	.72
E3	.62	.02	2.28	.03	.03	1.50	6.5	2.5	140	.72
W1	.78	.03	2.13	.01	.02	1.45	6.5	2.5	120	.57
W2	.64	.02	2.18	.01	.03	1.43	6.4	2.3	190	.61
C1	.69	.03	2.07	.02	.04	1.04	5.8	2.4	180	.90
C2	.64	.04	2.26	.10	.03	1.31	6.8	2.2	180	.81
C3	1.15	.06	1.89	.06	.04	0.74	6.5	2.9	160	1.22
L1	.81	.06	2.02	.07	.04	0.93	6.7	3.1	140	1.02
L2	.98	.05	1.98	.05	.04	1.09	6.5	2.7	140	0.86
L3	.57	.04	2.09	.04	.03	1.27	6.2	2.3	280	0.66

[1] *There was no cobalt, chromium, lead, nickel or zinc detected by atomic absorption.*
(Source - Ecological Report for the Proposed Missouri Basin Power Project, ECI, 1975)

III. SITING APPLICATION:

K. Impact Alleviations:

subsection 13

III.K. Impact Alleviations:

III.K.13. Vegetation:

The region of interest is characterized by gently rolling uplands dissected by the drainage canals of small, mostly intermittent streams. The vegetation of this area may be differentiated into six major types, each of which presents a uniformity of appearance and is explainable in its pattern of distribution. The six major vegetative types are Shortgrass Plains, Mountain Mahogany, Rough Breaks (steep side hill), Silver Sagebrush, Streambank and "Cultivated zones." A more complete description of vegetation type can be found in the Environmental Analysis for the Laramie River Station (Burns & McDonnell 1975) and in the Ecological Report, Volumes 1 and 2 (Ecology Consultants, Inc. 1975).

The plant site boundaries enclose approximately 2710 acres of land with most of the area being comprised of short grass grazing land (1773 acres). Five vegetation types may be found on Exhibit 25, included hereafter. Only four types are actually on the plant site, and of these, only the Shortgrass Prairie vegetation type will be substantially disturbed. Less than one-half the total acreage (mostly the grazing land) will be cleared for the construction of the plant facilities. The remaining areas will not be removed from wildlife habitat. The major impact of the plant construction will be the removal of surface cover and disruption of surface soils. Plant operations are expected to have no adverse effects on vegetation off the project site.

The area to be inundated by the Grayrocks Reservoir is estimated to be 4160 acres during maximum high water. Most of the area is cultivated land (1226 acres) and short grass grazing land (1072 acres). Terrestrial ecosystems in the reservoir areas will be converted to aquatic ecosystems for the life of the reservoir.

III. SITING APPLICATION:

K. Impact Alleviations:

subsection 14

III.K. Impact Alleviations:

III.K.14. Climate:

The predominant air masses that influence the climate of the area come from the Pacific Coast. This air is usually dry, having lost most of its moisture to the mountain ranges to the west. The Laramie Range, 35 miles to the west, has a marked effect upon the climate in the area as the predominantly westerly winds move downslope, warming the air by compression. The coldest temperatures come from cold air masses out of Canada. Seldom does air from the Gulf of Mexico invade this area. The climate is classified as semi-arid.

The following temperature and precipitation data were taken from Wyoming Annual Survey (1972) Climatological Date (Volume 81, No. 13) published by the U.S. Department of Commerce - National Oceanic and Atmospheric Administration for the Wheatland 4 North reporting station located 4 miles north of Wheatland. This data covers a 59-year period.

The mean annual temperature is 49.5° F. The 4,500-foot elevation, the dry air that permits rapid incoming and outgoing radiation and the passage of both warm and cold air masses cause wide temperature fluctuations, daily and between seasons. The extremes observed are a maximum of 106° F. in July, 1954 and a minimum of -35° F. in December, 1973. Late spring and early fall freezes are not uncommon. The average last occurrence of 32° F. in the spring is May 15. The average first occurrences of 32° F. in the fall is September 25.

The mean annual precipitation is 12.45 inches. The mean monthly precipitation amounts for January through December are .27, .35, .65, 1.75, 2.42, 1.98, 1.25, 1.05, 1.16, .77, .42, and .37 inches, respectively. Fifty percent of the annual precipitation occurs in the spring months of April, May, and June. Twenty-eight percent occurs during July through September. About 6.65 inches of 53.5 percent of the precipitation occurs during the average freeze-free dates. The greatest amounts of precipitation observed in any one month are 7.13 inches in May 1937. Several times there has been no precipitation for a month at this substation.

The greatest amount of rainfall measured in one day at Wheatland is 2.34 inches on June 12, 1970. The greatest amount of precipitation observed in one day at Wheatland, a combination of rain and snow on May 5, 1971, is 3.57 inches. The greatest amount of snowfall measured in one day at Wheatland is 25.0 inches in April, 1933. This month had the greatest measured snowfall of 40.2 inches.

Because continuously recorded wind data from Wheatland, Wyoming was lacking, Burns & McDonnell performed four seasonal ambient air tests during which wind speed and direction were continuously recorded. To supplement this data, wind data was obtained from the climatological data acquisition centers in Casper, Wyoming; Cheyenne, Wyoming; and Scotts Bluff, Nebraska.

Data compiled in each of these cities during the same time periods as the ambient air tests were utilized to determine the five predominant wind directions. ~~A representative wind rose is shown in Exhibit 11~~.

Sunshine is abundant in the study area. It is estimated that the average annual sunshine is about 65 percent of the possible sunshine. It ranges from about 55 to 60 percent for winter and spring, to about 65 to 70 percent for summer and fall. The average relative humidity is quite low, and is estimated to average about 55 percent. There is a great amount of variation in the relative humidity, daily and annually.

III. SITING APPLICATION:

K. Impact Alleviations:

subsection 15

III.K. Impact Alleviations

III.K.15. Noise:

III.K.15.a. Legal Requirements, State and Federal:

Noise levels will be controlled to within existing regulations. Occupational exposure to noise is governed by the Walsh-Healy Public Contracts Act of 1967 and the Williams-Steiger Occupational Safety and Health Act of 1971. These laws set forth the permissible levels of exposure of personnel to noise. Property line noise levels are not regulated in Wyoming at the present time.

III.K.15.b. Sources and Levels:

The major noise-producing equipment includes: fans, cooling towers, pulverizers, pumps, air compressors, valves and the turbine generator. Other periodic noises of short duration are produced by boiler blowoffs, pressure reliefs and other venting processes. Noise frequencies generated by these sources run the entire range of audible sound from about 20 hertz to 16,000 hertz.

Maximum sound pressure levels in octave bands at the nearest property line are not expected to exceed the following:

31Hz	63Hz	125Hz	250Hz	500 Hz	1KHz	2KHz	4KHz	8KHz	16KHz
72dB	73dB	72dB	68dB	65dB	61dB	56dB	50dB	40dB	20dB

These octave band sound pressure levels are equivalent to a sound level of 67 dBA. The nearest property line point for which the stated levels were calculated is south of the plant. At this point the property line is approximately 1500 feet from the center line of unit number one. The major contribution to noise levels at this point will be from the cooling towers.

Maximum sound pressure levels in octave bands at the property line directly east of the generation facility are not expected to exceed the following:

31Hz	63Hz	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz	8KHz	16KHz
67dB	63dB	58dB	51dB	45dB	43dB	40dB	21dB	0dB	0dB

These octave band sound pressure levels are equivalent to a sound level of 49 dBA.

Noise levels generated by the facility and propagated to the north and west property lines are expected to be less than 41 dBA and 37 dBA, respectively.

III.K.15.c. Projected Conditions with Alleviation Plans:

The emission of noise beyond the project property lines is not expected to cause any problems at this site. Present land uses of property adjoining the site are agricultural and general unpopulated rural land. Future use of this land is not expected to change, thus the noise levels at the property lines are not expected to cause activity interference or annoyance.

The calculated levels stated in this section are based on data taken at presently operating power plants. Source sound power levels were modified by appropriate distance factors (including molecular absorption at higher frequencies) to arrive at the stated property line levels.

III.K.15.d. Means of Control:

Wherever possible and considered necessary, the operating units will be purchased with noise controls applied. In the case of motors, pumps, control valves, fans and other major sources of noise, the items will be specified with allowable sound pressure levels or sound power levels listed. These levels will be based on reasonable typical values for the types of equipment specified and will allow compliance with the OSHA limit of 90 dBA for eight-hour personnel exposure. In cases where it is not practical or possible to limit the noise level to 90 dBA, personnel exposure will be limited through administrative controls (such as shortened shift lengths, work station locations, etc.) and environmental noise criteria will be met with the application of enclosures, mufflers or other means of transmission loss.

III.K.15.e. Ambient Monitoring:

One noise level monitoring program was conducted in September, 1975 at six locations near the plant site property line. Noise level measurements showed values typical of sparsely populated rural areas throughout the country. Additional monitoring programs will be conducted after plant startup to verify calculated levels. The Ambient Noise Measurement Report will be submitted as a reference report.

III. SITING APPLICATION:

K. Impact Alleviations:

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III.K. Impact Alleviations:

III.K.16. Fauna:

A detailed description of the fauna occurring in this area may be found in the Environmental Analysis for the Laramie River Station (Burns & McDonnell 1975) in Section 5.11 and in the Ecological Report, Volumes 1 and 2 (Ecology Consultants, Inc. 1975). Due to the length of this referenced section, it is presented here in a condensed form only.

III.K.16.a. Mammals:

Predominant species of mammals observed or expected to occur in the vicinity of the Laramie River Station are presented in Table 50 along with information on habitat, food preference and breeding characteristics.

III.K.16.b. Big Game Animals:

Through the efforts of field investigations and personal interviews, it has been determined that big game species present in the general area on a regular basis include white-tailed deer, mule deer and antelope. An occasional elk may wander through the area, but this is an uncommon occurrence as habitats in the area are not suitable for elk production. The species which do occur in the region utilize various habitats in the vicinity of the proposed plant site.

The Wyoming Game and Fish Department classifies the area near Wheatland as year-round deer range. They believe there is no great influx of deer from areas outside the area during any season of the year. No extensively used migration routes are known to be located in the area. The area appears to be able to support more deer than presently are located in the various habitats.

The Uva area, which includes the project site, is not a large production area for deer when compared to the Medicine Bow management unit as a whole. The animals in the Uva area are important, however, to locals for aesthetic reasons as well as for the meat and recreation they provide.

The Wyoming Game and Fish Department also considers the Uva area as year-round antelope range. The population appears to be fairly stable on a seasoned basis, with little influx of animals from nearby areas or emigration from the area. The Game and Fish Department has increased the number of antelope permits in the Rock Eagle management

area (of which the Uva area is part) during the period from 1971 to 1973. While the Rock Eagle area covers much more territory than the area of concern, this increase in permits reflects an increase in antelope production levels throughout the area.

An important fact of the wildlife studies is the apparent lack of extensively used migration areas for either antelope or deer with which the proposed facilities might interfere.

III.K.16.c. Song Birds:

Breeding bird populations are a conspicuous element of the primary and secondary consumer segment of most natural ecosystems. In the vicinity of the proposed Laramie River Station, 89 species were recorded of which only 16 may be considered numerically "important." These are:

Rough-legged hawk (Buteo lagopus)
Goshawk (Accipiter gentilis)
Great horned owl (Bubo virginianus)
Horned lark (Eremophila alpestris)
Black-capped chickadee (Parus atricipillus)
Rock wren (Salpinctes obsoletus)
House wren (Troglodytes aedon)
Townsend's solitaire (myadestes townsendi)
Yellow Warbler (Dendroica petechia)
Western meadowlark (Sturnella neglecta)
Rufous-sided towhee (Pipilo erythrophthalmus)
Lark bunting (Calamospiza melanocorys)
Lark sparrow (Chondestes grammacus)
Tree sparrow (Spizella arborea)
Brewer's sparrow (Spizella breweri)
Chipping sparrow (Spizella passerina)

These 16 "important" species contain none which are rare or endangered (in fact no such species were recorded). They can best be characterized as a set of widely distributed, ecologically opportunistic species. Two species (Rock wren and Brewer's sparrow) are restricted to a relatively narrowly-defined set of habitat conditions. These

Table 50

HABITATS, HABITS AND IMPORTANCE OF PREDOMINANT MAMMAL SPECIES IN THE VICINITY OF LARAMIE RIVER STATION, 1974

SPECIES	HABITAT AND HABITS	IMPORTANCE
Black-tailed jackrabbit (Lepus californicus)	Occurs in open areas on the plains. Active all year and is mostly nocturnal. Rests above ground in hollows constructed below shrubs. Feeds mostly on grasses and forbes. Reproduce during warmer months, up to 12 young in a season.	Hunted mainly for fur and as mink food.
Cottontail (Sylvilagus sp.)	Occurs in a variety of habitats from moist riparian situations to drier and more open grasslands and shrublands. Will seek shelter in rock crevices, shrubs and burrows. Active all year. Feed on grasses, sedges, forbes and shrubs. Breed from March to early August. Females potentially producing 15-20 young per year.	Hunted as game.
Deer mouse (Peromyscus maniculatus)	Occupies nearly every dry-land habitat. Stores food. Breeds from February to November, usually having 3-5 young per litter; 2-4 litters per year.	Prey for carnivores.
Spotted ground squirrel (Spermophilus spilosoma)	Occurs in open forests, scattered brush, grassy parks. Prefers sandy soil. Active throughout the year. Feeds on tender green vegetation in spring. Breeds during spring.	Prey for carnivores.
Thirteen-lined ground squirrel (Spermophilus tridecemlineatus)	Occurs in shortgrass prairie. Hibernates approximately six months of year. Breeds during spring, having usually 7-10 young, possibly a second litter in late summer.	Prey for carnivores.
Ord's kangaroo rat (Dipodomys ordii)	Prefers sandy soils. Active throughout the year; nocturnal. Stores seeds. Breeds during warmer months, possibly second litter in late summer.	Prey for carnivores.
Fox squirrel (Sciurus niger)	Occurs where there are enough deciduous trees to provide food and shelter. In riparian situations, very dependent on grains planted near dens as a main food source. Mates in late January and February and usually having one litter of about 4 young in a season.	Prey for carnivores.
Plains pocket gopher (Geomys bursarius)	A lowland species that inhabits the plains. Specialized for a fossorial existance, spending most of its time in elaborate tunnel systems it has dug. Feeds mainly on grasses, forbes and pricklypear cactus. One litter of about 3 produced a year.	Extensive burrowing may be a problem to agricultural and livestock interests.
Bushy-tailed wood rat (Neotoma cinerea)	Inhabits areas with rock outcrops. Builds its nests in crevices from various materials collected. Leaves of shrubs are the main food source but also eats other vegetation. Mostly nocturnal and does not hibernate. Breeding is during spring and summer.	Prey for carnivores.
Muskrat (Ondatra zibethicus)	Inhabits streams, lakes, ponds and swamps making homes constructed of aquatic vegetation and mud or burrows dug into the banks. Occasionally in the fall they are seen away from water. Food consists mainly of bulbs, roots, and stems of aquatic vegetation. Females have several litters in a season.	Trapped for fur.
Porcupine (Erethizon dorsatum)	Usually occurs in wooded areas where it leads a semiaborial life. Dens are located in open trees, or rock crevices. Active all year and feeds on the leaves, bark, buds and twigs of trees. Breeding is during fall. Young are born in early winter.	Occasionally eaten by man. Can kill trees by girdling them.
Coyote (Canis latrans)	Habitat varies from open prairies to more wooded areas. Active all year and primarily nocturnal. Although most often seen singly, may sometimes form small groups. Food consists mainly of rodent and rabbits but may include berries, carrion, game animals, and domestic livestock. Mating occurs in late January and early February producing litters of 5 to 6 pups.	Prey on many mammals. May be harmful to livestock.
Red fox (Vulpes fulva)	Inhabits river bottoms and farmlands of the plains. A secretive, nocturnal animal, active all year. Food consists of mammals, birds, reptiles, amphibians, insects, earthworms, berries, grasses and forbes. Mating occurs in late January and early February. Three to nine young are born in a litter.	Hunted as game and for fur. Preys on variety of vertebrates, may raid poultry houses.
Raccoon (Procyon lotor)	Abundant in moist areas, usually along rivers and ponds where there are trees for their dens. Primarily nocturnal, becoming inactive during colder weather. Diet includes plums, cherries, grapes, corn, crayfish, birds, small mammals, and insects. Mating occurs in winter or early spring; gestation period of about 63 days.	Hunted as game and for fur.
Striped skunk (Mephitis mephitis)	Inhabits open prairies, meadows, brushland and croplands. Chiefly nocturnal and may become inactive during colder weather. Foods consist of carrion, insects, amphibians, reptiles, birds, eggs, small mammals, fruits and nuts. Mating occurs in March and early April, producing litters of 4 to 10 young in May and early June.	Preys on small vertebrates.
American badger (Taxidea taxus)	Inhabits open prairie where soil is loose. Feed on pocket gophers, prairie dogs, ground squirrels, and mice, often by excavating their burrows. Den in holes in ground. Mating occurs in July and August; 1-4 young born in March and April.	Preys on small mammals.
White-tailed deer (Odocoileus virginianus)	Occurs in brushy and wooded bottom lands. Food varies but includes tree twigs and buds, corn and grass. Breeding occurs in the fall with fawns being born the following spring.	Hunted as game.
Mule deer (Odocoileus hemionus)	Habitat varies from coniferous forests to more open chaparral and grasslands. Browse on shoots of shrubs and may graze on forbes and grasses. Breeding occurs in October and November with fawns being born the following spring.	Hunted as game.
Pronghorn (Antilocapra americana)	Inhabits the open prairies and sage-brush plains but may occasionally be found in areas with scattered trees. Diurnal occuring singly or in herds. Diet consists of forbes, browse and occasionally grasses. Breeding occurs in late summer and early fall with males collecting small harems. Fawns born in the spring.	Hunted as game.

respective habitat types (rocky outcrops and shrubsteppe) are widespread and abundant throughout western North America. Neither can really be considered a narrow specialist. Lark buntings have a relatively restricted geographic range (the central North American grasslands), but are frequently spectacularly abundant locally within this range. The remaining species will have large geographic ranges in North America and occupy a moderate to wide range of habitat conditions within their range.

III.K.16.d. Game Birds:

The area near the proposed plant site and associated reservoir provides habitat for several game species throughout the year. Game bird species which have been observed in the area include sharptail grouse, wild turkeys, mourning doves, pheasants, and several species of duck. Other species which may also be found in the general vicinity include sharptail grouse and chuckars as well as several species of waterfowl which would migrate through the area on a seasonal basis and utilize sections of the Laramie River during migration.

III.K.16.e. Rare and Endangered Species:

The Rare and Endangered species listed for this area of Wyoming are the American Peregrine Falcon and the Black-Footed Ferret. The falcon's eastern limits presently follow the eastern front of the Rocky Mountains in the United States; only one known sighting was recorded of the falcon in Wyoming in 1969-70. The ferret's habitat is found in conjunction with prairie dog towns, none of which may be found in the area.

III.K.16.f. Projected Conditions Without Alleviation Plans:

The construction and operation of the power plant will have an impact on the local wildlife. Initial construction activities may usurp some of the habitat of small animals and will displace them to adjoining areas. Losses of the individual animals due to construction activities will not be significant. Operation of the plant will probably disrupt wildlife activities in the immediate area of the plant. These effects will be mitigated by the creation of additional wildlife habitat around the reservoir.

During filling of the reservoir there may be an impact on the bird populations presently occupying the stream-bank vegetation. New

growth of vegetation along the reservoir will mitigate this impact in the long term.

The reservoir is in the area of a major waterfowl flyway and may provide suitable habitat for nesting and resting during migrations. No major big game migration routes cross the area to be occupied by the plant site or reservoir.

III.K.16.g. Projected Conditions With Impact Alleviation Plans:

The project will not significantly disrupt the fauna. There are minimal adverse effects. No impact alleviation plans are necessary.

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DIVISION III:
Section K:

III.K. Impact Alleviations:

II.K.17 Satellite Industries Directly Related to Proposed Facility:

Significant growth of satellite industries directly related to, or resulting from construction of the Laramie River Station and associated facilities in Platte County is not anticipated.

Foreseen at this time are only two prospects. First would be the necessary facility to process, store and handle chemical products which would be produced by regenerable sulfur-removal equipment in the event such a system is installed. It does not at this time appear likely, however, that such a system will be selected. Even if one should be installed, it is not expected that such a satellite industry would result in significant employment or other economic impact in the area. Secondly, the only significant satellite industry anticipated is an irrigation project being planned by the Corn Creek Irrigation Association. This project would be located in western Goshen County near the Platte County line, and it is expected that this development would make possible irrigating approximately 15,000 acres presently consisting of 42% dry-land farm ground and 58% range land.

In efforts to achieve feasibility, numerous proposals and plans have been made in past years to develop the irrigation potential within the Corn Creek area. Unfortunately, costs have always been too high to justify the project. However, as a result of a joint cooperative agricultural-industrial effort agreement between Basin Electric, (acting on behalf of the Missouri Basin Power Project) and the Corn Creek Irrigation Association, the Grayrocks Reservoir will be developed as a water supply for both this irrigation project and as a water supply for industrial use by the Laramie River Station. It now appears that the Corn Creek Project will achieve feasibility.

The Corn Creek Irrigation project is divided into two phases. Phase I, consisting of approximately 5500 acres of development in the Harmony-Heights area, will include the pumping plant and initial part of the delivery system in both phases. Phase II consists of approximately 9500 acres of development in the Goshen-Hole area, will include construction of Teeters Reservoir and the balance of the delivery system.

Through the Agreement between Basin Electric and the Corn Creek Irrigation Association, Basin Electric will repay the full principal and interest of the investment from State Farm Loan funds that the Corn Creek Irrigation District makes in the Grayrocks Reservoir. The Agreement assumes an investment in Grayrocks Reservoir of approximately six million dollars.

III.K.17.a. Corn Creek Project:

Water Rights: The temporary filings cancelled by the Corn Creek Reservoir Association in trade for contracted water from Grayrocks Reservoir are itemized in the contract between Corn Creek Reservoir Association and Basin Electric Power Cooperative. The Association also holds temporary filings for the Corn Creek Pipeline as well as Corn Creek No. 1 Reservoir, now known as Teeters Reservoir. There is also a filing on groundwater from an infiltration gallery near the confluence of the Platte and Laramie Rivers.

Economic Analysis: The economic analysis of the Corn-Creek Project is as follows:

Cost-Benefit Study

I. Capitol Cost	
A. Construction costs	
1) Pumping Plant	$ 481,000
2) Mainlines	1,533,460
3) Concrete Lined Canals	468,880
4) Teeters Reservoir	2,750,000
Sub-total - construction costs	$5,233,500
B. Inflation factor (15%)	785,000
Sub-total	$6,018,500
C. Contingencies, Misc. (10%)	602,000
Sub-total	$6,620,500
D. Engineering and Legal Fees (9%)	595,500
Sub-total	$7,216,000
E. Interest During Construction	
Phase I	86,400

Phase II	$ 129,600
TOTAL	$7,432,000
Rounded to	$7,400,000
Phase I Costs	$3,000,000
Phase II Costs	$4,400,000*
Grayrocks Reservoir	$6,000,000
Total cash investment necessary for development of Phase I, Phase II, and investment in Grayrocks Reservoir	$13,400,000
Loan Request	$10,000.,000
Phase I investment	$ 3,000,000
Phase II investment	$ 1,000,000*
Investment in Grayrocks Reservoir	$ 6,000,000
	$10,000,000

*Only $1,000,000 of this loan request will be utilized for a portion of Phase II; this will require additional funds to be secured at a later date by the Corn Creek Reservoir Association for completion of Phase II.

Total cash investment in Phase I and Phase II. (Investment in Grayrocks is omitted because Basin Electric is to be responsible for repayment of those funds.)	$ 7,400,000.00
Cash investment per acre (15,000 acres) less individual on farm delivery systems:	$ 493.33

Development of the Corn Creek project will have the very beneficial effect of helping to stabilize the agricultural economy in the area. Furthermore, it is anticipated that, when fully developed, this project will provide the basis for approximately 70 family-farm units to develop in the area.

The Corn Creek Irrigation Association has applied to the State Farm Loan Board for loan funds to proceed with development. The Executive Director of the Department of Economic Planning and Development has recommended approval of a $10,000,000 loan which has been approved by the Wyoming Farm Loan Board at an interest rate of 4% for the term of 40 years.

Other Sattelite Industries: As exemplified by several other large power projects developed over the past decade in Wyoming, Montana and North and South Dakota, it is not anticipated that other satellite industries such as manufacturing, metal or wood fabrication or processing industries will develop within the general area as a direct result of construction and operation of the Laramie River Station.

The University of Wyoming (DOBER) concluded that increased development of satellite industries generally does not result from power plant construction.

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III.K.18. Water Supply for the Proposed Facility:

III.K.18.a. Description:

The requirement for an adequate reliable water supply for the facility was recognized by the Participants at the beginning of the site location phase of the project. Mr. Ken Holum of Ken Holum & Associates, Washington, D.C. was assigned the task of locating potential water supplies throughout the siting area. The firm of J. T. Banner & Associates, Inc., Laramie, Wyoming was retained by Basin Electric Power Cooperative, on behalf of the Participants, to assist Mr. Holum in the location of water supplies in the Wyoming and Montana areas and to evaluate the quantity and reliability of such water sources. The efforts of Mr. Holum and J. T. Banner & Associates have resulted in the development of a water supply plan for the proposed facility. The water supply plan is based on use of water from ~~three~~ four sources. The first of these sources is the excess flow of the lower Laramie River which could be stored in the proposed Grayrocks Reservoir. The Grayrocks Dam and Reservoir, as the facility will be named, will be located on the Laramie River about ten miles northwest of Wheatland (in Sections 5 and 6, T25N, R65W), see Exhibits 1, 10, 13, , 26. A pumping station will be built at the dam site and process water will be pumped back to the power plant via a transmission main. The following is a summary of major characteristics of the proposed facility extracted from the "Feasibility Report on the Grayrocks Dam and Reservoir" by J. T. Banner & Associates, Inc., Laramie, Wyoming, Rev. 1975. The potential yield of wells located on the Johnson Ranch is covered in a report entitled "Preliminary Investigation of the Availability of Ground Water - Johnson Ranch" by J. T. Banner & Associates, Inc., Laramie, Wyoming, 1974.

DAM

Type	Earth Fill
Height	94 Feet
Length at Crest	2550 Feet
Crest Elevation	4423 Feet (USGS)

RESERVOIR

Storage Capacity . . . . . .104,100 Acre-Ft
Area at Maximum High Water Level . . .~~4160~~ 4237 Acres
Normal High Water Level . . . . . 4404 Feet (USGS)
Maximum High Water Level . . . . . .4415 Feet (USGS)

The second source is well water to be obtained from the Johnson Ranch. In addition to the water supplied by the Grayrocks Reservoir, a well supply will be developed at the Johnson Ranch, located about 3 miles north of Wheatland. This well supply will be used only during extended drought periods. The well water will be pumped directly to the plant site via a transmission main.

The third source of water is from existing rights in the Boughton Ditch located approximately 100 miles upstream from the proposed Grayrocks Reservoir. (See Exhibit 26)

The incidental water rights is the fourth source.

Water Rights: Water rights have been or are in the process of being secured for the dam project. Enough water would be released from the proposed reservoir to assure a flow of 40 acre-ft per day from October through March and 80 acre-ft per day from April through September at the mouth of the Laramie River. This release rate will improve the low-flow situation that currently exists in the river during the late summer.

Water Use: A large portion of the yield from the proposed reservoir will be devoted to generating electricity. The bulk of the water conveyed to the plant will be evaporated in the cooling system. Additional water uses are presented in Section III.B.1.

A brief summary of the water supply and use situation follows:

Table 51

SUMMARY OF GRAYROCKS RESERVOIR OPERATION STUDY

41-YEAR PERIOD OF OPERATION - ANNUAL AVERAGES

(In thousands of Acre-Feet)

Laramie River Flows	
Flow Near Fort Laramie	89.37
Flow Near Uva	86.00
Flow at Lookout	86.10
Net Downstream Gain	7.49
Outside Water	
Inundated Water Rights	1.55
Boughton Ditch Rights	2.83
Pumped from Wells	1.59
Releases	
Downstream Irrigated Rights	3.94
Flow Released for G.I.D.	4.49
Corn Creek	
Total Water Required	22.50
River Gain Used	7.38
Uva Flow Used	10.50
Storage Used	4.62
Power Plant Requirement	
Total Water Required	30.65
Uva Flow Used	21.52
Inundated Water Used	1.55
Boughton Ditch Water Used	2.76
Pumped Well Water Used	1.59
Storage Used	3.24
Storage Conditions	
Available for Storage	45.54
Credit to Storage	16.11
Bypass	29.43
Reservoir Conditions	
Total Starting Storage	83.84
Average Surface Area (Thousands of Acres)	3.12
Evaporation Loss	8.48
Average Surface Elevation (Feet)	4397.53
Total End of Month Storage	83.82

(Source – "Engineering Feasibility Report on the Grayrocks Dam and Reservoir, "J. T. Banner & Associates, Inc.)

Sedimentation: The Bureau of Reclamation has found the existing Wheatland Reservoir No. 2 traps nearly all of the sediment derived from the upper basin of the Laramie River. The sediment load in the river below the reservoir is derived principally through surface (storm) runoff from the lower basin drainage area.

The worst sediment load found by the Bureau of Reclamation in the Laramie River above Wheatland Reservoir No. 2 was 80 tons per day. This would amount to an annual deposition of approximately 16.3 acre-feet per year if the inflow contained the same input load of 80 tons per day. This would result in a storage loss of less than 1% in 50 years.

It is believed that sedimentation in Grayrocks Reservoir will not interfere with the outlet works. Most sedimentation will occur during periods of peak runoff. Because of the length and size of the reservoir, most of the sedimentation will occur in the upper reaches and should consolidate to some degree due to the changing surface of the reservoir.

Groundwater: Utilization of groundwater from the Johnson Ranch will be done only in periods of extended drought. In the report entitled "Preliminary Investigation of the Availability of Groundwater Johnson Ranch" by J. T. Banner and Associates, Inc. 1974, the conclusions were:

1. There are two aquifers in the Johnson Ranch area. These have been designated as the Johnson "Red" and Johnson "Green" aquifers. The Johnson "Red" aquifer is the principal water producing horizon for agriculture in the Wheatland area.
2. Each aquifer would have a safe annual yield of 5000 acre-feet.

Plans are to utilize only water from Johnson "Green" aquifer, thus negating potential negative impacts to agriculture usage of the water.

No discharges will be made into the aquifers, thus the existing groundwater quality will remain unchanged.

III.K.18.b. Aquatic Impact of Power Plant Operation:

There will be no impact since the Laramie River Station is designed for zero discharge.

III.K.18.c. Aquatic Impact of Reservoir Operation:

According to ECI's report, the aquatic ecosystem of the Grayrocks Reservoir will be radically different from that of the Laramie River. The specific structure of the reservoir's ecosystem, however, can only be hypothesized by comparison with similar reservoirs in the area since there is no data directly relating to Grayrocks. Below is a summary of likely impacts of reservoir operations indicated in the 1975 Ecological Report by the Ecology Consultants, Inc., Fort Collins, Colorado.

Water Quality: The Army Corps of Engineers has been consulted concerning the hydrological properties that will likely characterize Grayrocks Reservoir. They have predicted that (1) little, if any, stratification will exist in the reservoir and (2) bottom waters released through the outlet works will not be more than $2^{o}F$ cooler than Laramie River waters immediately upstream from the reservoir. Water quality in the reservoir will be generally homogenous. The reservoir discharge will have a higher BOD due to decaying organic matter from the bottom and a lower turbidity than that of the river due to settling of solids (Support Document - Ecology Consultants, Inc. 1975).

Plankton: The development of the plankton community will proceed rapidly after the reservoir is filled. Green algae will likely predominate phytoplankton assemblages in late spring and summer during the first few years of reservoir existence. Blue-greens will likely become increasingly predominant each year, and occasional blooms of blue-greens may occur during summer months. These phytoplankton assemblages will become important food sources for reservoir fishes.

Zooplankton, small animals that graze on planktonic matter in the water, will also increase in numbers and will likely become another important food source for fish (Support Document - Ecology Consultants, Inc., 1975).

Periphyton: Light will not penetrate to most substrata in the reservoir and periphyton communities will be restricted to lake margins. Localized communities will likely be productive along the riprap areas on the dam embankment and in submerged slash from reservoir cleaning operations. (Support Document - Ecology Consustants, Inc., 1975)

Aquatic Macroinvertebrates: Most of the aquatic insects currently existing in the area to be inundated by the reservoir will be eliminated. Some may thrive in shallow water embayments where shoreline vegetative cover exists. Overall, aquatic macroinvertebrates will be limited in their number by siltation loss of running water habitation, water level fluctuation, potential depletion of oxygen in bottom waters and increased hydrostatic pressure. Therefore, aquatic insects will probably be only a minor food supply for reservoir fishes. (Support Document - Ecology Consultants, Inc., 1975)

Fish: Most nongame species currently existing in the Laramie River will survive in the reservoir. Anticipated large supplies of plankton will create a stable food base and many fish species will flourish.

Entrainment of fish by the outlet structures is not expected to be a significant problem. However, to assure that the entrainment impacts are minimized as much as possible, final design specifications for the outlet works will be coordinated with the Wyoming Game and Fish Department and evaluated according to recommendations made by U.S. Environmental Protection Agency. (Support Document - Ecology Consultants, Inc., 1975.)

Downstream Effects: Effects on downstream aquatic ecosystems resulting from the physical and chemical quality of reservoir releases will probably be insignificant.

Waters released through the outlet works will stabilize flow in the lower reaches of the Laramie River and will therefore be beneficial to aquatic organisms. (Support Document - Ecology Consultants, Inc. 1975)

Intake Design: The intake structure for the Grayrocks Reservoir outlet works and for the diversion from the Laramie River to the plant will be designed to minimize the environmental impact. The final design of the intake structure will be made in accordance with the guidelines in the EPA's Development Document for Proposed Best Technology Available for Minimizing Adverse Environmental Impact of Cooling Water Intake Structures (December 1973). To assure that entrainment of fish is minimized, the design will be discussed with the Wyoming Game and Fish Department. The final design will result in the least environmental impact possible.

III.K.18.d. Construction of the Dam:

Every effort will be made to maintain a minimum impact on the environment during construction.

The contractor will be required to comply with applicable Federal and State laws, orders and regulations concerning the control and abatement of water pollution.

The contractor's construction activities will be performed by methods that will prevent entrance, or accidental spillage of solid material, contaminants, debris and other objectionable materials into the river. Such pollutants shall include, but not be restricted to, refuse, garbage, cement, concrete, sewage effluent, industrial waste, oil and other petroleum products, aggregate process tailings, mineral salts, and thermal pollution. Intercepting ditches, bypass channels barriers, settling ponds, or other approved methods will be used to prevent muddy water and eroded materials from entering the river due to the construction activities.

The contractor will comply with applicable Federal and State laws and regulations relative to air pollution prevention and control. Every effort will be made to utilize practical methods and devices to control, prevent, and otherwise minimize atmospheric emissions and discharges of air contaminants. Equipment and vehicles will be in proper operating condition to eliminate excessive emissions of exhaust gases.

The overall impact to the area will be negligible during construction. Some wildlife will be displaced from the river bottom by the construction and inundation. The fish will be affected very little by the construction activities. The impounded water will improve the fishery habitat.

III.K.18.e. Summary:

The proposed dam and reservoir should expand the economic base of the Wheatland area. As the situation currently exists, the water resources available are not being fully utilized. Construction of the Grayrocks Reservoir will have a positive impact on the water supply situation in the lower Laramie River basin. The impoundment will "level out" the water flow variations and make the river a more reliable source for water usage. The reservoir will make available to the Corn Creek Irrigation District a supply of water sufficient to irrigate an additional 15,000 acres of cropland. This should result in more stable agricultural productivity in the area with the accompanying economic benefits.

The reservoir plan is environmentally sound. Since the power plant will be a nondischarging facility, the water quality in the Grayrocks Reservoir and in the Laramie River at the present time should be comparable. The reservoir will maintain a steady discharge downstream. This will eliminate the deterioration of water quality that occurs during extremely low flow periods.

The project (dam, reservoir and power plant) will utilize the water resource for the production of electricity. From the water supply standpoint, the project will be beneficial to the Wheatland area. It has been determined in the "Feasibility Report on the Proposed Grayrocks Dam and Reservoir" that a sufficient water supply is available in the lower Laramie River basin.

III. SITING APPLICATION:

L. Transmission Lines:

subsection 1

DIVISION III:
Section L:

III.L. Transmission Lines:

All facets of the design and construction of the proposed lines will be done in accordance with the National Electric Safety Code and all applicable state and federal laws and regulations. Additional steps will be taken as necessary, to minimize any threat to public health, property, or the environment.

III.L.1 Technical Discussion of the Proposed Facilities:

III.L.1.a. Transmission System Design:

The transmission system for the proposed Laramie River Station will be designed to provide an adequate and reliable system of outlets into the existing grid in an environmentally acceptable manner. The facilities, as presented in Table 52, will consist of both 345-kV and 230-kV transmission lines in a three-state area (see Exhibit 28). A discussion of the system and the factors which will influence the design of this system is presented in the Transmission Section, Part V, of the Feasibility Study beginning on page 131.

Alternatives: Several alternatives were investigated. Among the alternatives considered were: (1) Utilizing existing transmission lines in the area; (2) Energizing the lines at an alternate voltage; (3) Placing the facilities underground; (4) Utilizing different construction materials.

Because the Laramie River Station is located approximately in the mid-point of a triangle formed by the transmission lines that connect Dave Johnston, Stegall and Archer, the existing transmission systems will be used to a certain extent during both normal and line outage conditions. The Laramie River Station is centrally located between the loads expected to develop in northeast Wyoming and northern Colorado, thereby utilizing the existing transmission lines as much as possible.

The existing transmission lines of 115 kV or less are used primarily for distribution of power to the load centers. It would require a complete reconstruction of these lines if they were converted to 230 kV or larger operation and, therefore, would be impractical. Disruption of power would also be likely to occur to these load centers

while the transmission lines were constructed, thereby making it very difficult to reconstruct certain facilities.

The voltages and power capability of the proposed lines were determined from studies which considered the stability and reliability of the entire regional transmission network. These studies established the transmission line terminal points as well as the required power of each line. (See the Transmission Section of the Feasibility Study, Sec. V, page 131.) A Lower power capability of these lines would decrease the system's reliability and cause stability problems.

The construction of an underground line over such distances would pose a greater environmental disruption than the proposed facilities. Wildlife, livestock and agriculture would be disturbed to a much greater extent during construction. A scar would be left on the earth over the entire length of the line. Post-construction activities along the right-of-way would be more limited (i.e., no farming, mineral resource, exploration, etc.). Paralleling existing pipelines would not be possible because of induced voltage and subsequent corrosion problems. Another important aspect of underground transmission lines is that cooling reactor stations are required every few miles to dissipate heat.

Information on technical aspects and difficulties of underground transmission systems may be found in the July 1, 1972 issue of "Electrical World" magazine as well as other technical journals.

Perhaps the greatest single drawback to underground placement of lines is that this kind of construction is 20-40 times more expensive than overhead lines. Faced with this multiplier on an estimated overhead line cost of $70,000 per mile, the sums involved are staggering. Furthermore, hardware and techniques would have to be developed on a prototype basis.

The only benefit seemingly gained from underground placement is that of less visual impact. The corridors selected have been chosen to minimize visual impact. From a technological standpoint, underground transmission over a distance such as this is not practical.

Many different structure designs have been used throughout the country over the past few years as shown in Exhibit 27. Aesthetic

steel structures have been used in the more populated areas. Their simple design is considered to blend into the urban surroundings with less visual impact. In general, these lines tend to be more visible at greater distances in open areas than the wood pole structures or lattice steel towers proposed for this project. The other designs shown on Exhibit ~~44~~ 27 have been used where special terrain is to be crossed for lines of different structural requirements.

Wood pole structures are generally used for single circuit lines of 230-kV and below. For these voltages, they are generally less expensive than steel towers and are considered to be aesthetically equal. For double-circuit lines and lines above 230-kV, steel lattice towers are considered more practical and economical due to the additional height required. The increased span and the greater flexibility of design offered by steel structures are advantages of the steel towers. These steel structures minimize impact since, inherently, they make it possible to minimize the number of structures required per mile.

The choice of alternate corridors will not influence the basic tower design or the work force. The method of determination of alternate corridors is presented in Section III.L.3.

III.L.1.b. Reliability:

The reliability of the system will be an important factor in the final system design. As discussed in the Feasibility Study, the system will fulfill the reliability criteria of both the Western System Coordinating Council and the Mid-Continent Area Reliability Coordination Agreement. By meeting these criteria, this system will provide a reliable outlet into the existing system and increase the total bulk transmission system's ability to distribute power throughout the region.

III.L.1.c. Reliability of Design and Safety:

The reliability of a transmission line depends on its ability to resist mechanical, electrical and natural forces imposed upon it. Safety is also a measure of reliability. A reliable line is a safe line. Anything that would happen in violation of safety would, very likely, take the line out of service, thus destroying its reliability. Reliability is also dependent upon the strength of the line as a whole as well as its component parts.

Required safety factors of the various materials used in the construction of transmission lines are given below:

Material	Rated Strength Multiplied by (Safety Factor)
Wood	4
Steel	1½
Procelain and Glass Insulators	2½
Wire and Cable	2

A higher safety factor is used for wood. It is a natural substance which is used in its natural state. The strength of wood varies widely as compared to steel. The high safety factor insures that the actual strength will be sufficient to withstand the loads placed upon it.

Steel, insulators and wire and cable are manufactured products. Their strength and other characteristics are closely controlled in the manufacturing process. Therefore, smaller safety factors are sufficient.

Other items affecting reliability and safety are acts of man, acts of other forms of life, temperature changes, wind, lightning, ice on conductors, rust and other forms of decay.

Effects of man's acts are avoided by locating the line as far away from his activities as possible. Lines are located away from roads with sufficient height of wires over roads where crossings cannot be avoided.

Other forms of life which may be detrimental are domestic animals, insects, and birds. Damage by domestic animals is avoided by making structures strong enough to resist their actions.

Insects, such as termites, can eat away unprotected wood. This is prevented by treating wood parts with creosote or pentachlorophenol. This treatment of wood also prevents decay.

Damage from temperature change is prevented by providing for expansion and contraction due to temperature change.

Protection from lightning is accomplished by proper line design. This will be discussed later under the design features.

The steel lattice towers will have a ladder to permit workmen to climb them safely if the need arises. Steps will be left out of the

bottom 12 to 15 feet so that any unauthorized persons cannot climb the tower. The wood-pole lines will be accessible only to workmen with special climbing equipment or a power lift. By following the practices set up in the National Electric Safety Code, these lines should not present a hazard to the workmen. The only time these lines would present a hazard to the general public is when a conductor falls. Such an occurrence will cause the breakers on the line to trip open, and deenergize the line.

III.L.1.d. Line Design Features:

III.L.1.d.(1) Towers and Foundations:

Wood Pole Structures: The wood pole structures to be used in the Laramie River Station to Dave Johnston line are known as "H"-frame structures. (See Exhibit 29.) The wood poles will be treated with either creosote or pentachloraphenol to prevent insect damage and decay.

The average size will be eighty feet long. Longer poles will be used where increased span or clearance is required. Eighty-foot poles will be set ten feet deep. Taller poles will be set six inches deeper for each five-foot increase in length. The structures will have poles spaced 19.5 feet apart horizontally. The conductors will be suspended on strings of insulators which are approximately 7 feet long and consist of thirteen units. The two overhead ground wires will be suspended from an angle iron crosspiece near the top of the structure. There will be X-braces between the poles to give the structure increased rigidness. Steel ground wires run down the poles to the ground and incorporate coil of the wire stapled to the pole butt to form contact with the ground. These structures will be assembled on the ground and set with a crane. Holes in the ground will be dug with a power auger.

Steel Lattice Structures: Both double and single-circuit steel lattice structures will be utilized for the remaining lines. Typical steel lattice towers are shown in Exhibits 30 thru 32.

The towers are constructed by bolting together galvanized steel angles which come from the fabricator predrilled. They are assembled in sections on the ground and lifted into position by a crane where workers bolt the sections together. The type of foundations to

be used will depend upon soil conditions at the tower locations. For the area in which these lines will be built, concrete spread footings or drilled-in concrete caisson footings will most likely be used. Occasionally a rock anchor foundation will be used when the tower is located on solid rock.

III.L.1.d.(2) Conductors:

The conductors to be used for the proposed transmission system are all ACSR (Aluminum conductor, steel reinforced) conductors. They consist of a steel core, which provides the strength with aluminum strands wound around this core for electrical conductivity.

Conductor size studies for each of the transmission lines are not yet complete. Typical conductor sizes can range from 1-954 mcm to 1-1272 mcm for 230-kV lines and 2-954 mcm or 1-2160 mcm for 345-kV lines. The three conductors and ground wires for each line will be spaced as shown on Exhibits 29 thru 32.

These lines will carry two overhead ground wires for protection of the line from lightning. The vertical angle of the conductor measured at the overhead ground wire will be approximately 30°. The pole ground wires will be connected to provide paths to the ground for the lightning charge. This is the method universally used for lightning protection.

III.L.1.d.(4) Insulators:

The insulators to be used on these lines will be ten inches in diameter by 5-3/4 inches in length. The insulators will be suspension insulators. The 230-kV lines will require a string of thirteen insulators for each conductor. Angle structures and dead-end structures will require one or two additional insulators. The 345-kV lines will require 18 insulators per conductor.

III.L.1.d.(5) Right-of-Way Requirements:

The 230-kV wood-pole line will require a 100-foot-wide right-of-way and the 345-kV lines will require a 150-foot-wide right-of-way. The right-of-way for the double-circuit line, depending upon the type of tower used, will be 150 feet to 180 feet. (See Exhibits 31 and 32.)

The width of the right-of-way is determined by the swingout of the conductor.

III.L.1.d.(6) Planned Operational Voltage and Critical Voltages:

The planned operation Voltage and Critical Voltages are given in Table 52. It should be noted that these lines will operate at the design voltage and the voltage can only be changed by replacing the substation equipment.

III.L.1.d.(7) Electrical Effects:

III.L.1.d.(7)(a) Corona Loss:

Corona loss varies widely under different conditions. Loss is at a minimum during fair weather conditions; however, it increases rapidly during stormy conditions. Dust, ice, snow, or rain on the conductor will cause increased corona; the loss is usually higher on new conductors than old. After about six months, the grease left on the conductor by the drawing dies is dissipated, decreasing corona loss. The knicks in the conductor will also tend to diminish in time. The conductors, will be "tension strung" to minimize the possibility of abrasion.

Representative losses are given in Table 52. The increased energy loss due to bad weather is primarily the corona loss. While the stormy weather losses appear very high when compared to the fair weather losses, the duration of very stormy weather is usually comparatively short. Also, stormy weather will seldom occur over the whole length of the proposed lines at the same time.

III.L.1.d.(7)(b) Ozone Generation:

The current literature indicates that the ozone generated by these lines will be insignificant in comparison to the levels normally found in the area. (See H.N. Schere, Jr., B.J. Ware, and C.H. Shih, "Gaseous Effluents Due to EHV Transmission Line Corona," presented at the 1972 IEEE Summer Power Meeting, July, 1972; and J.F. Roach, V. L. Chartier, F. M. Dietrich, "Experimental Oxidant Production Rates for EHV Transmission Lines and Theoretical Estimates of Ozone Concentrations Near Operating Lines, IEEE, May 1, 1973.)

III.L.1.d.(7)(c) Electric Power Loss:

The total system loss should not exceed 5% of the power input into the system. The power loss per mile is given in Table 52.

Table 52

SUMMARY OF PROPOSED TRANSMISSION LINES

Transmission Line Segments (Terminal Points)	Number of Circuits	Interconnected[3] System	Design Voltage (kV)	Length (Miles)	Estimated Completion Date	Type of Structure	Conductor[4] Size (MCM)	Corona Loss Per Mile[5]		Critical Disruptive Voltage[5]	
								Fair Weather (kW/Mile)	Bad Weather (kW/Mile)	Fair Weather (kV)	Bad Weather (kV)
Laramie River Station to the Dave Johnston Plant	1	West	230	75.5	1978	Wood Pole H-Frame	1-954	.80	4.80	328	262
Laramie River Station to[2] the Story Substation	1[1]	West	345	171	1978	Steel Lattice Tower	2-954 or 1-2160	1.7 1.7	7.1 7.7	466 470	368 382
Laramie River Station to the Stegall Substation	2	East & West	345 + 230	60	1980	Steel Lattice Tower	1-1272 2-943 1-2160	2.3 7.7 1.7	8.3 7.7 7.1	359 466 470	287 368 387
Laramie River Station to the Sidney Substation	1[1]	East	345	126	1980	Steel Lattice Tower	2-954 or 1-2160	1.7 1.7	7.1 7.7	466 470	368 387
Stegall Substation to the Sidney Substation	1	East	345	80.5	1980	Steel Lattice Tower	2-954 or 1-2160	1.7 1.7	7.1 7.7	466 470	368 387
Laramie River Station to the Ault Substation	1	West	345	108	1983	Steel Lattice Tower	2-954 or 1-2160	1.7 1.7	7.1 7.7	466 470	368 387

[1] *The Story and Sidney Lines will be double circuited for the first eighteen miles leaving the plant site.*

[2] *This line will have a temporary tie into the Archer Substation and be operated at 230 kV until the third unit at the Laramie River Station becomes operational in 1983. At this time the line will be energized at its design voltage and the temporary tie will be removed.*

[3] *The east and west interconnected systems of the United States are divided along a line running through eastern Montana, Wyoming, Colorado, and Western Nebraska. Since it is difficult, except under special circumstances, to move power across the east-west inter-ties, the power must be transmitted to each system separately.*

[4] *Selection of conductor arrangement and size is still under discussion but, it is expected that conductor size will be within the ranges denoted.*

[5] *The range of valves given reflects the range of conductor sizes expected. These valves are for an air density factor equal to 1.*

III. SITING APPLICATION:

L. Transmission Lines:

subsection 2

III.L.2. General Construction Plan:

III.L.2.a. Estimated Location of Construction Force:

General Discussion of Transmission Line Construction Force:

The construction work force for the transmission line segments is not expected to be similar to that force working on the generating station. The construction of a transmission line segment is of a much shorter duration than that of the generating station. Construction crews are not expected to locate in one place during the entire construction period but to move along with the construction. As can be seen from the estimated construction schedules, Tables 53 through 58 which follow, the work on the transmission line is sequential. As one crew finishes work in an area the next crew enters the area to proceed with the next step in the construction process. The construction personnel will therefore tend to spread out over the transmission line route.

Laramie River to Dave Johnston Segment: The construction of the proposed 230-kV transmission line (utilizing woodpole, "H"-frame structures) will require approximately seven months of actual construction time and a construction crew peaking at approximately 50 men. The actual time for construction and the period during which the construction will occur will largely depend upon the final schedule established by the contractor. An estimated schedule is presented in the following Table 53. Factors which will affect the contractor's decision are the number of qualified workmen available and the status of other projects in which the contractor is involved. Preliminary work and surveys are scheduled to begin during 1976. The construction of the proposed line will probably begin in April of 1978 and reach completion by November of that year.

The location of the work force during construction will depend upon several factors. The contractor will establish a headquarters somewhere along the line route. The basic requirements for the headquarters are: (1) a small office for keeping records, (ordinarily contractors bring in a mobile home or trailer for this purpose); (2) sufficient parking space for construction vehicles and the personal cars of the workers; and (3) a convenient source of fuel and oil for construction vehicles. Likely places for this headquarters are Douglas, Glendo,

Glenrock and Guernsey. The Wheatland area will likely be avoided since it is not centrally located along the route.

The general discussion of the transmission line construction force also applies to this segment.

Laramie River to Archer Segment and Archer to Story Segment:

The construction of these transmission line segments will require considerably more workers and construction time than the Laramie River to Dave Johnston segment previously described. Preliminary activities and surveying work are expected to commence in March, 1976 for both line segments. Construction of the Laramie River to Archer segment is expected to begin in March of 1977 and include the construction periods of March to November 1977 and March to November 1978. The construction work force is expected to peak at approximately 45 men in 1977 and approximately 100 men during 1978. An estimated detailed construction schedule is presented as Table 54 which follows.

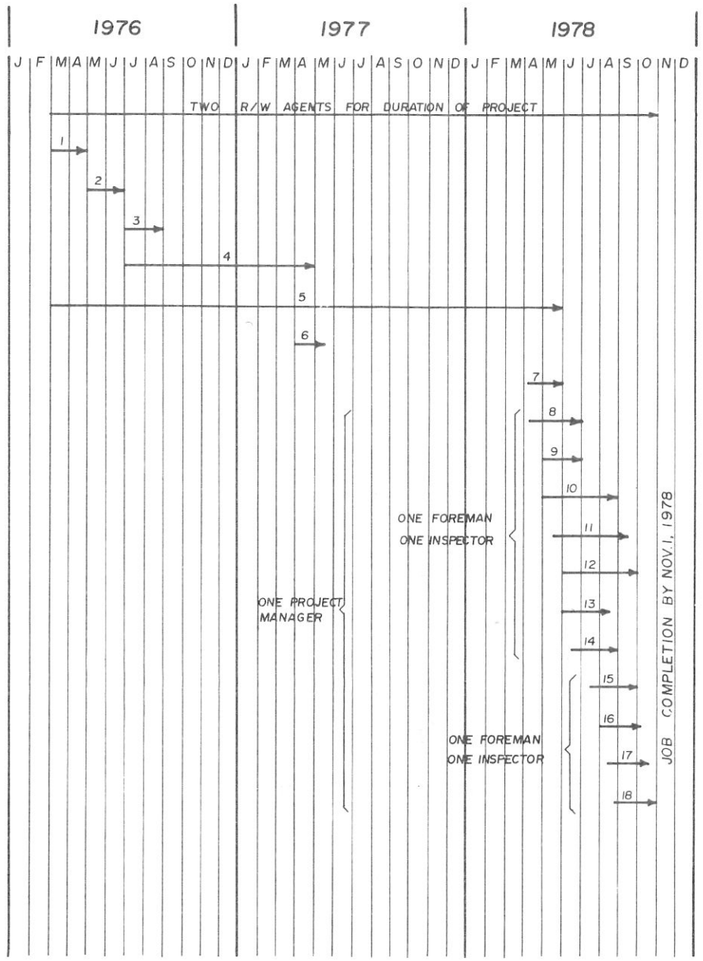
The work on the Archer to Story line segment is scheduled to begin in March of 1976 with preliminary line routings and survey work. Construction is estimated to commence in March 1978 and include the construction periods March to November of 1978 and 1979. The construction work force is expected to peak near 70 men in 1978 and at approximately 30 men in 1979. The average work force in Wyoming is estimated at 22 men for 1978 and 15 men for 1979. These figures are for the Wyoming portion of the segment only and appear in Table 55 which follows.

As can be seen from the estimated construction schedules, the peak number of workers for both line segments will be in August 1978 at approximately 140 men.

Chugwater might be a centralized location for the construction headquarters on the Laramie River to Archer segment. Cheyenne will probably be the headquarters for construction during the period when construction is close to the Archer Substation. The headquarters for construction of the Archer to Story line segment will probably be located at Cheyenne and possibly the Ft. Morgan area during the construction of this line segment.

Table 53

LARAMIE RIVER / DAVE JOHNSTON 230 KV WOOD POLE TRANSMISSION LINE (75.5 MILES IN WYOMING)



CONSTRUCTION ACTIVITY	NO. OF CREWS	NO. OF MEN PER CREW
1. Reconnaisance	1	3
2. Route Selection & Location of Angle Points	1	3
3. Preliminary Survey & Paneling of Centerline	2	3
4. Plan & Profile Preparation	---	---
5. Design, Contact Award, & Material Delivery	---	---
6. Soil Borings	1	3
7. Tower Staking	1	3
8. Clearing & Gate Installation	1	6
9. Excavation	1	3
10. Pole Spotting	1	3
11. Pole Framing	1	3
12. Pole Setting	1	4
13. Insul. & Hardware Hauling	1	3
14. Guard Pole Setting	1	3
15. Leadline	1	6
16. Wire Pulling & Sagging	1	12
17. Clipping	2	4
18. Clean-up	1	6

Information provided by Basin Electric Power Cooperative, November, 1975.

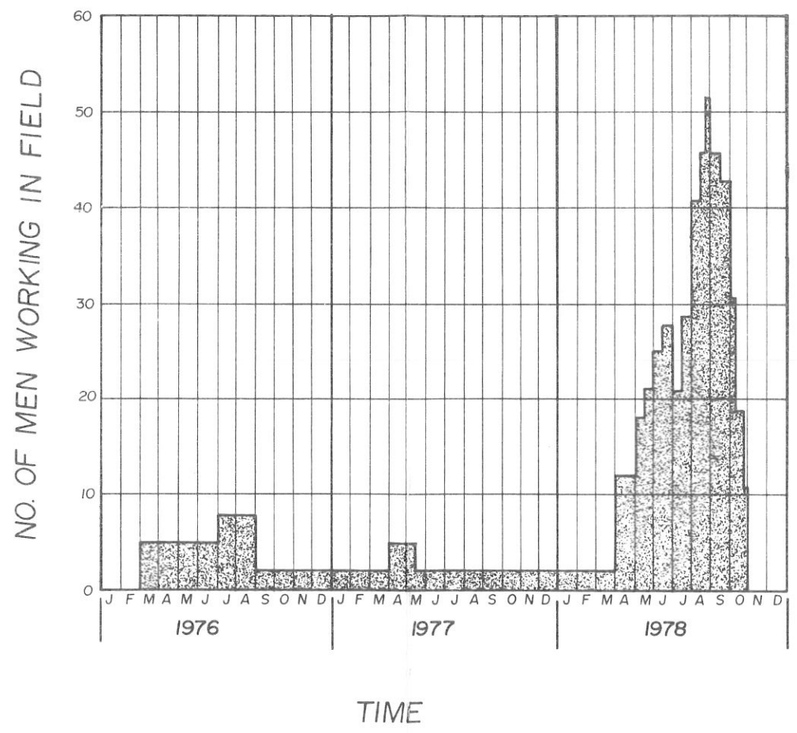
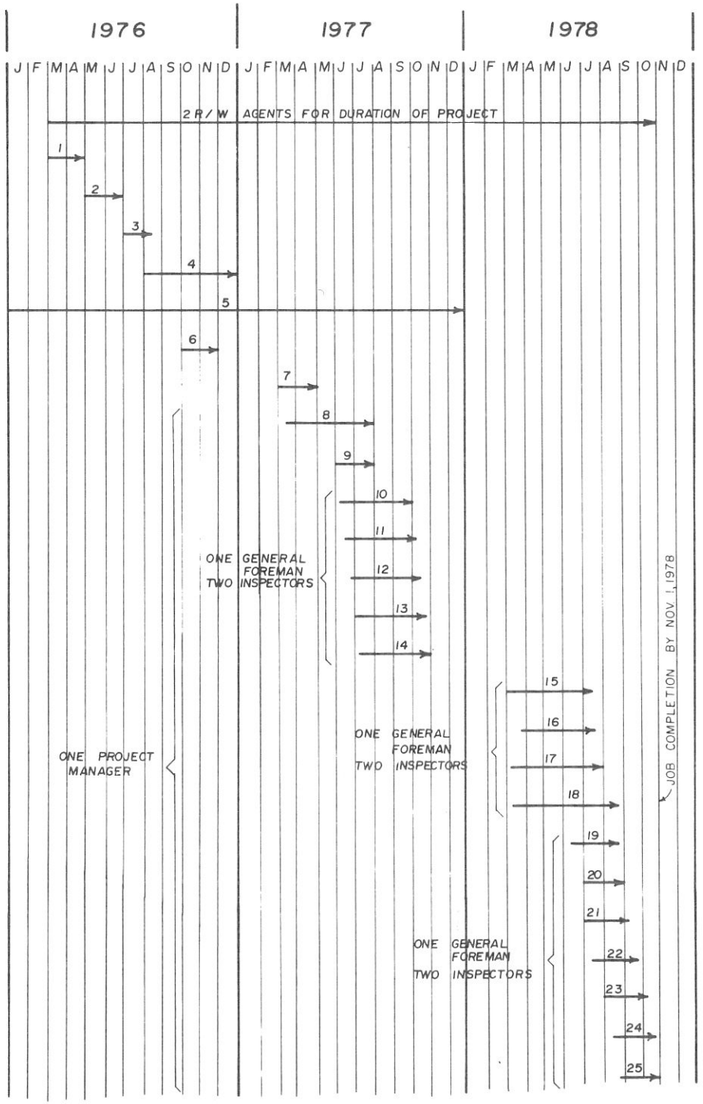


Table 54

LARAMIE RIVER TO ARCHER 345 KV SINGLE CIRCUIT TRANSMISSION LINE (72 MILES) IN WYOMING



CONSTRUCTION ACTIVITY	NO. OF CREWS	NO. MEN PER CREW
1. Reconnaisance	1	3
2. Route Selection & Location of Angle Points	1	3
3. Preliminary Survey & Paneling of Centerline	2	3
4. Plan & Profile Preparation	---	---
5. Design, Contract Award, & Material Delivery	---	---
6. Soil Boring	1	3
7. Tower Center Survey	1	3
8. Clearing & Gate Installation	1	4
9. Tower Staking	1	3
10. Excavation	3	3
11. Stub Angle & Rebar Hauling	1	3
12. Stub Angle Setting	3	4
13. Concrete Placing	1	5
14. Stripping	1	3
15. Steel Hauling	1	5
16. Steel Assembly	6	9
17. Steel Erection	1	9
18. Shake down	1	9
19. Insulator & Hardware Hauling	1	3
20. Insulator Hanging	1	6
21. Guard Poles	1	4
22. Leadline	1	8
23. Wire Pulling & Sag	1	16
24. Clipping	2	5
25. Clean up	1	6

Information provided by Basin Electric Power Cooperative, November, 1975.

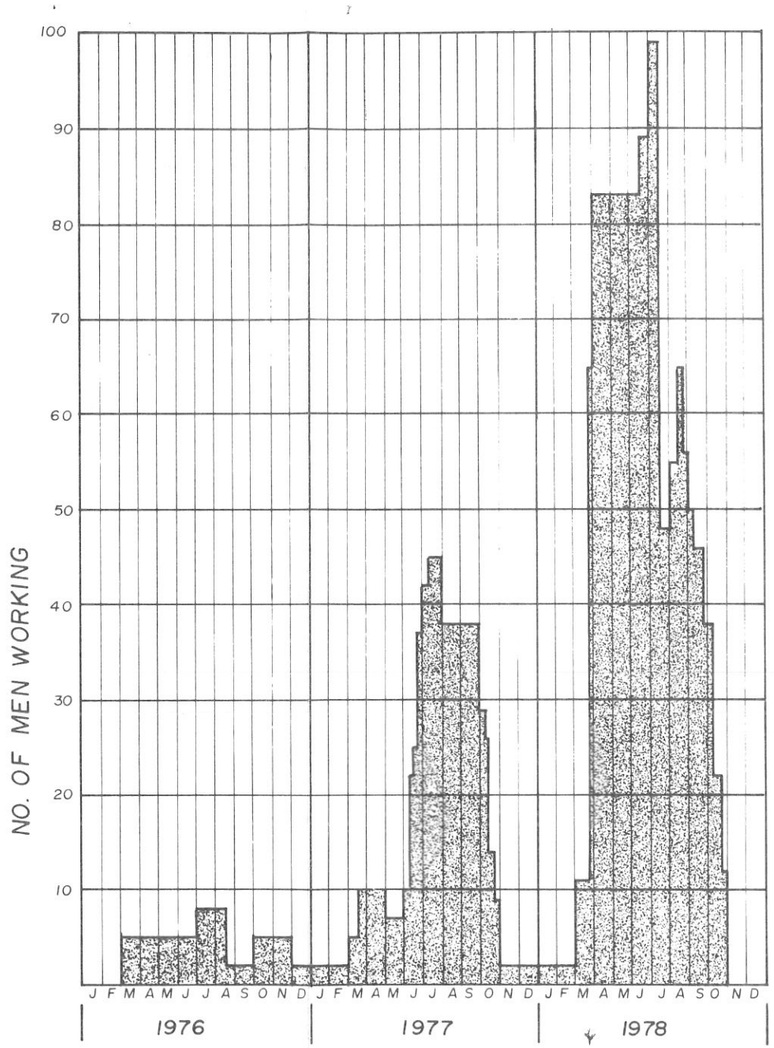
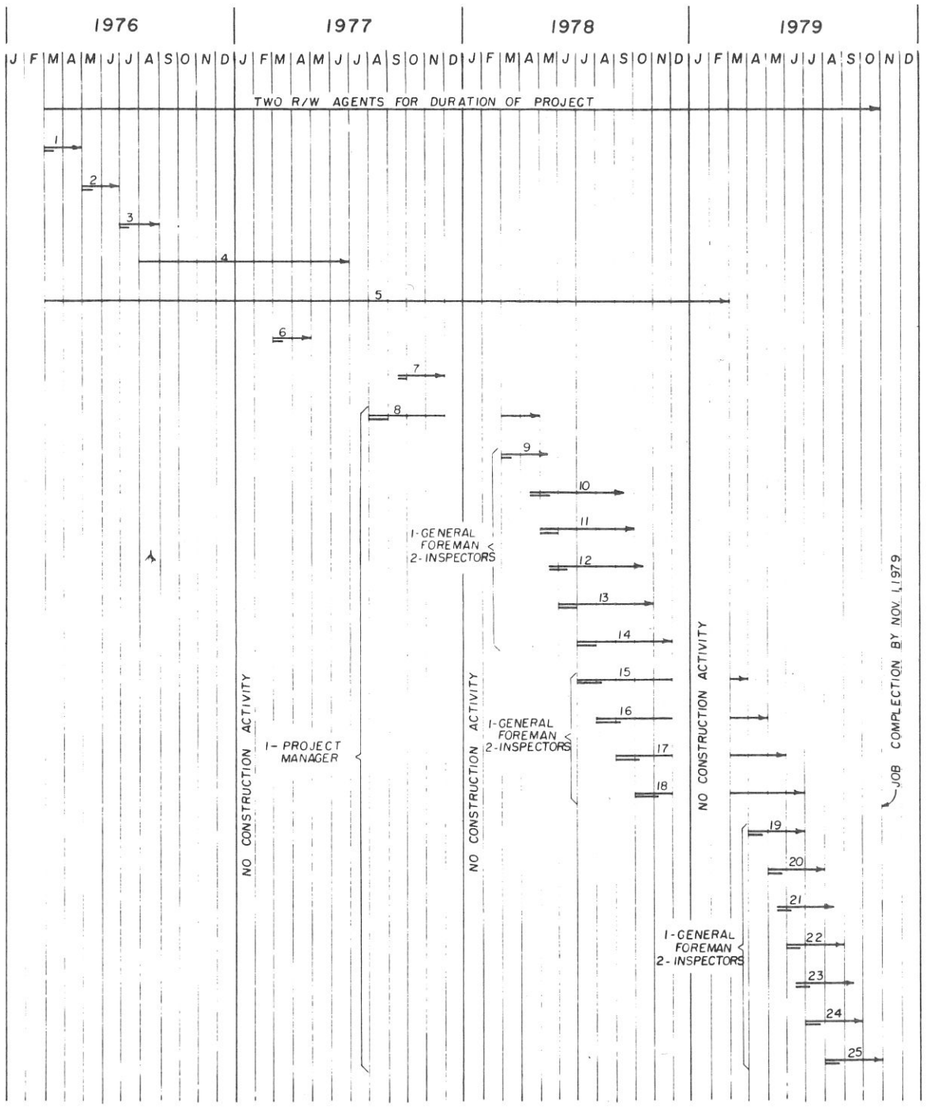


Table 55

ARCHER TO STORY 345 KV SINGLE CIRCUIT TRANSMISSION LINE

(99 MILES OF WHICH 18 MILES ARE IN WYOMING)



	CONSTRUCTION ACTIVITY	NO. OF CREWS	NO. MEN PER CREW
1.	Reconnaisance	1	3
2.	Route Selection & Location of Angle Points	1	3
3.	Preliminary Survey & Paneling of Centerline	2	3
4.	Plan & Profile Preparation	---	---
5.	Design, Contract Award, & Material Delivery	---	---
6.	Soil Borings	1	3
7.	Tower Center Survey	1	3
8.	Clearing & Gate Installation	1	4
9.	Tower Staking	1	3
10.	Excavation	3	3
11.	Stub Angle & Rebar Hauling	1	3
12.	Stub Angle Setting	3	4
13.	Concrete Placing	1	5
14.	Stripping	1	3
15.	Steel Hauling	1	5
16.	Steel Assembly	6	9
17.	Steel Erection	1	9
18.	Shake down	1	9
19.	Insulator & Hardware Hauling	1	3
20.	Insulator Hanging	1	6
21.	Guard Poles	1	4
22.	Leadline	1	8
23.	Wire Pulling & Sagging	1	16
24.	Clipping	2	5
25.	Clean-up	1	6

Information provided by Basin Electric Power Cooperative, November, 1975.

LEGEND

——— ARCHER TO STORY.

═══ WYOMING PORTION OF ARCHER TO STORY.

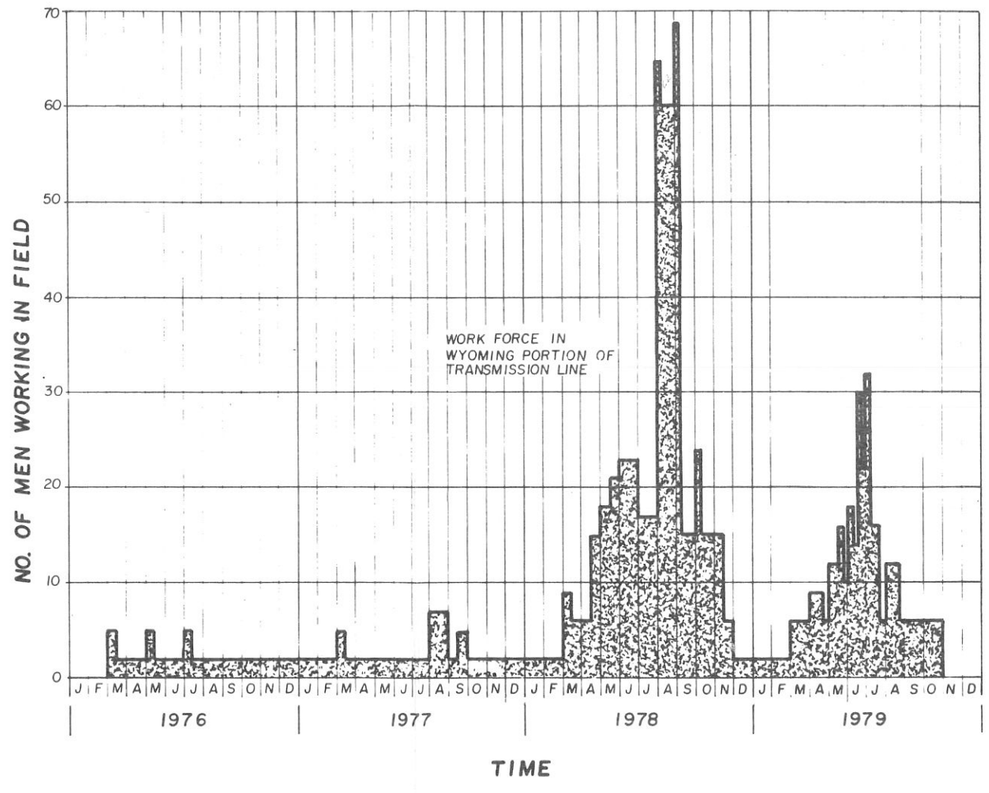
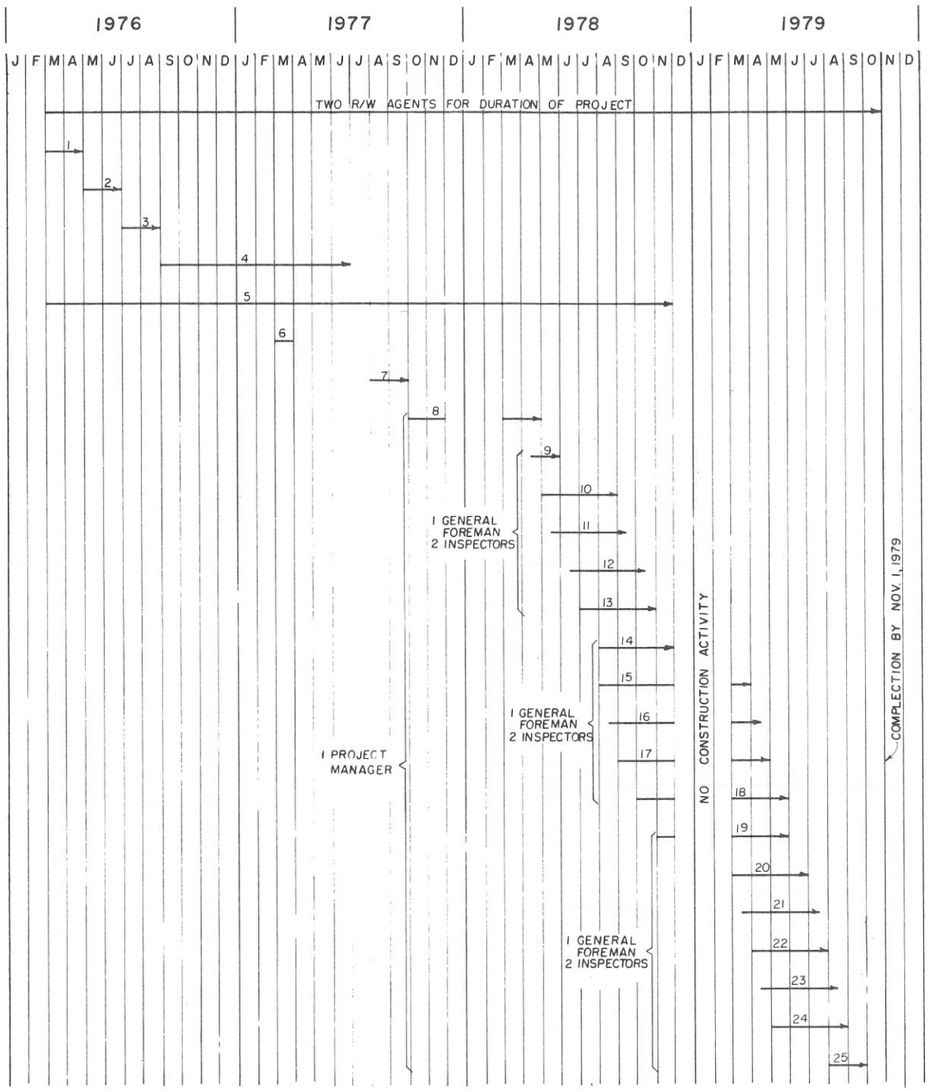


Table 56

LARAMIE RIVER/STEGALL (EAST & WEST) DOUBLE CIRCUIT 345 KV TRANSMISSION LINE

(60 MILES OF WHICH 53 MILES ARE IN WYOMING)

NOTE:
WORK FORCE IS SHOWN ASSUMING ALL MEN IN WYOMING WHEN ACTUALLY 12% OF TIME MEN WILL BE WORKING IN NEBRASKA.



	CONSTRUCTION ACTIVITY	NO. OF CREWS	NO. MEN PER CREW
1.	Reconnaisance	1	3
2.	Route Selection & Location of Angle Points	1	3
3.	Preliminary Survey & Paneling of Centerline	2	3
4.	Plan & Profile Preparation	---	---
5.	Design, Contract Award, & Material Delivery	---	---
6.	Soil Borings	1	3
7.	Tower Center Survey	1	3
8.	Clearing & Gate Installation	1	4
9.	Tower Staking	1	3
10.	Excavation	3	3
11.	Stub Angle & Rebar Hauling	1	3
12.	Stub Angle Setting	3	4
13.	Concrete Placing	1	5
14.	Stripping	1	3
15.	Steel Hauling	1	5
16.	Steel Assembly	8	9
17.	Steel Erection	1	9
18.	Shakedown	1	9
19.	Insulator & Hardware Hauling	1	3
20.	Insulator Hanging	1	6
21.	Guard Poles	1	3
22.	Leadline	1	8
23.	Wire Pulling & Sagging	1	16
24.	Clipping	2	5
25.	Clean-up	1	6

Information provided by Basin Electric Power Cooperative, November, 1975.

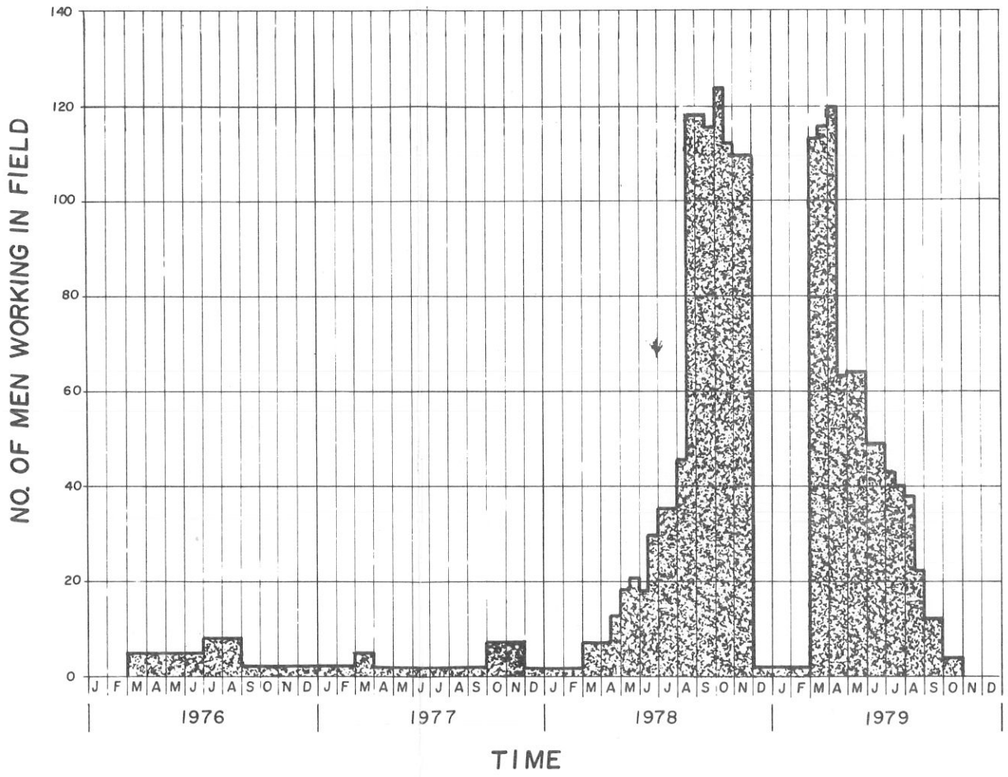
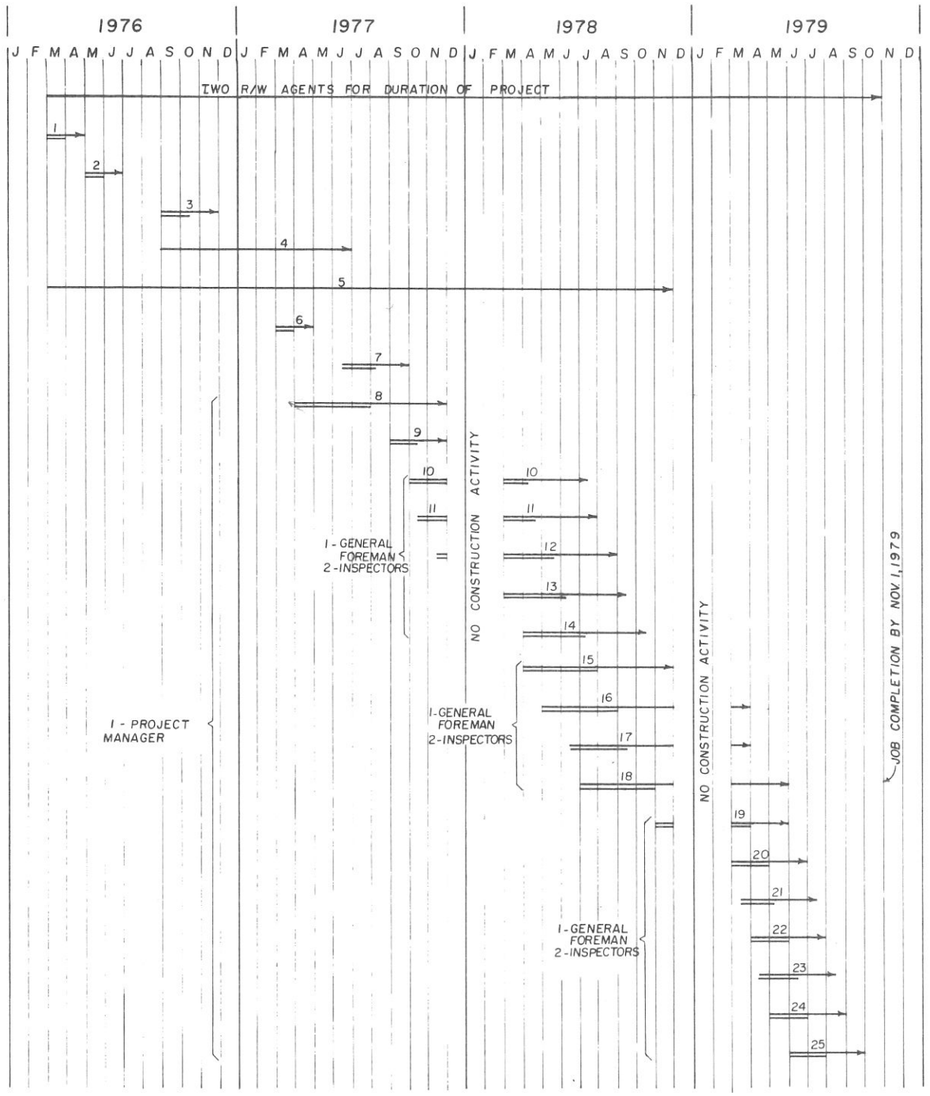


Table 57

SIDNEY EAST/LARAMIE RIVER 345 KV SINGLE CIRCUIT TRANSMISSION LINE (126 MILES)

(APPROX. 58 MILES IN WYOMING)



	CONSTRUCTION ACTIVITY	NO. OF CREWS	NO. MEN PER CREW
1.	Reconnaisance	1	3
2.	Route Selection & Location of Angle Points	1	3
3.	Preliminary Survey & Paneling of Centerline	2	3
4.	Plan & Profile Preparation	---	---
5.	Design, Contract Award, & Material Delivery	---	---
6.	Soil Borings	1	3
7.	Tower Center Survey	1	3
8.	Clearing & Gate Installation	1	4
9.	Tower Staking	1	3
10.	Excavation	3	3
11.	Stub Angle & Rebar Hauling	1	3
12.	Stub Angle Setting	3	4
13.	Concrete Placing	1	5
14.	Stripping	1	3
15.	Steel Hauling	1	5
16.	Steel Assembly	6	9
17.	Steel Errection	1	9
18.	Shakedown	1	9
19.	Insulator & Hardware Hauling	1	3
20.	Insulator Hanging	1	6
21.	Guard Poles	1	4
22.	Leadline	1	8
23.	Wire Pulling & Sagging	1	16
24.	Clipping	2	5
25.	Clean-up	1	6

Information provided by Basin Electric Power Cooperative, November, 1975.

LEGEND

LARAMIE RIVER TO SIDNEY SUBSTATION.

WYOMING PORTION OF LINE.

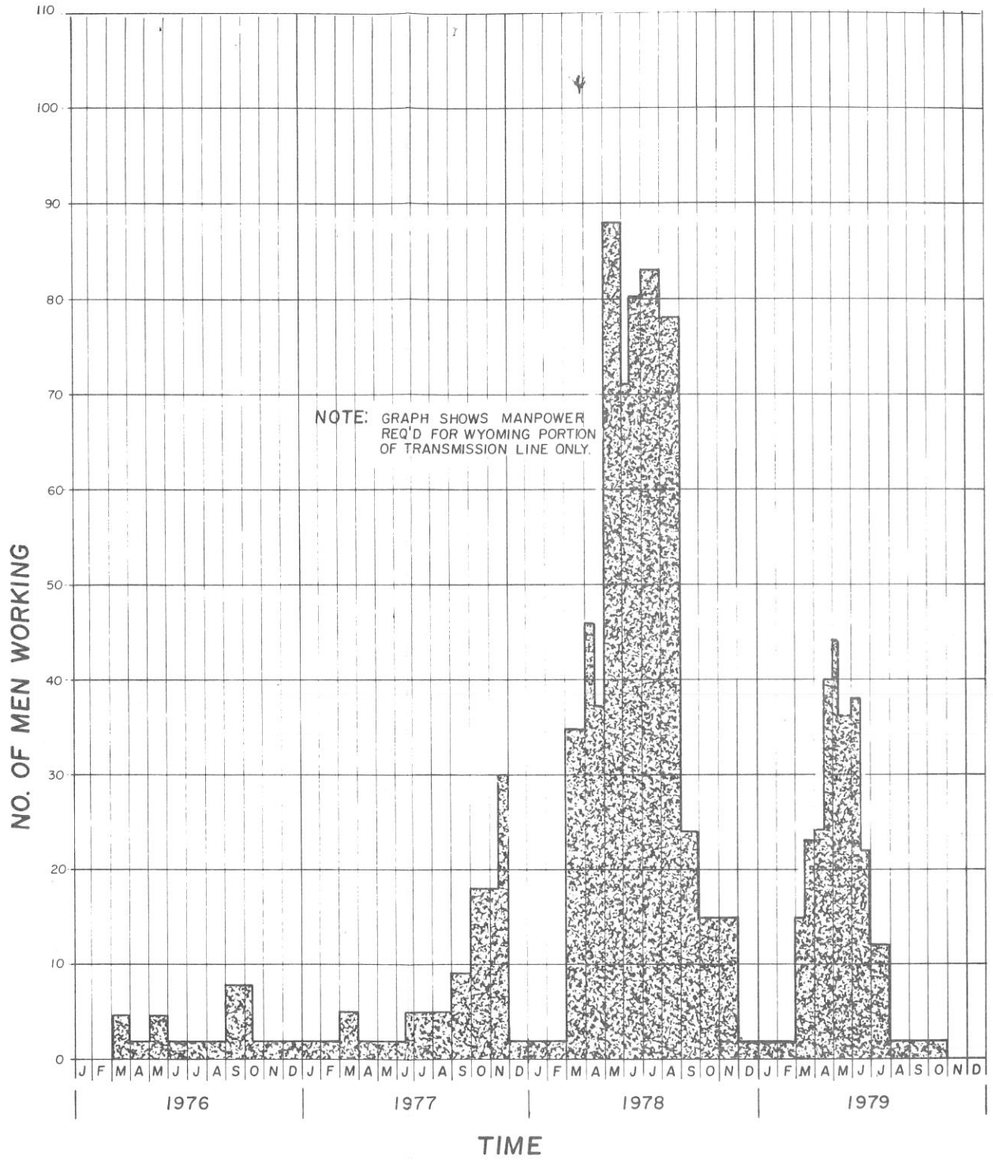
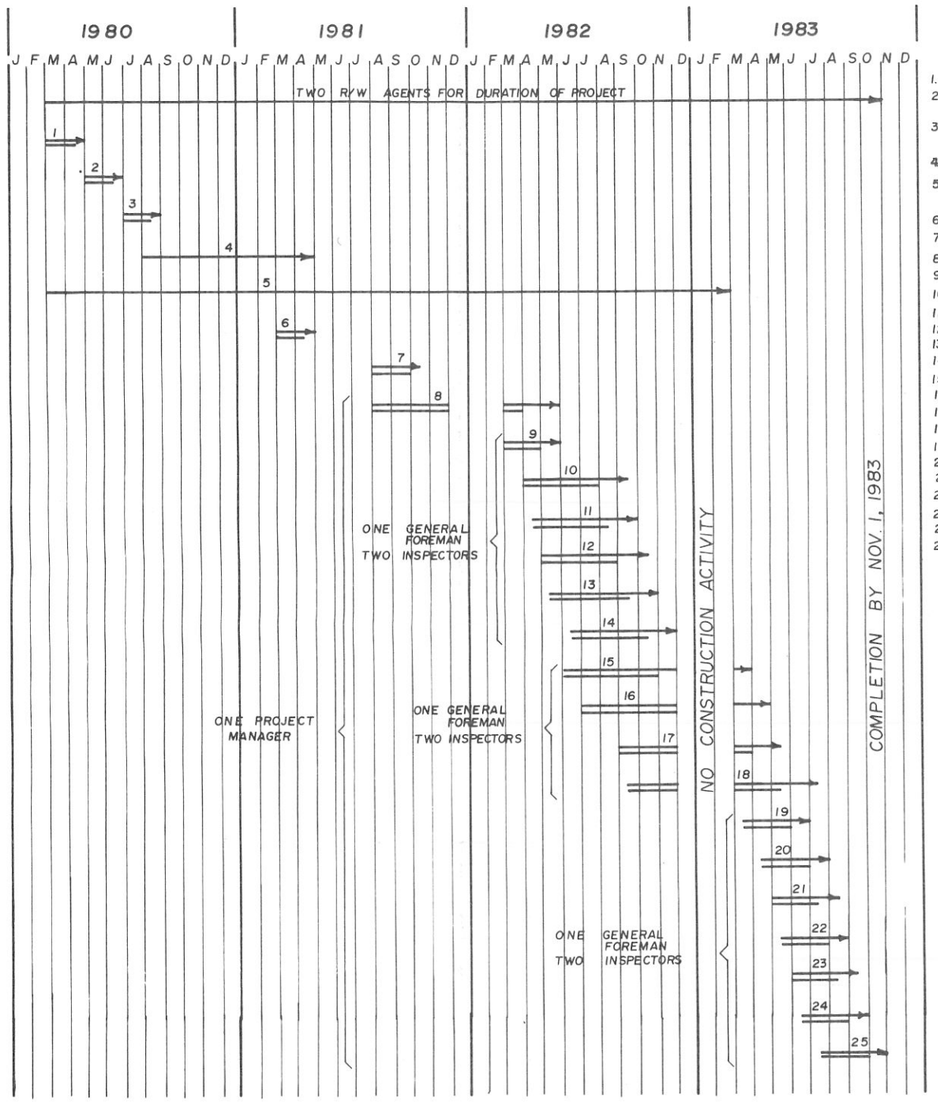


Table 58

LARAMIE RIVER TO AULT 345 KV SINGLE CIRCUIT TRANSMISSION LINE
(108 MILES OF WHICH 78 MILES ARE IN WYOMING)

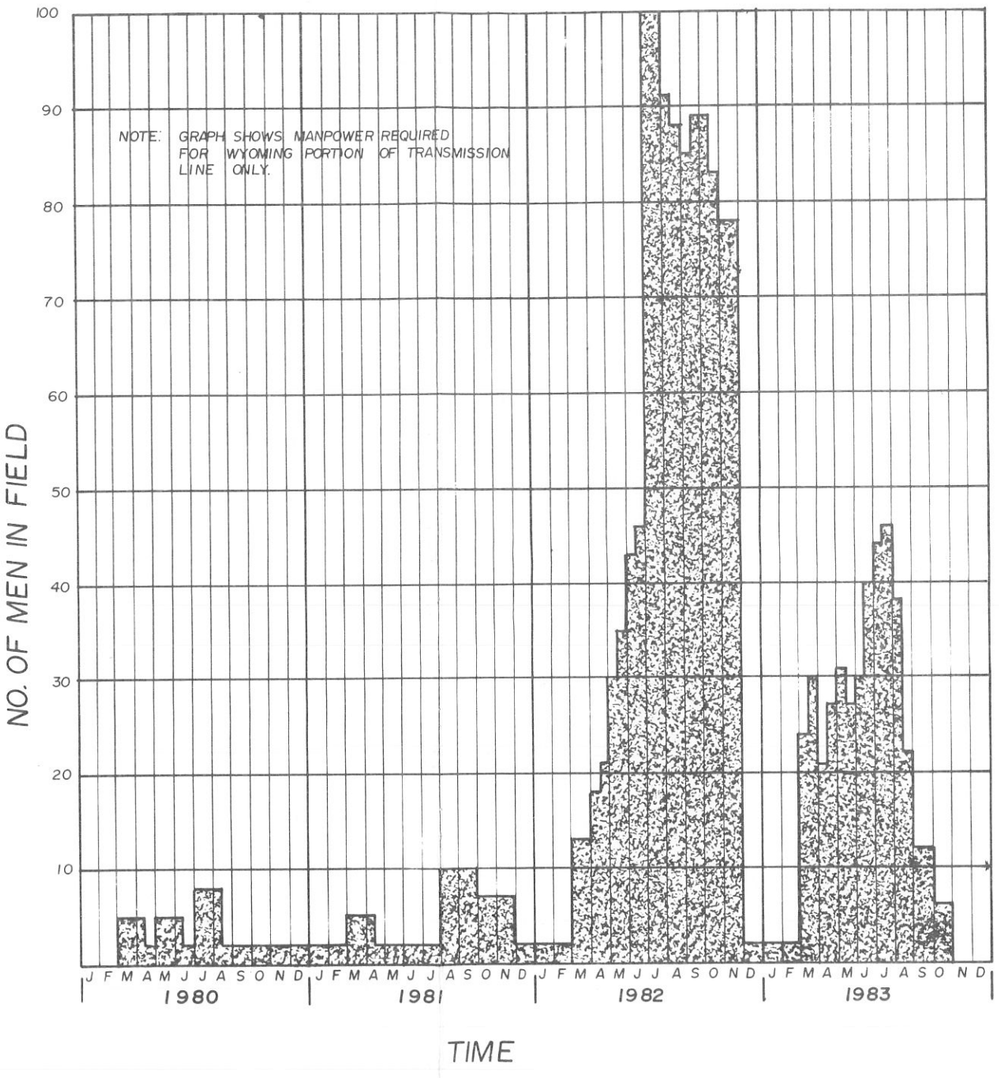


CONSTRUCTION ACTIVITY	NO. OF CREWS	NO. MEN PER CREW
1. Reconnaisance	1	3
2. Route Selection & Location of Angle Points	1	3
3. Preliminary Survey & Paneling of Centerline	2	3
4. Plan & Profile Preparation	---	---
5. Design, Contract Award, & Material Delivery	---	---
6. Soil Borings	1	3
7. Tower Center Survey	1	3
8. Clearing & Gate Installation	1	4
9. Tower Staking	1	3
10. Excavation	3	3
11. Stub Angle & Rebar Hauling	1	3
12. Stub Angle Setting	3	4
13. Concrete Placing	1	5
14. Stripping	1	3
15. Steel Hauling	1	5
16. Steel Assembly	6	9
17. Steel Erection	1	9
18. Shakedown	1	9
19. Insulator & Hardware Hauling	1	3
20. Insulator Hanging	1	6
21. Guard Poles	1	4
22. Leadline	1	8
23. Wire Pulling & Sag	1	16
24. Clipping	2	5
25. Clean up	1	6

LEGEND

——— Laramie River To Ault

═══ Wyoming Portion of Line



Information provided by Basin Electric Power Cooperative, November, 1975.

Again, the general comments made concerning the transmission line construction work force apply to these line segments also. Impacts are transitory and are not expected to be significant on the communities involved.

Laramie River to Stegall and Laramie River to Sidney Segments: Due to the proximity of these lines and the coincidence of their construction periods, these lines will be considered jointly. The sixty miles of double-circuit line between the Laramie River Station and the Stegall Substation will require a peak crew of approximately 120 men over two construction periods. Since this line will be required by January, 1980, the construction will most likely begin in 1978 and be completed by November of ~~1979~~ 1980. An estimated construction schedule follows as Table 56 .

The transmission line from the Laramie River Station to Sidney is scheduled for completion by June, 1980. The first eighteen miles of this line will be strung on the same towers used for the Laramie River Station to Story Transmission Line. Therefore, probably only about fifty miles of new structures would be constructed using Wyoming as the principal base of operations. (The additional 58 miles will probably be constructed using a Nebraska town as the headquarters). The construction of the fifty miles of line and the stringing of the additional eighteen miles from the Wyoming headquarters would require a crew up to approximately 90 men for the 1978 construction period and up to 55 men during the 1979 construction period. The construction is scheduled to begin in the summer of 1978. The tower construction and stringing would probably begin later in the year, slacking off during the winter, and picking up during the spring of 1979. As mentioned before, the actual scheduling and determination of the headquarters site will be a decision made by the contractor.

Hawk Springs will probably be the contractor's headquarters for the Laramie River Station to Stegall Transmission Line. The construction force could reside in Torrington, Lingle, and Scotts Bluff-Gering area, with a few living in the small towns of the area. The availability of motel rooms and camper sites will determine what percent of the construction force will line in each area.

The LaGrange area will probably be the site of the headquarters for the western portion of the line to Sidney. Most of the construction personnel would probably reside in the Scotts Bluff-Gering and Pine Bluffs areas. Again, the contractor's decisions and the availability of facilities will influence the actual population influx to this area.

Since the construction period of these two transmission segments will coincide, the construction forces may also coincide. The total construction forces required for both line segments will peak at approximately 210 men in 1978 and 165 men in 1979. Again, until construction plans are finalized, it is not possible to predict the distribution of these construction personnel. It is possible that one transmission segment could begin construction at the Laramie River project and the other at Sidney. Also, the Laramie River to Sidney and Laramie River to Archer segments are to be double circuited for the first 18 miles leaving the Laramie River Station. As for the previous line segments discussed, the general comments regarding transmission line construction work force are applicable to these segments.

Laramie River to Ault Segment: This transmission line will require two construction work periods during 1982 and 1983. The average number of workers over the period will be 33 men with a peak of approximately 100 men in 1982. Many of the construction personnel may come from the area. Cheyenne will probably be the site of the headquarters. The line is scheduled for completion by November 1983.

The construction of this transmission line segment will not coincide with any of the other segments' construction. The impact of the construction of this segment is therefore expected to be insignificant on the areas involved. Comments relating to the Laramie River to Archer transmission line segment are applicable to the construction of this Ault segment as is the general discussion of transmission line construction force presented at the beginning of the section of the application.

III.L.2.b. Tower Spotting and Staking:

Once the plan and profile sheets are finished, the line route

will be surveyed and the tower sites will be staked out.

III.L.2.c. Construction Survey:

The construction survey is the survey where the towers are staked. This survey will require approximately 5 or 6 men who will survey the right-of-way, staking the individual structures. During, or soon after this survey is completed, borings will be made to determine the type of foundations that will be required for the towers.

III.L.2.d. Clearing Activities:

The area through which the proposed lines will be constructed can, in general, be traversed without any clearing activities. Clearing will be held to a minimum and the understory will be left to help deter erosion. In areas where clearing will be required, the debris will be disposed of in a manner which is in accordance with applicable regulations and the area will be reseeded. All marked timber will be saved. Refer to the Environmental Analysis for Electrical Transmission Facilities for more information concerning this matter.

III.L.2.e. Road Building Activities and Location:

The construction equipment will be able to traverse most of this area without building access roads; few new access, if any, will be needed. The decision on whether any new access roads will be needed, will be made once the final line route is determined. Any new roads will be built in compliance with all applicable requirements.

III.L.2.f. Foundation Installation Activities:

The holes for the foundations will be dug to proper depth (depending upon the soil characteristics, tower size, predicted strain, etc.). Reinforcing steel will then be put into place in the hole and the concrete will be poured. The concrete will probably be brought in by truck, and premixed by a local company. The concrete will be allowed to set a minimum of seven days before tower construction can begin. The excess fill from the excavation, not used to fill ruts, will be spread out under the structure.

Two general types of foundations are in use. One type consists of setting a stub angle in the concrete. This stub angle is shaped and drilled to permit the leg of the tower to be bolted to it. The other type consists of setting anchor bolts in the concrete. The

tower footing, fabricated with a flat base and drilled to match anchor bolts, is then set upon the foundation. The wood pole H-frame structures do not require foundations.

III.L.2.g. Tower Assembly and Erection Activity:

The steel towers will be assembled by sections on the ground and raised into place with a crane and bolted into place. The structural material will be hauled in by flatbed truck to each tower site as needed. The wood pole structures will be assembled on the ground and set up as a unit.

III.L.2.h. Conductor Installation:

Conductors will be strung by the "tension" method. This consists of pulling a rope or nylon line through sheaves or pulleys which are attached temporarily to the end of the insulator strings and then the conductors are fed through the pulleys. By keeping tension on the conductor while stringing, the conductor is kept up off the ground, thus avoiding scratching or knicking the conductor. After the conductor is strung, the sag is adjusted to the proper height. Similar measures are followed in stringing and sagging of the shield wires. After sagging is complete, the sheaves are replaced by permanent clamps.

III.L.2.i. Cleanup and Reclamation Activities:

The cleanup will be a continuous process during construction. Debris from construction will be picked up and loaded on a vehicle to be hauled away as soon as it becomes no longer useful in the construction activity. The cleanup crew is the last of the construction force through the right-of-way. This group picks up all debris, makes repairs to the surface of the land, repairs all fences, gates, etc., and makes any necessary adjustments to the structures, leaving the right-of-way in a neat and presentable condition. Where the surface of ground is badly distrubed, ruts will be filled. Where ground cover is damaged, the area will be seeded if appropriate. A representative of the Engineer accompanied by the contractor or his authorized representative makes the final inspection, pointing out to the contractor any deficiencies and requiring them to be corrected. Corrections are then reinspected and, if satisfactory, the contractor is released.

DIVISION III:
Section L: (continued)

III.L.2.j. Maintenance Activities:

Ordinarily, transmission lines require a very minimum of maintenance. There may be occasional damage from lightning which will consist of broken insulators. Another source of trouble is caused by hunters who shoot out the insulators. Lines are usually inspected twice a year. These scheduled inspections will probably be done by air, making it necessary to enter the right-of-way on ground only where damage is found. It is not unusual for lines to go for a period of four to five years without requiring any maintenance.

8-9 x 2/yr (2 mpd)

III. SITING APPLICATION:

L. Transmission Lines:

subsection 3

III.L.3. Corridor Location Analysis:

The method, reasons and the selection of the preferred and alternate corridor are presented in the Report on the Environmental Analysis for the Electric Transmission Facilities (Burns & McDonnell, 1975). The following is a brief summary of the methodology used to determine environmentally compatible corridors and the factors which influenced the corridor selection.

Methodology: The determination of environmentally acceptable corridors began with a general study of the region through which the transmission line would eventually be routed. To make use of the data found in this general study, a technique called constraint mapping was utilized. Using this method, areas which are socially, environmentally, or economically important were denoted as constraints on county highway maps at a scale of ½ inch = 1 mile. In essence, these areas were considered as regions where the construction of a transmission line would cause a greater disruption. The following constraints were defined for the study:

1. Urban Areas: In and around towns and cities where the presence of a transmission line would be highly visible to a greater number of people and potentially disruptive to future growth.
2. Recreational Areas: In and around areas utilized by the public for recreation where a transmission line would be highly visible.
3. All Known Historical and Archaeological Sites: Areas where transmission line construction might disturb historical or archaeological sites and in and around areas where people visit to gain a perspective of the past.
4. Designated Natural Areas: Areas designated by the state and federal governments for the preservation of wilderness or wildlife habitat.
5. Irrigated Lands: Lands which are presently under irrigation which have a greater value to the economy and are, in general, more densely populated than rangeland.

6. Cropland: Nonirrigated arable land which is more valuable, more densely settled, and has a greater susceptibility to disruption from the construction of transmission lines than rangeland.
7. Mineral Resources: Areas where the presence of a transmission line may impede the removal of mineral resources.
8. Physiographical Features and Soil Types Which Would Make Construction Difficult: Terrain and unstable soils which could cause possible disruption or erosion of the land due to the construction and maintenance of a transmission line, as well as increased construction and maintenance costs.
9. Surface Waters: Rivers, lakes and reservoirs.
10. Potential Groundwater: Areas where significant quantities of groundwater are located which could be utilized for circular pivot of flood irrigation projects.
11. Irrigable Soils: General areas where the soils are irrigable if sufficient water can be found.

After the general information was accumulated from state and federal sources and placed on the constraint maps, the area where potential corridors might exist where photographed. This information was then transferred to the constraint maps and tentative corridors were located. At this time, local officials (SCS and ASCS conservationists, county agents, county planners, resource conservation and development directors, etc.) were contacted for their input into the routing. Working with the local agencies and the constraint maps, preferred and alternate corridors were established.

Scenic Resources: The areas which were considered as scenic resources were classified as either Recreational Areas or Designated Natural Areas in the constraint mapping process. The impact on these areas in addition to the mitigation measures prescribed were discussed in the Impact on Aesthetics sections of the Report on the Environmental Analysis for the Electric Transmission Facilities (Burns & McDonnell, 1975).

Archaeological and Historical Resources: The historical and archaeological sites which are in the vicinity of the proposed corridor were discussed in the General Description of the Study Area sections, and the impact of the proposed lines on these sites was discussed in the Impact on Archaeological and Historic Sites of the Report on the Environmental Analysis for the Electric Transmission Facilties (Burns & McDonnell, 1975). The sites listed in the National Register of Historic Places were denoted in the report, while the balance of the sites were either listed or proposed to be listed in the Wyoming Inventory of Historic Sites.

There will be an archaeological survey conducted by a qualified archaeologist of the final line routes within the corridors. This survey will determine if any unknown sites of archaeologic or historic significance are in the right-of-ways, and will prevent the possibility of valuable historic losses due to the construction of the proposed transmission lines.

Area Economy: The proposed lines will only have a minimal impact on the economies of the four counties affected in Wyoming, and the overall economic consequences of one corridor as opposed to another will not vary significantly. Areas containing mineral resources, used for cultivation, under irrigation, or potentially irrigable were constrained. The counties' economic bases and trends are briefly discussed in the Socioeconomic and Agricultural portions of the General Description of the Study Area sections of the Environmental Analysis for the Electrical Transmission Facilities (Burns & McDonnell, 1975).

The right-of-way acquisition and transmission line construction will provide a temporary beneficial increase in cash flow over the four-county region. The cost of the transmission lines will be over $63,000,000.00. This will have a substantial benefit on the tax base with a resultant increase in revenues.

Capital Facilities: Although water, electricity, and other utilities will be required by the work force and the headquarters, it is not envisioned that any significant expansion of capital facilities will be needed.

Recreational Resources: The recreational resources are discussed in the General Description of the Study Areas and the impact on these areas is described in the Impact on Aesthetics in the Environmental Analysis for the Electric Transmission Facilities (Burns & McDonnell, 1975). These areas were also denoted on the constraint maps.

Housing Facilities: The location of housing facilities did not influence the selection of the corridors. The construction workers will be housed in motels and/or mobile housing such as campers, etc. There will be no adverse impacts on housing.

Transportation Facilities: The materials to be used in the construction of the proposed transmission lines and related facilities will be transported to suitable storage areas. From these storage areas the materials will be taken to the construction area by truck. These lines will not have a significant effect on scheduling or congestion of any transportation methods.

Land Use: The types of land crossed by the proposed corridor are denoted in the Land Use Along Route sections of the Report on the Environmental Analysis for the Electric Transmission Facilities (Burns & McDonnell, 1975). The right-of-way requirements and the total area needed for right-of-way for the proposed lines is given in Tables 59 and 60 . It should be noted that only .14 and .015 (factors arrived at by estimating that 35-foot-square area will be unusable for the steel structures and an area of 23 feet by 4 feet will not be available due to the wood pole structures) acres per mile will be required for the steel and wood pole structures, respectively. The remainder of the right-of-way will be available for other uses. To minimize the impact on existing land use, present cropland was avoided where possible. In areas of potential future development, section lines were followed to mitigate impacts on any future use of land.

Educational Facilities: The location of the educational facilities was not a factor in the selection of the location for the transmission lines. There will be no adverse impacts on educational facilities.

Geological Conditions: The proposed corridors are located in areas where there is little danger of an earthquake occurring. The geology of the area is described in the Environmental Report on the Proposed Transmission Lines (May and Lavigne, 1974).

Soils: A discussion of the soils found in the area and the potential impact and mitigation measures can be found in the Impact on Soils section of the Report on the Environmental Analysis for the Electric Transmission Facilities (Burns & McDonnell, 1975). Soils which were determined to be unsuitable for transmission line construction were denoted on the constraint maps and avoided during corridor selection.

Vegetation: Plant species composition within the study area vary markedly with changes in range sites and climatic conditions. The native vegetation is characterized primarily by the short-grass plains in the Wyoming area. Clearing of vegetation will be minimized. A description of the vegetation found in the study area is in the Environmental Report on the Proposed Transmission Lines (May and Lavigne, 1974). A discussion on the potential impact and mitigation measures may be found in the Impact on Vegetation section of the Report on the Environmental Analysis for the Electric Transmission Facilities (Burns & McDonnell, 1975).

Climate: The climate of this area was not an important factor in the determination of the proposed line routes since climate is a regional phenomenon. The climate will affect the work season as explained in Section III.L.2. Information concerning the climate of this area may be found in the Climate section of the Environmental Report on the Proposed Transmission Lines (May and Lavigne, 1974). The lines will be constructed to bear heavy wind and ice loadings.

Noise: These lines should not produce high levels of audible noise. There will be some noise produced by the wind blowing through the towers and the lines. This impact was minimized by the selection of corridors in sparsely populated areas. Information on the impact of noise may be found in the Noise, Radio-TV Interference section of the Report on the Environmental Analysis for the Electric Transmission Facilities (Burns & McDonnell, 1975).

DIVISION III:
Section L:

Wildlife: The proposed lines should not have a significant impact on wildlife. The proposed corridors avoided lakes and ponds where water fowl might hit the lines during landing or takeoff. These lines do not cross any unique wildlife habitat and will not impede the migration of animals. More information on the wildlife in this area is contained in the Environmental Report on the Proposed Transmission Lines (May and Lavigne, 1975). The impact along with the mitigation measures is presented in the Impact on Wildlife section of the Report on the Environmental Analysis for the Electric Transmission Facilities (Burns & McDonnell, 1975).

Table 59

SUMMARY OF TRANSMISSION LINE ROUTE CROSSINGS

	Laramie River-Dave Johnston	Laramie River-Ault	Laramie River-Archer
Total length of proposed line (mi. crossed)	75.5	108	71
Privately-owned land	68.5	103	70
Publicly-owned land	7.0	5	1
State	6.5	5	1
County or local	0	0	0
Federal park or forest	0	0	0
BLM	.5	0	0
Land use (mi.)			
Cropland	3	22	10.5
Irrigated	1	5	2.5
Dry	2	17	8
Range or pasture	72.3	86	60.5
Forest (commercial)	0	0	0
Forest (pre-commercial, non-commercial)	0	0	0
Desert, barren or rock	0	0	0
Residential	0	0	0
Commercial or industrial	0.2	0	0
Bogs or other wet land	0	0	0
Relation to existing utilities (mi.)			
Adjacent to existing wood structure (voltage)	(115-kV) 19.6		
Adjacent to existing steel structure (voltage)	0	12 (230+115 kV)	5
Adjacent to existing oil or gas pipelines (mi.)	25.4	12	0
Within utility corridors	45.0	12	5
Adjacent to railroads	0	12	0
Crossings	0	13	0
Main highways (each)	US-26 US-87 I-25 (twice)	I-25 I-80	US-85 I-80
Secondary roads (each)	Easter Brook Rd. Cold Sp. Rd. Horseshoe Ck. Rd. Natural Br. Rd.	Antelope Gap Rd. Federal Rd. Happy Jack Rd. Bristol Ridge Rd.	Antelope Gap Rd.

Table 59

SUMMARY OF TRANSMISSION LINE ROUTE CROSSINGS

	Laramie River-Dave Johnston	Laramie River-Ault	Laramie River-Archer
Unnamed secondary roads	41	65	36
Bituminous road, low type	1	2	1
Paved road, high type	0	1	0
Paved road, low type	0	0	0
Gravel, graded and drained	0	0	0
Gravel or stone	1	21	9
Graded and drained	2	3	2
Unimproved roads	8	0	4
Primitive roads	29	39	20
Water crossings (each)	Cottonwood Cr.	Chugwater Cr.	Chugwater Cr.
	Little Cottonwood	Antelope Cr.	Chugwater Cr.
	South Bear Cr.	Hunton Cr.	Hunton Cr.
	Middle Bear Cr.	South Hunton Cr.	Richeau Cr.
	North Bear Cr.	Maxwell Cr.	Chugwater Cr.
	Horseshoe Cr.	Richeau Cr.	North Bear Cr.
	Spring Cr.	North Chugwater Cr.	Bear Cr.
	Whiskey Gulch	Chugwater Cr.	Little Bear Cr.
	Elkhorn Cr.	Spring Cr.	Horse Cr.
	North Elkhorn Cr.	North Bear Cr.	Lodge Pole Cr.
	Little Indian Cr.	Bear Cr.	Ninemile Draw
	Spring Cr.	South Bear Cr.	Crow Cr.
	Sand Cr.	N. Little Bear Cr.	Porter Cr.
	LaBonte Cr.	Horse Cr.	Swan Cr.
	Wagonhound Cr.	Lodgepole Cr.	
	Bed Tick Cr.	Crow Cr.	
	Lower Bed Tick Cr.	Spring Cr.	
	Prele Cr.	Diamond Cr.	
	Alkali Cr.	Lone Tree Cr.	
	Lower Box Elder Cr.	Goose Cr.	
	Box Elder Cr.	Duck Cr.	
	North Platte River	Dry Cr.	
		North Fork of Antelope Cr.	
		South Fork of Antelope Cr.	
		Grant Cr., Scotch Cr.	
		Tepee Ring Cr.	
		Coolbone Cr.	
		Pierce Cr.	

Table 59

SUMMARY OF TRANSMISSION LINE ROUTE CROSSINGS

	Laramie River-Dave Johnston	Laramie River-Ault	Laramie River-Archer
Areas			
Total right-of-way (acres)	915	1963	1126
Substations (new acres needed)	1 na	0	5
Access Roads			
Existing	42	70	
New, Permanent	2 Fe	2 Fe	2 Fe
New, Temporary	2 Fe	2 Fe	2 Fe
Width of right-of-way (feet)	100	150	150
Poles or towers per mile (No.)	7	5	5

[1] *na - not applicable*

[2] *Fe - Few, if any, are expected*

Table 60

SUMMARY OF TRANSMISSION LINE ROUTE CROSSINGS

	Laramie River-Stegall	Stegall-Sidney	Laramie River-Sidney
Total length of proposed line (mi. crossed)	60	80.5	126
Privately-owned land	57.8	72.5	115
Publicly-owned land	2.2	8	11
State	2.2	8	11
County or local	0	0	0
Federal park or forest	0	0	0
BLM	0	0	0
Land Use (mi.)			
Cropland	12	19	23
Irrigated	2	0	0
Dry	10	19	20
Range or pasture	48	61.5	103
Forest (commercial)	0	0	0
Forest (pre-commercial)	0	0	0
Desert, barren or rock	0	0	0
Residential	0	0	0
Commercial or industrial	0	0	0
Bogs or other wetland	0	0	0
Relation to existing utilities (mi.)			
Adjacent to existing wood structure (voltage)	3	12 (115 kV)	0
Adjacent to existing steel structure (voltage)	0	0	0
Adjacent to existing oil or gas pipelines (mi.)	0	0	0
Within utility corridors	3	12	0
Adjacent to railroads	0	0	0
Crossings			
Main highways (each)	US-85	NEB-71	US-85, NEB-71
Secondary roads (each)	--	--	--
Unnamed secondary roads	36	38	76
Bituminous road, low type	1	3	5
Paved road, low type	3	5	8
Gravel, graded and drained		0	0
Gravel or stone	8	25	29
Graded and drained	7	0	7
Unimproved roads	2	1	3
Primitive roads	15	5	24

Table 60

SUMMARY OF TRANSMISSION LINE ROUTE CROSSINGS

	Laramie River-Stegall	Stegall-Sidney	Laramie River-Sidney
Water crossings (each)	Chugwater Cr. Eagles Nest Canyon Box Elder Cr. Corn Cr. Josh Cr. Lone Tree Cr. Horse Cr. Dry Cr. Robb Draw	Bull Canyon Long Canyon Willow Cr. Lawrence Fork Rocky Hollow Fork Lodgepole Cr.	Bull Canyon Long Canyon Cr. Willow Cr. Rocky Hollow Fork No. 2 Canal Chugwater Cr. Chugspring Cr. Elder Cr. Corn Cr. YBU Cr. Josh Cr. Tree Cr. Horse Cr. Lodgepole Cr. Kiowa Cr.
Areas			
Total right-of-way (acres)	1091	1463	2291
Substations (new acres needed)	1 na	5	5
Access Roads			
Existing	2 Fe	2Fe	2Fe
New, permanent	2 Fe	2Fe	2Fe
New, temporary			
Width of right-of-way (feet)	150	150	150
Poles or towers per mile (No.)	5-6	5	5

[1] *na - not applicable*

[2] *Fe - few, if any, are expected*

IV. PLANS AND PROPOSALS FOR IMPACT ALLEVIATION:

A. Introduction:

DIVISION IV:
Section A:

IV.A. Introduction:

A unique "open planning process" was implemented in mid 1974 in an effort to develop viable plans and proposals for mitigating potential negative impacts that might accompany the construction of the Laramie River Station. This "open planning process," has provided the Platte County Impact Alleviation Task Force established in 1974 the forum for community interaction and involvement by all interested citizens and state, Federal and local public officials.

While this section describes plans and proposals that have been developed as of the date of this application, it should be understood that the impact alleviation process is on-going. Necessary flexibility has been created so that, as projections develop into reality and plans need revising, the open planning process will allow for continued interaction and adjustments in the implementation of specific mitigating plans to impacts.

The basic tools used in developing the impact alleviation plans and proposals include:

1. A socioeconomic Baseline-data Analysis.
2. A Social Impact Assessment.
3. An Analysis of Community Attitudes and Preferences.
4. A Revenue and Expenditure Analysis for Polititал Subdivisions.

It is very difficult to determine precisely the degree of responsibility for mitigating potential impacts on a community. With respect to Platte County, a cooperative effort between the Project Participants, political subdivisions, state government, and Federal agencies has been developed to assure maximum effort in impact alleviation.

Many statutory, constitutional, and administrative policy constraints exist at various levels of government making it very difficult to deal with anticipated impacts prior to their existence in a community. Implementation of the following plans and proposals must necessarily be a cooperative effort by all responsible entities having jurisdiction if they are to achieve the desired alleviation.

The plans and proposals for mitigating negative impacts are basically in three categories:

1. Private housing
2. Community capital facility needs
3. Public service needs

Table No. 60 summarizes in table form the impact-alleviation plans and proposals under consideration at this time.

Table 60
PLANS AND PROPOSALS FOR IMPACT ALLEVIATION

Identified Impact	Area of Site Influence	Proposed Plans for Mitigation	Proposed Funding Requirement	Proposed Funding Source	Responsible Entity	Estimated Date of Implementation	Alternative Proposals
1. Housing	Town of Wheatland	Development of approximately 1900 lots.	Estimated $10,000,000	Private	Private developers	Jan. 1976 (phased)	Possible ownership by housing authority of apartments.
2. Water Supply System	Town of Wheatland	1. The present system is sufficient to meet a population of 10,000.	N/A	N/A	Town of Wheatland	N/A	N/A
		2. Additional chlorination equipment is needed.	$52,500	Joint Powers Board/with State Farm Board Loan & grant from Coal Tax Fund	Town of Wheatland	Jan. 1976	
3. Water Distribution System	Town of Wheatland	Upgrade present distribution system to facilitate new housing development needs.	$742,101	Joint Powers Board/with State Farm Board Loan & grant from Coal Tax Fund	Town of Wheatland	Jan. 1976	1. EPA facilities grant. 2. Developer tap fees.
4. Sewage Treatment Facilities	Town of Wheatland	Upgrade lagoon facilities.	$30,000	Joint Powers Board/with State Farm Board Loan & grant from Coal Tax Fund	Town of Wheatland	Jan. 1, 1976	1. EPA facilities grant. 2. Developer tap fees.
5. Sewer Collection System	Town of Wheatland	15,000 feet of additional sewer pipe–36 man holes. The additional lines would facilitate the housing developments contemplated for the Town of Wheatland.	$325,877	Joint Powers Board/with State Farm Board Loan & grant from Coal Tax Fund	Town of Wheatland	Jan. 1, 1976	1. EPA facilities grant. 2. Developer tap fees.
6. Solid Waste	Platte County/ Town of Wheatland	1. Capacity of landfill is sufficient to facilitate anticipated population increase of Platte County.	N/A	Town of Wheatland	Town of Wheatland	1977	None
		2. Town will need to purchase three additional trucks during peak.	$66,000	Town of Wheatland	Town of Wheatland	1978-1979	Federal excess property program.
7. Electrical System	Town of Wheatland	1. Upgrade present system including transmission facilities, substations and new tielines as well as direct lines for new housing developments.	$1,671,420	Joint Power Board Loan	Town of Wheatland	Jan. 1, 1976	None
8. Fire Protection	Town of Wheatland	1. New substation of 2,500 square feet.	$70,000	Town of Wheatland	Town of Wheatland	1976	Platte County continues to assist municipalities with cost of providing rural fire protection.
		2. Replace equipment.	$50,000	Town of Wheatland	Town of Wheatland	1980	

Table 60

PLANS AND PROPOSALS
FOR IMPACT ALLEVIATION
(continued)

Identified Impact	Area of Site Influence	Proposed Plans for Mitigation	Proposed Funding Requirement	Proposed Funding Source	Responsible Entity	Estimated Date of Implementation	Alternative Proposals
9. Law Enforcement	Town of Wheatland	1. Increase officers to 16 by 1979. 2. Increase clerical staff by 2½ 3. Increase floor space by 1,000 sq. ft. 4. Increase vehicles to 5 by 1979.	1. Operating budget will increase by $134,000 at Peak Period in 1979. 2. 3 new police cars for $15,000.	Town of Wheatland	Town of Wheatland	1976	None
10. City Government Administration Space	Town of Wheatland	Purchase existing Post Office facilities	$150,000	Town of Wheatland General Fund.	Town of Wheatland	1976	None at present time, however, city will have to renovate and expand present facilities to accommodate expected growth.
11. Fire Protection	Platte County	1. None necessary since the cooperative effort between the County and the municipalities is sufficient to meet county needs. 2. Need to replace the 3 army jeeps with two 500 GPM vehicles.	$42,500	Platte County Revenues	Platte County	1979	1. May be possible to procure vehicle through federal excess property program.
12. Law Enforcement	Platte County	1. Increase officers by four. 2. Purchase two additional vehicles. 3. Build a new law enforcement complex.	1. Budget must increase to $64,000 at peak. 2. $10,000 for vehicle purchase. 3. Estimated cost of new law enforcement facility $600,000.	County General Fund	Platte County	Late 1976	Present facilities at the courthouse could be used, but overcrowded conditions will exist in the future. It may be possible to acquire state and federal funds for new Law Enforcement complex.
13. Judicial System	Platte County	1. Expand Co. Attorney's Office to full time. 2. Add two full-time assistants and associated clerical personnel. 3. Increase physical space.	Increase Operating Budgets for: 1. District Court 2. Justice Court 3. County Attorney 4. Courthouse and jail.	Platte County	Platte County	Late 1976	None

Table 60
PLANS AND PROPOSALS FOR IMPACT ALLEVIATION
(continued)

Identified Impact	Area of Site Influence	Proposed Plans for Mitigation	Proposed Funding Requirement	Proposed Funding Source	Responsible Entity	Estimated Date of Implementation	Alternative Proposals
14. Courthouse Administration Facilities	Platte County	Remodel present facilities.	$200,000 estimated.	Platte County	Platte County	1976	Build a new courthouse, but costs seem prohibiting at the time.
15. Road and Bridge Division	Platte County	Replacement of truck equipment	$40,000	Platte County	Platte County	1978	None
16. Road to Plant Site	Platte County	1. Upgrade portion of present road to plant site. 2. Road construction at Reservoir.	$500,000 $1,600,000	1. Public grant from state Coal Tax Fund with interim financing assistance from MBPP. 2. County, State, MBPP.	County/MBPP State	Early 1976	No other financing proposals are viable at this time given the constraints on when the road must be completed.
17. Library Facilities	Platte County	Increase staff to facilitate demand.	$40,000/year increase in operating budget.	Platte County 2-mill levy.	Platte County Library Board	1978	None
18. Recreation	Platte County	1. Indoor Recreation Center Complex and affiliated programs.	1. Center Complex - $700,000. 2. Other Capital needs - $290,000. 3. Operating expenditures - $55,000 to $90,000 year.	Federal, State & Local Governments.	Platte County Parks and Recreation Board	1976	None
19. Mental Health Services	Platte County	1. Increase professional and support staff. 2. Alcoholism Program. 3. Half-way House.	Increased budget by $90,000 per year through peak construction.	Federal, State, Local Government and clients.	Southeast Wyoming Mental Health Center.	Mid 1976	None
20. Day Care Services	Platte County	1. Construct additional facilities to accommodate 85 additional children. 2. Increase staff.	1. New building - $100,000. 2. Operating expenses will rise to $212,000 at peak 1979.	State, Federal, and Local government, enrollment fees and donation from private sources.	Platte County Day Care Association	Mid 1976	Consideration is being given to utilizing facilities in Black Mountain subdivision for day care needs. This could eliminate the need to construct a new building.

Table 60
PLANS AND PROPOSALS
FOR IMPACT ALLEVIATION
(continued)

Identified Impact	Area of Site Influence	Proposed Plans for Mitigation	Proposed Funding Requirement	Proposed Funding Source	Responsible Entity	Estimated Date of Implementation	Alternative Proposals
21. Public Assistance and Social Services	Platte County	1. Administration & counseling staff will need to increase to meet additional population. 2. Services that will need upgrading include legal aid, vocational rehabilitation counseling, social security and supplemental security income, employment & unemployment offices, public health nurse.	No capital investments are necessary. Operating Budgets will increase significantly. State & Federal funds will lag behind the initial period of need.	Present local financing by way of mill-levy is being phased out & the state will assume obligation. Federal financing is another source.	State & Federal Agencies	Early 1976	A temporary contingency fund needs to be established to fill financial gaps for operating expenditures.
22. Senior Citizens	Platte County	1. New Senior Citizen Center. 2. Increase "meals on wheels" program. 3. Increase role for Seniors, Inc. 4. Increase health services program. 5. Increase congregate dining.	1. New facility $114,000. 2. Operating expenditure increase by $15-20,000 during primary peak.	State, Federal, Local government and private	Local government, State government and Seniors, Inc.	1976	None
23. Elderly Housing	Platte County/ Town of Wheatland	Construction of 20 elderly housing units for elderly on fixed incomes of $5,000 or less.	$500,000	HUD, Sec. 8 and Farmers Home Administration	Platte County Housing Authority	1976	Submission in 1976 for 30 additional elderly housing units.
24. Health Services - Physicians	Platte County	Search Committee of Local Citizens and Doctors seeking 2 additional General Practitioners, 1 Internal Medicine, 1 Obstetrician, 1 Pediatrician, and 1 Psychiatrist.	N/A	N/A	Local Recruitment Committee/ Hospital Board	Underway at present time.	1. Proposal for a Public Health Delivery System. 2. Paramedic program for peak period.
25. Health Services - Registered Nurses & LPNs	Platte County	Recruitment Committee seeking additional RNs and LPNs to reach Wyoming Standards	N/A	N/A	Recruitment Committee/ Hospital Board	Underway at present time	Public Health Nurse program will assist in alleviation.
26. Health Services - Ambulance Personnel and Emergency Medical Technicians	Platte County	Shortage of physician specialist requires a need for full-time ambulance personnel and EMTs. Recruitment to meet 1980 requirement of 150 is underway.	N/A	N/A	Local Recruitment Committee	Underway at present time	The high number of EMTs will not be needed if the shortage of physicians is resolved.

Table 60
PLANS AND PROPOSALS FOR IMPACT ALLEVIATION
(continued)

Identified Impact	Area of Site Influence	Proposed Plans for Mitigation	Proposed Funding Requirement	Proposed Funding Source	Responsible Entity	Estimated Date of Implementation	Alternative Proposals
27. Health Services - Dentists, Optometrists & Pharmacists	Platte County	There is no formal means of attracting additional members in these professions. However, thru the Task Force an awareness of the problem has been developed and there has been responses to the needs of these specialists.	N/A	N/A	N/A	N/A	None
28. Health Services - City/County Health Department	Platte County	Incorporate a system of preventive health & sanitation through the full-time hiring of a sanitarian and public health nurse.	$26,000	50/50 between State and County	County Government	Sanitarian program was approved beginning Nov. 1975	None
29. Health Services - Hospital Beds and Nursing Home Beds	Platte County	A bond issue to finance 16 additional nursing home beds, improvements in hospital recovery room, emergency room, provide an auxillary power plant.	Estimated cost of $474,000	Platte County Revenue Bond Issue	Platte County and Hospital	Jan. 1976	Preliminary study is being made for the possible addition to the hospital on a long-range basis.
30. Health Services - Ambulances	Platte County	The addition of two additional ambulances and three additional standby vehicles.	$50,000	Platte County	Platte County	1977	Excess Property Program
31. Schools	School Dist. No. 1	1. 41 new classrooms. 2. 41 additional teachers. 3. Additional administrative personnel.	1. $3.5 million for additional elementary school. 2. Temporary classroom units. 3. Increased operating expenditures.	1. School District Mill Levy 2. Non-profit corporation for building of new school. 3. Possible use of Joint Powers Board.	School Dist. No. 1	1976	Site acquisition and architectural design is being instigated.
32. Schools	School Dist. No. 2 (Guernsey)	1. 4 new teachers. 2. Additional equipment and supplies.	Increased operating budget.	School Dist. Mill Levy.	School Dist. No. 2	1976	
33. Schools	Glendo and Chugwater (School Dist. No. 1)	1. 6 new classrooms. 2. 6 new teachers. 3. Additional supplies and equipment.	Included in No. 31.	School Dist. No. 1 Mill Levy	School Dist. No. 1	1976	

Table 60
PLANS AND PROPOSALS
FOR IMPACT ALLEVIATION
(continued)

Identified Impact	Area of Site Influence	Proposed Plans for Mitigation	Proposed Funding Requirement	Proposed funding Source	Responsible Entity	Estimated Date of Implementation	Alternative Proposals
34. Elderly Housing	Platte County Guernsey	Construction of 12 elderly housing units in Guernsey	$336,000	HUD, Sec. 8 and Farmers Home Administration	Non-Profit Housing Association	1975	None
35. Municipal Electric System	Town of Guernsey	Up-Grade electrical system to accommodate anticipated growth.	Estimated cost - unavailable.	Joint Powers Board Loan	Town of Guernsey	1977	None
36. Municipal Water Delivery System and Storage Supply Facilities	Town of Guernsey	Up-Grade storage facilities and increase delivery system to additional developments to handle anticipated population influx.	$350,000	Joint Powers Loan from Farm Loan Board and Coal Tax Grant	Town of Guernsey	1977	Federal financing and user hook-up charges would assist in financing capital improvements.
37. Sewage Treatment and Collection System	Town of Guernsey	Up-Grade treatment facilities and increase feeder and collection system to handle population influx.	$250,000	Joint Powers Loan from State Farm Loan Board and Coal Tax Grant	Town of Guernsey	1977	Federal financing through EPA grant and user hook-up fees.

IV. PLANS AND PROPOSALS FOR IMPACT ALLEVIATION:

B. Specific Plans and Proposals:

Subsection 1
Subsection 2
Subsection 3
Subsection 4
Subsection 5
Subsection 6
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Subsection 8
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Subsection 10
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Subsection 14
Subsection 15

DIVISION IV:
Section B:

IV.B. Specific Plans and Proposals:

IV.B.1. Alleviation Plans to Provide Adequate Housing Accommodations in the Town of Wheatland:

The Socioeconomic Study conducted by the University of Wyoming suggests a possible housing mix to meet new anticipated population preferences (Table 39). This suggested mix along with the results of the "Community Attitudes and Preference Survey" were the basis for projecting specific housing accommodations illustrated in Exhibit 35.

There are two basic elements to mitigating housing impact. First, private housing developers are reluctant to risk capital for a short-run demand to meet "front-end" supply. Most housing is constructed to meet an already existing demand. To adequately mitigate impact during and after construction, the supply must coincide more closely with the demand and ideally precede demand to some extent. The project has developed a housing program that will provide for adequate "front-end" housing and at the same time flexibility in the project's housing program to allow for greater "private" participation as the risk diminishes.

Exhibit 35 indicates peak periods of the total construction work force including induced population. While the peak is somewhat smaller for Wheatland than for all of Platte County, the project's housing plans are to create housing sufficiently within the City of Wheatland so that no undue pressure is placed on smaller communities to accommodate additional housing beyond their present capacity. The shaded area represents the type of housing being planned, number of units, and estimated work force to be housed. The flexibility in this housing program is such that the maximum work force can be accommodated.

Exhibit 33 illustrates the location of the housing programs being developed by the project. In developing specific sites, the over-all growth potential of the town, traffic patterns, and community integrity were major considerations. All sites meet or exceed present community development codes and have either already been approved by the appropriate local planning boards or are in final approval stages.

Specific housing developments being implemented by by the project include: bachelor quarters, mobile home pads, recreational

vehicle pads, apartments, and single-family housing units. In addition to the housing facilities, recreational and social amenities are being addressed in each major development.

The project is directly involved in the development and/or management of approximately 135 acres in Wheatland accounting for an estimated 2060 lots for housing or actual housing units.

IV.B.1.a. Housing Parcel #1 (Black Mountain Subdivision)

Black Mountain Subdivision is being acquired by the Missouri Basin Power Project and will be developed as a Planned Unit Development to accommodate both temporary and permanent population. MBPP is contracting for the purchase of 101 acres for the development and has entered into contractural arrangements to develop and manage the subdivision. The schedule for compeltion of this subdivision is approximately August, 1976, as outlined in Exhibit 36.

The development is planned to accommodate 314 single-family units for permanent residents or 470 temporary mobile pads as well as space for recational vehicle park up to 300 units. The site plan illustrates the basic layout of the subdivision (Exhibit ~~41~~ 40). The project has requested a temporary variance so that the single-family lots can be utilized for the first 5-6 years to accommodate two mobile homes on one single-family lot. As the demand for the temporary mobile homes decreases, the single-family lots will be sold for permanent residents.

As a planned unit development, 6.7 acres have been dedicated for park and recreation facilities. Six acres adjacent to the Park have been dedicated for school facilities of either a temporary nature or for a permanent facility.

The temporary mobile home park will have a management program under the direction of MBPP that will provide for social and recreational benefits to both present residents of the town and temporary construction population residing in the Black Mountain Development.

The social and recreational programs will be conducted under the supervision of a professional staff and will include programs for all ages. A 9,593-square-foot indoor clubhouse facility is planned to accommodate various social and recreational programs.

The recreational vehicle facility will be constructed for variance use as with the mobile home park.

Immediately adjacent to the Black Mountain Subdivision is property zoned commercial to complement the housing facilities in the 101 acres. The total development will be an attractive living environment and add significantly to the orderly growth of the community. Traffic patterns are such that the project work force is only nine minutes from the plant site and will not need to travel through town.

IV.B.1.b. Housing Development - Parcel No. 4:

Housing Parcel No. 4 being developed by the project includes accommodations for up to 200 bachelors including dining and recreational facilities, and 116 mobile home pads for temporary and permanent occupancy.

Presently, 60 of the 116 mobile home pads are under construction. These bachelor facilities are scheduled for a construction start in Spring 1976. This development has been approved by appropriate planning authorities or is in the final stages of meeting local development code requirements.

The bachelor facilities will be modular units to accommodate 200 men on 40 acres. Included in the development is a dining facility that could feed up to 300 men per day (6,272 sq ft). The bachelor housing facility will be under the direct control of MBPP. Contract catering will provide proper meals and housekeeping accommodations. These facilities will be of a temporary nature and once no longer needed, the land will revert to residential use.

The construction phase of the bachelor facilities and the remaining mobile home pads in Parcel No. 4 is outlined in Exhibit 39.

IV.B.1.c. Housing Development Parcel No. 3:

Housing Development Parcel No. 3 represents approximately nine acres approved for single-family housing. MBPP has not made a direct commitment to be involved in this development as of the date of this application. It is expected that the 48 lots in this parcel will be fully developed to meet the growing demand. The development is already two-thirds completed and will be connected to city utilities.

IV.B.1.d. Housing Development Parcel No. 2:

Housing development Parcel No. 2 is known as the Allison Subdivision. This subdivision has been approved by local planning authorities and single-family housing is under construction ranging in price from $35,000 to $55,000. The development schedule is outlined on Table 38, and is presently ahead of schedule. The project is working out contractual arrangements whereby a specific number (40 units) would be available to meet demand beginning in 1976.

IV.B.1.e. Housing Development Parcel No. 1 (Apartment Complex):

Another consideration for meeting the anticipated housing demand is the supply of 112 apartments to be located in Parcel No. 1 immediately adjacent to the Black Mountain Subdivision. While no direct contractual arrangements have been entered into by the project at this time, discussion and feasibility studies are underway to construct a sufficient mix of apartments to facilitate both permanent and temporary demand. It is estimated in preliminary evaluations that rents would be in the neighborhood of $300.00 for a furnished 3-bedroom, 1,008-square-foot apartment. A preliminary construction time frame is illustrated in Table 37 for the apartments.

IV.B.1.f. Housing Development Parcel No. 1 Contingency Plan:

MBPP has developed a contingency plan for additional mobile home pads in the event additional facilities are needed. Through a private contractor, MBPP has option rights to 80± acres allowing for the construction of 500 additional mobile home pads. This construction would be of a temporary nature.

In the event private developers do not meet the demand and there is a significant lag in housing supply for the work force, the contingency would be put into effect.

IV.B.1.g. Summary:

MBPP has developed an overall housing program to effectively accommodate the total construction work force and permanent population moving into the areas of primary site influence. This includes the estimated needs of the induced population as projected in Table 61.

The type of housing being developed for Wheatland will provide reasonably-priced accommodations and assure less work force turnover

Table 61

PROJECTED POPULATION AND EMPLOYMENT INCREASES ASSOCIATED WITH PLANT CONSTRUCTION AND OPERATION[1]

Description	Peak During Year									
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Construction Employment[2]	520	750	1,780	2,000	1,210	630	840	560	0	0
Daily Commuters	100	150	360	400	250	130	160	120	0	0
Weekly Commuters	210	300	710	800	480	250	340	220	0	0
Temporary Residents	210	300	710	800	480	250	340	220	0	0
Construction Population	900	1,290	3,060	3,440	2,070	1,070	1,440	960	0	0
Plant Employment[2]	Neg[3]	Neg	30	120	160	160	160	200	200	200
Plant Population	Neg.	Neg.	70	310	400	400	400	520	520	520
Induced Employment	110	220	500	750	730	590	570	530	390	360
Induced Population	290	560	1,310	1,960	1,890	1,540	1,480	1,370	1,000	940
Total Population Increase	1,190	1,850	4,440	5,710	4,360	3,010	3,320	2,850	1,520	1,460

[1] *Division of Business and Economic Research estimates.*
[2] *Based upon 1980-80-83 completion dates.*
[3] *Negligible.*

and absenteeism. With the type of amenities planned, greater community interaction between the new and present residents will exist, making for a more socially acceptable transition in the community and reduce potential friction between the two groups.

IV.B.2. Plans for Alleviation of Municipal Utility Facilities, (Area of Site Influence - Wheatland):

IV.B.2.a. Funding Requirement and Method of Financing:

Upgrading of necessary water, sewage, and electrical facilities to accommodate a population of 10,000 is estimated at $2,821,898. Many alternative methods of financing these improvements have been explored by the appropriate responsible authority. To meet the expected time frame of new population influx some of the upgrading process has actually been started. No funding source has been found other than the Wyoming State Farm Loan Board that would commit either grant funds or loans to assist Wheatland in mitigating this impact problem. Wheatland has applications pending with EPA and Farmers Home Administration with no expectation of funding, even though under EPA guidelines Wheatland will be in non-compliance under normal circumstances in 1977.

Because of statutory constraints, the only method through which assistance could be sought for a loan from the State Farm Loan Board was by creating a Joint Powers Board. In November 1975, Wheatland and Guernsey Town Councils formed the Guernsey-Wheatland Joint Powers Impact Board and submitted an application on December 3, 1975, for a Farm Board loan.

Because municipalities do not fare well with revenue generation under impact conditions (See Table IV-33, Social Impact Assessment) but must bear the burden of capital facilities investments to accommodate increased population, the town of Wheatland has asked for additional assistance from the Coal Tax Revenue fund to assist in amortizing its debt for municipal utility improvements. In addition, the town has imposed tap fees of up to $750 per lot on all new development. Excess revenues from these services and the tap fees have been pledged to amortize the debt over a 10-year period.

The revenue and expenditure projections indicate that Wheatland will begin to lose income after 1981 due to the decrease in

population of the construction work force. This projection emphasizes the need to finance the major improvements during the time of primary revenue generation so that no undue burden is placed on a future population to generate revenues sufficient to amortize the debt. Even with the increased effort during the 10-year period, the town will need assistance from the Coal Tax Revenue Fund.

In order to assure no unwarranted risk by the local community for capital improvements beyond the needs of the present population, the Missouri Basin Power Project has agreed to guarantee the municipal capital facilities loan from the State Farm Loan Board.

Under the financing plan discussed above, it is expected that all municipal capital utility improvements can be constructed in a timely manner to meet the present construction schedule for MBPP.

IV.B.2.b. Plans to Alleviate Water Supply Equipment Facilities Need:

The report on existing water supplies and proposed improvements prepared by K & H Consulting Engineers recommends that the improvements necessary, relating to water supply, is to upgrade the filter and chlorination equipment to handle the increased capacity requirement. The estimated cost of these improvements is $52,500. The improvements are scheduled for 1976. The town of Wheatland has primary responsibility for the improvements and is taking steps for implementation.

IV.B.2.c. Plans to Alleviate Water Distribution System Impact:

According to the engineering recommendations referenced in B.2.b, additional water distribution facilities need to be installed to accommodate the new housing developments. Exhibit 33 illustrates the proposed distribution system consisting of approximately 18,000 feet of pipe. The addition to the system will allow Wheatland to accommodate a population of 10,000. The estimated cost is $742,101 and will be financed through the Joint Powers Board loan described in B.2.a. The town of Wheatland has the primary responsibility for the improvements and implementation of the plan is expected to begin in the spring of 1976.

IV.B.2.d. Plans to Alleviate Water Storage Impact:

As quoted in the above-referenced engineering report, an additional storage tank with an 800,000-gallon capacity will be needed

in 1977. The estimated cost is $230,000. The storage tank improvement will be financed through the Joint Powers Board loan and construction will be the responsibility of the town of Wheatland; implementation of this plan is scheduled in 1977.

The overall alleviation plan for water distribution and storage will assure adequate water pressure in all parts of town for proper fire protection and to meet health and safety standards.

IV.B.2.e. Plans to Alleviate Impact on Sewage Collection Facilities:

The above-referenced engineering reports recommends replacement and new installation of sewage collection and feeder pipe to accommodate population increases. Exhibit 33 illustrates the additional system in connection with new housing developments.

The overall requirement is for approximately 15,000 lineal feet of pipe at an estimated cost of $325,877. The plan for alleviation is the responsibility of the town of Wheatland and is scheduled for implementation in early 1976. Funding will be through a Joint Powers Board loan.

IV.B.2.f. Plans to Alleviate Impact on Sewage Treatment Facilities:

Under the same engineering report, it was recommended to upgrade the present lagoon facilities. Even without impact from the Laramie River Station, Wheatland would need to upgrade its treatment facilities to comply with 1977 EPA Standards.

Wheatland has been working on this matter for over 2 years and has an application pending with EPA. However, Wheatland still does not have a sufficient priority to assure upgrading to meet either the impact anticipated in 1976 nor to meet the 1977 EPA Standards.

The plan calls for a cost of $30,000 to upgrade the lagoons with aerators. At a later date it is expected that a new cell will need to be developed. The town of Wheatland has primary responsibility for the alleviation plans and implementation is expected to begin in 1976. Financing will be through a Joint Powers Board loan.

IV.B.2.g. Plans to Alleviate Impact to the Municipal Electrical Facility - Area of Site Influence - Wheatland:

An engineering study was commissioned by the town of Wheatland in 1974 to analyze the needs of the town based on present demands and

expected impact due to the construction of the Laramie River Station.

The study conducted by Miner, and Miner Consulting Engineers, recommended a plan for upgrading substations, transmission lines, and installation of underground/overhead distribution facilities to new consumers based on population projections made by the University of Wyoming Socioeconomic Study.

The estimated cost is $1,671,420. The plans for upgrading have begun under the direction of the town of Wheatland and are expected to be implemented in a manner to meet housing development projections outlined in Table 35. The Plan also deals with necessary commercial and business needs expected to accommodate this population impact.

The financing of this project will be handled through a Joint Powers Board loan.

IV.B.2.h. Proposal to Alleviate Impact on Solid Waste Facilities - Area of Site Influence - Wheatland:

The only negative impact expected to accommodate the increase in solid waste facilities is the need for three additional collection trucks and additional employees.

Through financial projections for the town of Wheatland, an allocation was made for an expenditure of $22,000 per year beginning in 1977 for the purchase of additional equipment. Allocation was made in the overall expenditure for the Sanitary Department to cover additional personnel during peak years. The budget for the Sanitary Department was estimated at a peak of $145,000 in fiscal year 1979, leveling off at $88,000 in 1985. It may be possible to secure additional equipment through the excess property program administered by the Old West Regional Commission.

IV.B.3. Proposal to Alleviate Impact on Fire Protection Facilities - Area of Site Influence - Wheatland:

The Social Impact Assessment conducted by the University of Wyoming Sociology Department assesses the impact on the Wheatland Fire Protection Facilities. Proposals recommended to alleviate consists of the following:

1. Construction of a 2,500-square-foot firehouse in 1977 at an estimated cost of $70,000.

2. Replacement of a 1500 gpm pumper in 1981.
3. Increase in operating budget of the Fire Department.
4. Replace three army jeeps with two 500-gpm vehicles.

The costs for budget increases and capital investments were projected in the revenue and expenditure analysis. (See Table IV-31 and Table IV-32, Social Impact Assessment.) It is expected that town officials will take into account the projected needs and make fiscal allocations as recommended in the studies.

IV.B.4. Proposals to Alleviate Impact on Law Enforcement Facilities - Area of Site Influence - Wheatland:

The proposals for mitigating impacts on the Wheatland Law Enforcement facilities include the following:

1. Increase total officer and clerical staff as recommended in Table 28.
2. Increase physical space. Consideration should be given to a Combined Law Enforcement Center between the City and County.
3. Increase budget for Law Enforcement department as population increases.
4. Purchase additional vehicles for officers at $5,000 per vehicle.

The recommendations have been reviewed with appropriate town officials and allocation for costs have been included in the fiscal projections to allow town officials the flexibility of preplanning.

It should be noted that recruitment efforts are underway for additional law-enforcement personnel.

IV.B.5. Proposal to Alleviate Impact on General Administrative Facilities - Area of Site Influence - Wheatland:

The present administrative office space is inadequate to accommodate the anticipated increase in Town Government Administration.

The town of Wheatland is presently in the process of developing a priority status for the purchase of the old Post Office building in Wheatland which will be vacated in 1976.

The cost of purchase and remodeling was considered as a capital facility expenditure in the fiscal projection at approximately

$150,000. (See Table IV-32, Social Impact Assessment Study.)

IV.B.6. Proposals to Alleviate Impact on Law Enforcement and the Judicial System - Area of Site Influence - Platte County:

The social impact assessment study discussed the needs of County Law Enforcement and the Judicial System. The proposals were recommended to County officials and operating costs and capital investments were included in the fiscal projections for County government.

IV.B.6.a. Proposals for Law Enforcements Alleviation:

Table 27 describes the recommended increase in officers, clerical personnel and vehicle needs. Missouri Basin Power Project and County officials are discussing a possible plan of cooperative effort regarding security personnel for the plant.

In addition to the personnel needs for law enforcement, there is also a recommendation for additional facilities to accommodate County Sheriff personnel, jail facilities and radio equipment. The estimated capital costs have been projected in the county's revenue and expenditure projections. In light of the projected needs for both the county and town law-enforcement departments, it may be advisable to construct a combined Law Enforcement Center. It is estimated that such a facility to meet these projected demands would cost $600,000.

IV.B.6.b. Proposals to Alleviate Impact on the Judicial System:

Specific recommendations have been discussed in the Social Impact Assessment Study. Budgetary projections to meet these recommendations have been included in the fiscal analysis for the County. They include:

1. Expand County attorney to full-time position with two full-time assistants and associated clerical personnel.
2. Add one additional District Judge.
3. Remodel existing judicial facility to handle increased demand.

County officials recognize that law enforcement and the administration of a judicial system are required by statute and are studying these proposals for consideration.

IV.B.7. Proposals to Alleviate Impact on County Road System - Area of Site Influence - Platte County:

The socioeconomic study, conducted by the University of Wyoming, indicated the need to upgrade present public road facilities between the plant site and the town of Wheatland. County and project officials have begun discussions to determine a method of financing and development of a road design to meet the construction timetable of the plant. Under present conditions, the county does not have the funding available to finance this public road. One source of funding being explored is a grant from the Wyoming Road Tax revenue fund.

IV.B.8. Proposal to Alleviate Impact on Recreational Facilities - Area of Site Influence - Platte County:

Section 9 of the Social Impact Assessment by the Sociology Department of the University of Wyoming describes the nature of recreational facilities in Platte County.

In order to further enhance the quality of life of Platte County citizens, the development of a County-wide Recreational Complex is proposed to assist in alleviating impact both during construction of the Laramie River Station and after.

Steps are being taken to look into the feasibility and desirability of an indoor complex. Table 62 outlines projected costs for capital improvements and operating expenses necessary to maintain such a complex. These costs were included in the fiscal analysis for Platte County under non-obligated functions. (See Table IV-28, Social Impact Assessment Report.) A Platte County Park and Recreation Board is in the process of being formed. This Board would normally take the responsibility in developing this proposal to help alleviate impact on recreation in Platte County.

IV.B.9. Proposals to Alleviate Impact on Mental Health Services - Area of Site Influence - Platte County:

An in-depth study has been conducted into the services provided by the Southeast Mental Health Center. These services provide both direct and community prevention assistance.

Table 62

PROJECTED CAPITAL AND OPERATING EXPENDITURES FOR A PLATTE COUNTY RECREATION DEPARTMENT FOR THE PERIOD 1975-1986 WITH THE MBP PROJECT[1]

($1000)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Capital Outlays										
Recreation Center Complex	700									
Other Additions (Baseball Fields, Buses, Major Equipment)[2]	0	15	30	35	40	40	40	0	0	
Operating Expenditures										
Administration (Salaries)	30	35	45	50	50	50	45	45	45	45
Operation (Repairs, Office Rent, Supplies, Etc.)	20	25	35	35	35	35	30	30	30	30
Fixed Charges (Insurance, Social Security, etc.)	6	8	10	10	10	10	10	10	10	10

[1] *No estimates were made "without MBP Project" because there would probably not be sufficient demand for a county recreation program without the increased population.*

[2] *These figures are very rough estimates. It was assumed that the program would grow until after the boom period at which time, some variable costs may drop.*

To insure maintenance of present services and provide for additional services to meet the needs of people during construction, the Wheatland office will need additional professional staff and development of an alcoholism program. Table 37 outlines the recommended changes in staff and budgetry requirements to meet population increases.

The Mental Health Center's financing is limited and spread among different entities. The Center's grant from the Federal government is a decreasing grant due to expire in 1979.

Under the proposals recommended to alleviate expected impact, the Mental Health Center is in need of additional funding. It is recommended that appropriate state agencies look into these needs for possible assistance through state resources.

The County's budget was projected to take into account the possibility of the County picking up fifty percent of the Federal grant portion in 1979. Presently, the grant is 50/50 with County and Federal participation. (See Table IV-27, Social Impact Assessment Study.)

IV.B.10. Proposal to Alleviate Impact on Day-Care Facilities - Area of Site Influence - Platte County:

In the Social Impact Assessment Study, Section 8, the impact on day-care facilities is addressed. It is projected that the student demand will increase between 60 to 85 children. This is taking into account the establishment of kindergarten in the public school system.

Based upon these projections, it is proposed that a new facility capable of handling 85 students be constructed. The estimated cost of such a complex at $100,000 was considered in the nonobligated capital expenditure projections for Platte County. In addition to this possible source of financing, the Day-Care Association is discussing with Missouri Basin Power Project officials the possible cooperative use of complex facilities being constructed in the Black Mountain Subdivision.

In addition to the additional facilities, the Day-Care Program will need additional staffing and increased budgeting. It may be possible for Platte County to provide additional assistance in budgeting needs along with the expected client charges to be administered by the Association. Table 63 outlines the proposals for alleviating impact on Day-Care facilities and programs.

Table 63

PROJECTED NEEDS FOR A PLATTE COUNTY DAY CARE SERVICE FOR THE PERIOD 1975-1985 WITH A PUBLIC SCHOOL KINDERGARTEN IN 1978[1]

	1976	1977	1978	1979	1980
Children seeking day care[2]					
Without MBPP	25	26	0	0	0
Induced by MBPP	37	58	58	76	58
Total with MBPP	62	84	55	73	56
New public day care centers					
Without MBPP					
Small (20-30 children)	1	1	0	0	0
Staff (full & parttime)	5	5	0	0	0
One-time expenditures[3]	$35,000	0	0	0	0
Operating costs	$37,280	39,713	0	0	0
With MBPP					
Medium (60-85 children)	1	1	1	1	1
Staff	12	16	12	15	12
One-time expenditures	$100,000	0	0	0	0
Operating expenditures	$63,600	69,200	89,800	100,100	90,500

	1981	1982	1983	1984	1985
Children seeking day care					
Without MBPP	0	0	0	1	2
Induced by MBPP	40	44	38	20	19
Total with MBPP	39	43	38	21	21
New public day care centers					
Without MBPP					
Small (20-30 children)	0	0	0	0	0
Staff (full & parttime)	0	0	0	0	0
One-time expenditures	$ 0	0	0	0	0
Operating costs	$ 0	0	0	0	0
With MBPP					
Medium (60-85 children)	1	1	1	1	1
Staff	8	8	8	5	5
One-time expenditures	$ 0	0	0	0	0
Operating expenditures	$80,600	83,600	80,400	70,800	70,800

[1] *It is assumed that a kindergarten will be operational for the 1977-78 school year.*

[2] *Children seeking day care service are those not eligible for the Headstart program. These figures do not include 149 certified spaces from 1975 to 1977, and 78 certified spaces from 1978 to 1985.*

[3] *All costs are figured with a 6 percent per year inflation rate.*

IV.B.11. Proposals to Alleviate Impact on Department of Public Assistance and Social Services - Area of Site Influence - Platte County:

Section 3 of the Social Impact Assessment Study outlines the services rendered by the Department of Public Assistance and Social Services and to what extent these services may need upgrading to meet the expected population increase.

The local office of D-PASS will need an increase in staff and operating budget. D-PASS will incur increases in caseloads in the area of normal D-PASS functions. In addition, D-PASS will receive an increased workload in assisting clients' requests for services handled by an agency of the state or federal government not having a local office. This situation is already existent in the case of transients looking for employment.

IV.B.12. Plans to Alleviate Impact on Senior Citizens - Area of Site Influence - Platte County:

Section 6 of the Social Impact Assessment Study outlines present Senior Citizens' Programs and suggested needs in the County.

The two major areas affecting senior citizens will be housing and recreational activities. Efforts are underway to assist in mitigating these potential impacts.

IV.B.12.a. Elderly Housing Program:

Through the Platte County Housing Authority, formed in 1974, an application has been filed with HUD and Farmers' Home Administration for the construction of 20 low-income elderly housing units in Wheatland. These units are being designed and are expected to be under construction in early 1976. It is expected that additional units will be built by the Housing Authority once Federal requirements are formulated. Construction of 12 low-income elderly units is already underway in Guernsey. MBPP staff has in the past and will continue to provide technical assistance in the future to help assure development of these facilities.

IV.B.12.b. Special Senior Citizen's Programs to Alleviate Impact on Elderly:

Table 64 outlines projected increased demand for "meals on wheels" program, congregate dining needs and additional health care service needs.

These services will need expanding to facilitate the needs of the elderly. A new Senior Citizens' Center is being planned for in the elderly housing complex for Wheatland. While Services for Seniors, Inc., is expanding to meet many of these needs, additional assistance from appropriate state, federal and local agencies of government is necessary to assure full implementation of these proposals.

IV.B.13. Proposals to Alleviate Impact on Health Services - Area of Site Influence - Platte County:

IV.B.13.a. Physicians; RNs and LPNs:

Table 34 outlines the present and projected need for professional personnel to meet the expected population increase in Platte County.

A local recruitment Committee and the Platte County Hospital Board, along with financial assistance from the Platte County Commissioners, have instigated a recruitment program that has yielded benefits to the community by the addition of a new surgeon.

It is expected that this effort will continue, and, with the preplanning and assessment of needs already completed, the community will have sufficient lead time to accomplish the task of increasing its personnel to meet expected population demands.

IV.B.13.b. Proposal to Alleviate Impact on Public Health - Area of Site Influence - Platte County:

The development of a Public Health delivery system would be helpful in light of the overall medical needs of Platte County.

A proposal has been submitted to the County and Town for a full-time Sanitarian and a part-time Public Health Nurse program.

The County has implemented the Sanitarian Program in cooperation with the State of Wyoming and will begin operation in December, 1975.

It is expected that the overall proposal for a Sanitarian and Public Health Nurse Program will receive consideration for implementation by the appropriate agencies. A detailed report on how to establish a city/county health district has been prepared by the Platte County Joint Planning Office.

IV.B.13.c. Medical Facilities Improvements to Alleviate Impact on Medical Services - Area of Site Influence - Platte County:

Table 36 outlines the estimated expenditure necessary to implement proposals for adding hospital beds, increasing ambulance vehicles and making improvements in 1976 to present hospital facilities.

These cost estimates have been included in the Revenue and Expenditure Projection for Platte County. (See Table IV-27, Social Impact Assessment Study.)

Work is underway in Platte County by appropriate officials to implement these proposals to meet expected population increases.

IV.B.14. Plans to Alleviate Impact on School District No. 1 Area of Site Influence - Platte County:

Section 10 of the Social Impact Assessment Study discusses the projected impact on Platte County schools. Since education is a statutory requirement, the plans for mitigating impact deal primarily in the area of additional facilities and instructors as outlined in Table 65.

The primary problem in alleviating this impact is that tax revenues collected for the purpose of financing education are not forthcoming until after the impact actually occurs. School District 1 does not have the bonding capacity to raise the estimated $3,500,000 necessary to mitigate the projected impact. Table 65 summarizes the projected needs for School District 1. Exhibit 34 depicts boundaries of School Districts 1 and 2.

The preliminary plans for mitigation have been approved by the school district authorities. The problem is one of financing the plans. This problem is illustrated in Table IV-34, Social Impact Assessment Study. In a cooperative effort between the school district and the Missouri Basin Power Project, studies are underway to assess the most viable alternative to financing adequate facilities. In addition

Table 64

PROJECTIONS OF THE NEEDS OF THE PLATTE COUNTY "SERVICES FOR SENIOR CITIZENS" FOR THE PERIOD 1975-1985

	1975	1976	1977	1978	1979
Population age 60 or over					
Without MBPP	1,254	1,266	1,279	1,292	1,305
Due to MBPP	0	25	39	94	131
Total with MBPP	1,254	1,291	1,318	1,386	1,426
Without MBPP					
Number using SSC	650	696	742	788[2]	835
Meals-on-wheels	2,050	2,499	2,983	3,507	4,075
Congregate dining	7,371	8,108	8,838	9,545	10,213
Health services	220	247	275	305	336
Home visits	264	304	346	391	439
Staff	10	10	12	14½	14½
One-time expenditures	$ 0	0	0	119,101	0
Operating budget	72,270	84,374	97,217	118,302	126,828
Total costs without MBPP	72,270	84,374	97,217	237,403	126,828
With MBPP					
Number using SSC	650	710	791[3]	901	950
Meals-on-wheels	2,050	3,057	4,316	5,953	6,267
Congregate dining	7,371	8,429	9,812	11,655	12,289
Health services	220	263	324	400	428
Home visits	264	352	462	600	633
Staff	10	11	13	17	17
One-time expenditures	$ 0	0	114,360	0	0
Operating budget	72,270	87,961	107,586	135,699	144,947
Total costs with MBPP	72,270	87,961	221,946	135,699	144,947
Cost Difference with MBPP	$ 0	3,587	124,729	-101,704	18,119

Table 65

NUMBER OF NEW PERMANENT CLASSROOMS AND NEW TEACHERS NEEDED FOR THE PERIOD FY 1977 TO FY 1986 FOR SCHOOL DISTRICT NO. 1

Grade	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Grades Kindergarten - 6[1]										
No. of permanent classrooms	NA	35	--	--	--	--	--	--	--	--
No. of new teachers	12	30	39	48	42	36	37	36	30	30
Grades 7 - 9[2]										
No. of permanent classrooms	0	3	--	--	--	--	--	--	--	--
No. of new teachers	0	3	7	10	7	1	2	1	3	3
Grades 10 - 12										
No. of permanent classrooms	0	3	--	--	--	0	0	0	0	0
No. of new teachers	0	4	5	6	6	5	5	5	5	5

[1] *Classrooms and teachers for elementary schools were calculated using a ratio of 1:20 as recommended by Platte County school administrators.*

[2] *Classrooms and teachers for Grades 7 - 9 and Grades 10 - 12 were calculated using a ratio of 1:25 as recommended by Platte County school administrators.*

to this effort, MBPP officials have agreed to guarantee the costs associated with architectural design and land acquisition for the additional facilities. The letter of agreement between the school district and Missouri Basin Power Project is attached in the Appendix.

By immediately starting design work and land acquisition, valuable time can be saved in meeting the construction schedule for the additional facilities. Both the design and study of financing alternatives can go on at the same time.

IV.B.15. Proposals to Alleviate Impact on Municipal Utility Facilities - Area of Site Influence - Guernsey:

Guernsey is expected to be impacted as projected in the socio-economic report. Project officials have conducted several meetings and discussed potential impact with Guernsey officials.

To handle the additional housing units that Guernsey could accommodate the water distribution system and sewage collection and treatment facilities will need upgrading. These systems are being studied to assess the amount of financing necessary to assure adequate upgrading. In anticipation of Guernsey's needs for financing, the town has joined with the Wheatland-Guernsey Impact Joint Powers Board to secure a loan and, hopefully, a grant from the State Farm Loan Board.

The timetable for implementation of improvements in Guernsey is for late 1976 and early 1977. It is expected that impact will lag behind Wheatland to some degree.

V. STUDIES:

A. Acceptable Environmental Impact of the Proposed Facility and Predictable Adverse Effects:

DIVISION V:
Section A:

V. STUDIES:

V.A. Acceptable Environmental Impacts on the Proposed Facility and the Predictable Adverse Effects:

This division itemizes and references the voluminous and exhaustive studies previously conducted. The studies determined this proposed facility's actual impacts in the areas of site influence covered by the Wyoming Industrial Siting Council's regulations. In addition, the proposed preliminary impact alleviation plans as presented in Division IV, show how the adverse impacts presented in these studies can be mitigated.

As an aid to reviewers of this application, this section lists the support documents and those topics and headings of greatest interest and concern and where each is discussed in the studies.

V.A.1. The Normal Environment:

V.A.1.a. Land:

Applicable Industrial Development and Siting Regulations: Sections 8a, 8d.

Siting Application: Sections III.A.; III.B.1; III.C.; III.D.3.; III.H.; III.J.; III.K.2.; III.K.3.; III.K.6.; III.K.8.; III.K.9.; III.K.11.; III.K.12.; III.K.13.; III.K.14.

Additional Information:

1. Environmental Analysis for the Laramie River Station, Burns & McDonnell, 1975.
2. Environmental Analysis for the Electric Transmission Facilities - Burns & McDonnell, 1975.
3. Environmental Reconnaissance Study - Burns & McDonnell, 1973.
4. Environmental Report on Proposed Transmission Line - Dr. M. May and Dr. R. Lavigne, 1974.
5. Socioeconomic Impact of the Laramie River Station - Division of Business and Economic Research (DOBER) University of Wyoming, 1975.
6. A Social Impact Assessment of the Proposed Laramie River Station - Department of Sociology, University of Wyoming - 1975.

V.A.1.b. Air:

Applicable Industrial Development and Siting Regulations: Sections 8a, 8b.

Siting Application: Sections III.C.3.; III.D.2.; III.D.4.; III.K.14.

Additional Information:

1. Feasibility Study for the Laramie River Station - Burns & McDonnell, 1975.
2. Environmental Analysis for the Laramie River Station - Burns & McDonnell, 1975.
3. Environmental Reconnaissance Study - Burns & McDonnell, 1973.
4. Ambient Air Test Volumes I-IV - Burns & McDonnell, Vol.I, 1973; Vol. II, 1974; Vol. III, 1974; Vol. IV, 1975.

V.A.1.c. Water:

Applicable Industrial Development and Siting Regulations: Sections 8a, 8b.

Siting Application: Sections III.B.1.; III.C.3.; III.D.1.; III.D.3.; III.D.4.; III.K.5.; III.K.6.; III.K.18.

Additional Information:

1. Feasibility Study for the Laramie River Station - Burns & McDonnell, 1975.
2. Environmental Analysis for the Laramie River Station - Burns & McDonnell, 1975.
3. Environmental Analysis for the Electric Transmission Facilities - Burns & McDonnell, 1975.
4. Environmental Reconnaissance Study - Burns & McDonnell, 1973.
5. Feasibility Report on the Proposed Grayrocks Dam and Reservoir - J. T. Banner & Associates, Inc., 1973 - printed 1975.
6. Ecological Report Volumes 1 and 2 - Ecology Consultants, Inc. (ECI), 1975.
7. Environmental Report on the Proposed Transmission Line - Dr. Morton May and Dr. Robert Lavigne, 1974.
8. Socioeconomic Impact of the Laramie River Station - Division of Business & Economic Research (DOBER) University of Wyoming, 1975.

DIVISION V:
Section A: (continued)

9. Regional Siting Study Volumes 1 and 2 - Burns & McDonnell, 1975.
10. Preliminary Investigation of the Availability of Groundwater, Johnson Ranch - J. T. Banner & Associates, Inc., 1974.

V.A.1.d. Minerals:

Applicable Industrial Development and Siting Regulations: Section 8a.

Siting Application: Sections III.K.11.; III.K.12.

Additional Information: Environment Reconnaissance Study - Burns & McDonnell, 1973.

V.A.1.e. Flora:

Applicable Industrial Development and Siting Regulations: Section 8a.

Siting Application: Sections III.K.13.; III.L.3.

Additional Information:

1. Environmental Analysis for Laramie River Station - Burns & McDonnell, 1975.
2. Environmental Analysis for the Electric Transmission Facilities - Burns & McDonnell, 1975.
3. Environmental Reconnaissance Study - Burns & McDonnell, 1973.
4. Ecological Report Volumes 1 and 2 - Ecology Consultants, Inc. (ECI), 1975.
5. Environmental Report on the Proposed Transmission Line - Dr. Morton May and Dr. Robert Lavigne, 1974.

V.A.1.f. Fauna:

Applicable Industrial Development and Siting Regulations: Section: 8a.

Siting Application: Sections II.K.16.; III.L.3.

Additional Information:

1. Environmental Analysis for the Laramie River Station - Burns & McDonnell, 1975.
2. Environmental Analysis for the Electric Transmission Facilities - Burns & McDonnell, 1975.

3. Environmental Reconnaissance Study - Burns & McDonnell, 1973.
4. Ecological Report Volumes 1 and 2 - Ecology Consultants, Inc. (ECI), 1975.
5. Environmental Report on the Proposed Transmission Line - Dr. Morton May and Dr. Robert Lavigne, 1974.

V.A.1.g. Noise:

Applicable Industrial Development and Siting Regulations: Section 8a.

Siting Application: Sections III.K.15.; III.L.3.

Additional Information:

1. Feasibility Study for the Laramie River Station - Burns & McDonnell, 1975.
2. Environmental Analysis for the Laramie River Station - Burns & McDonnell, 1975.
3. Environmental Analysis for the Electric Transmission Facilities - Burns & McDonnell, 1975.
4. Environmental Report on the Proposed Transmission Line - Dr. Morton May and Dr. Robert Lavigne, 1974.
5. Ambient Noise Measurement Report of the Laramie River Station Site - Burns & McDonnell, 1975.

V.A.1.h. Historic Areas:

Applicable Industrial Development and Siting Regulations: Sections 8a, 8b.

Siting Application: Section III.K.3.; III.L.3.

Additional Information:

1. Environmental Analysis for the Laramie River Station - Burns & McDonnell, 1975.
2. Environmental Analysis for the Electric Transmission Facilities - Burns & McDonnell, 1975.
3. Environmental Reconnaissance Study - Burns & McDonnell, 1973.
4. Environmental Report on the Proposed Transmission Line - Dr. Morton May and Dr. Robert Lavigne, 1974.

Applicable Industrial Development and Siting Regulations: Section 8a.

Siting application: Sections III.K.2.; III.K.6.; III.L.3.

Additional Information:

1. Environmental Analysis for the Laramie River Station - Burns & McDonnell, 1975.
2. Environmental Analysis for the Electric Transmission Facilities - Burns & McDonnell, 1975.
3. Ecological Report Volumes 1 and 2 - Ecology Consultants, inc., (ECI), 1975.
4. Environmental Report on the Proposed Transmission Line - Dr. Morton May and Dr. Robert Lavigne, 1974.

V.A.1.k. Recreational Areas:

Applicable Industrial Development and Siting Regulations: Section 8a.

Siting Application: Sections III.K.6.; III.L.3.

Additional Information:

1. Environmental Analysis for the Laramie River Station - Burns & McDonnell, 1975.
2. Environmental Analysis for the Electric Transmission Facilities - Burns & McDonnell, 1975.
3. Environmental Report on the Proposed Transmission Line - Dr. Morton May and Dr. Robert Lavigne, 1974.
4. Feasibility Report on the Proposed Grayrocks Dam and Reservoir - J. T. Banner & Associates, Inc., 1975.
5. Regional Siting Study Volumes 1 and 2 - Burns & McDonnell, 1973, printed 1975.

V.A.1.l. Public Health, Safety and Welfare:

Applicable Industrial Development and Siting Regulations: Sections 8a, 8c.

Siting Application: Sections III.A.2.; III.D.2.; III.D.4.; III.F.2.; III.F.3.; III.K.4.; III.K.5.; III.K.7.; III.K.9.; III.K.10.; III.K.17.; III.L.2.; III.L.3.

Additional Information:

1. Socioeconomic Impact of the Laramie River Station - Division of Business & Economic Research (DOBER), University of Wyoming, 1975.
2. Environmental Analysis for the Laramie River Station - Burns & McDonnell, 1975.
3. Ecological Report Volumes 1 and 2 - Ecology Consultants, Inc., (ECI), 1975.
4. A Social Impact Assessment of the Proposed Laramie River Station - Department of Sociology, University of Wyoming, 1975.
5. Environmental Analysis for the Electric Transmission Facilities - Burns & McDonnell, 1975.

V.A.1.m. Agriculture:

Applicable Industrial Development and Siting Regulations: Sections 8a, 8b.

Siting Applications: Sections III.K.9.; III.K.18.; III.L.3.

Additional Information:

1. Environmental Analysis for the Laramie River Station - Burns & McDonnell, 1975.
2. Environmental Analysis for the Electric Transmission Facilities - Burns & McDonnell, 1975.
3. Environmental Reconnaissance Study - Burns & McDonnell, 1973.
4. Environmental Report on the Proposed Transmission Line - Dr. Morton May and Dr. Robert Lavigne, 1974.
5. Socioeconomic Impact of the Laramie River Station - Division of Business & Economic Research (DOBER), University of Wyoming, 1975.

V. STUDIES:

B. Impact Alleviation by Design and Location:

DIVISION V:
Section B: (continued)

V.B. Facility Design Compliance with State and Local Laws and Regulations

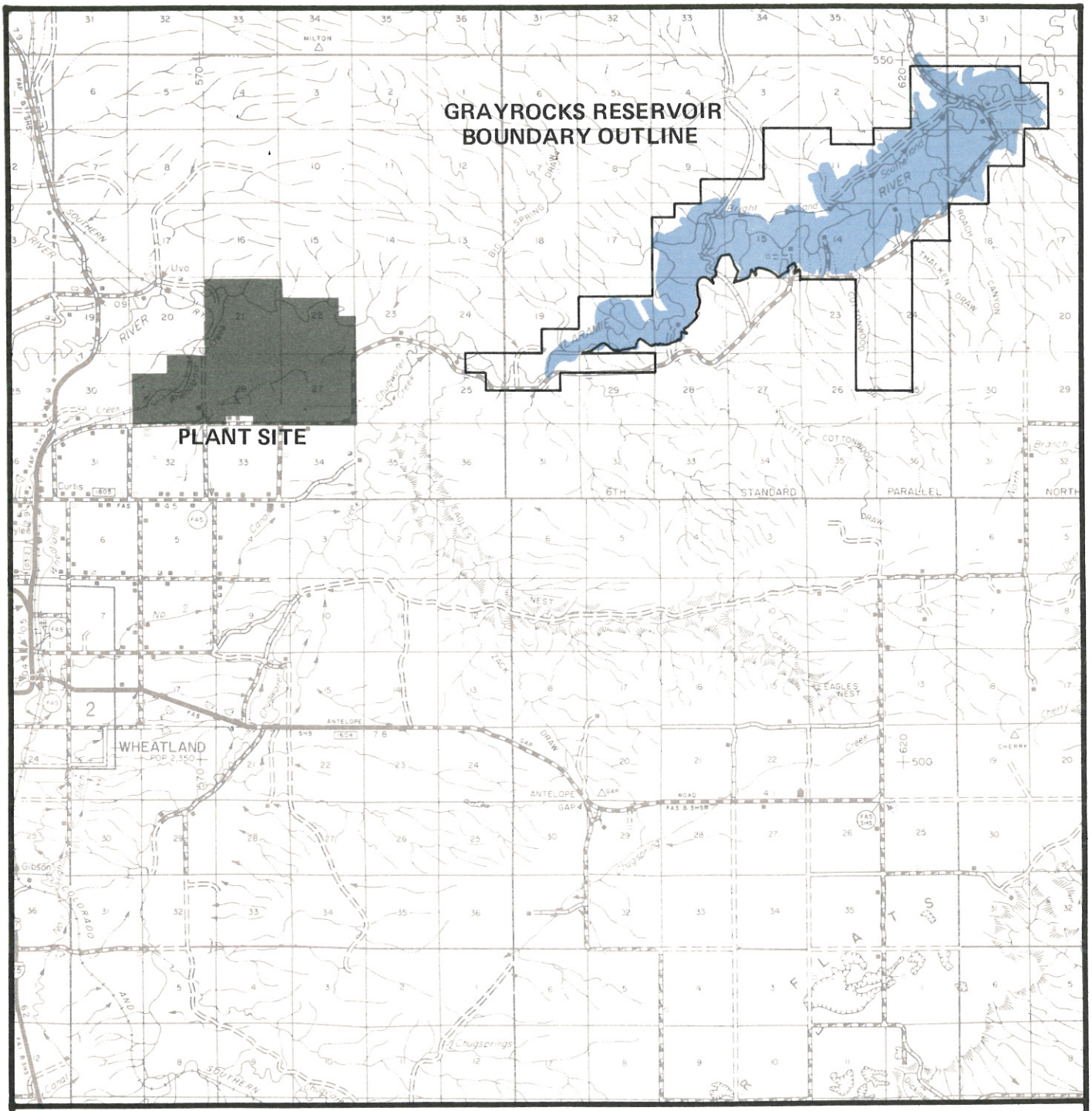
Applicable Industrial Development and Siting Regulations: Section 8a.

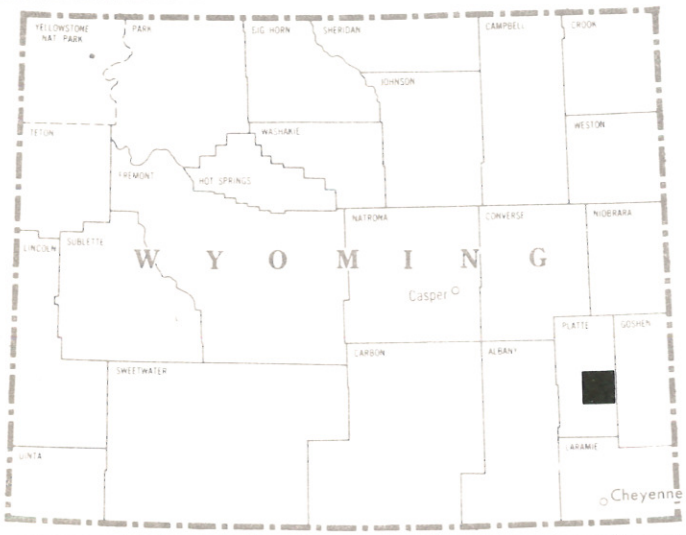
Siting Application: Sections II.A.; III.G.

Additional Information:

1. Feasibility Study for the Laramie River Station - Burns & McDonnell, 1975.
2. Environmental Analysis for the Laramie River Station - Burns & McDonnell, 1975.
3. Environmental Analysis for the Electric Transmission Facilities - Burns & McDonnell, 1975.

EXHIBITS





N

Scale; ½" = 1 mile

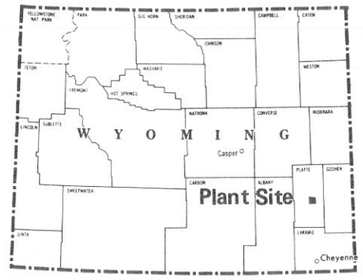
Environmental Analysis
For The
Laramie River Station
MISSOURI BASIN POWER PROJECT

ORIENTATION OF PLANT SITE

Exhibit 1

Burns & McDonnell
Engineers – Architects – Consultants
KANSAS CITY, MISSOURI
74-012-4-001

N

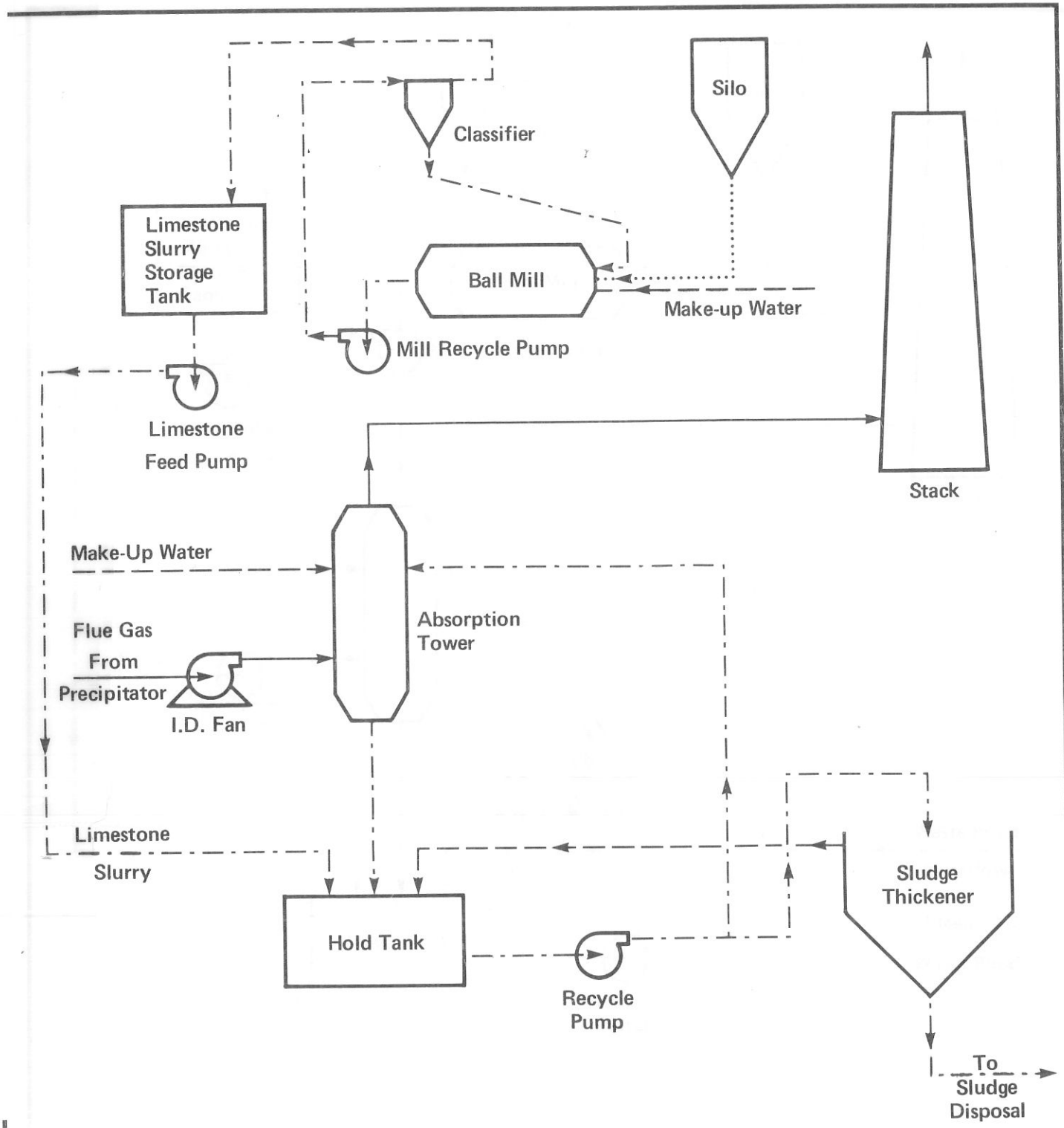


Plant Site

Burns & McDonnell
Engineers-Architects-Consultants

Exhibit 2
AERIAL PHOTOGRAPH
OF
PLANT SITE TOPOGRAPHY

BASMBPP SITING APP. 74-012-1



LEGEND

- Flue Gas
- Water
- Slurry
- Limestone

Burns & McDonnell
Engineers-Architects-Consultants

Exhibit 3

SIMPLIFIED
PROCESS FLOW DIAGRAM
LIMESTONE SCRUBBER

BASMBPP SITING APP. 74-012-1 REVISED 2/2/76

E 569000 E 570000 E 571000 E 572000 E 573000 E 574000 E 575000 E 576000 E 577000 E 578000 E 579000 E 580000 E 581000 E 582000

N 533000 N 532000 N 531000 N 530000 N 529000 N 528000 N 527000 N 526000 N 525000

To Wendover

BRIDGE 1

BRIDGE 2

SCALE IN FEET 400 0 400 800

LAND LEASED FROM OTHERS

UTILITY CORRIDOR

ACCESS SPUR

EMERGENCY HOLDING POND

STORM WATER RUNOFF RETENTION POND

GAS CLEANING WASTE DISPOSAL AREA
FLYASH & SO_2 SCRUBBER WASTE SLUDGE

EXISTING R/W FENCES

COLORADO AND SOUTHERN RAILWAY COMPANY MAINLINE

LEGEND
- 500 KVA POWER CENTERS
- 225 KVA POWER CENTERS

To Denver

CONSTRUCTION WATER SUPPLY

BRIDGE 3

COOLING TOWERS UNIT NO. 3

WATER PLANT

RAW WATER STORAGE

CONSTRUCTION PARKING

WEST 230-KV SUB-STATION

COAL PILE RUNOFF RETENTION POND

BRIDGE 4A

BRIDGE 4B

BRIDGE 5

UNIT NO. 3

UNIT NO. 2

UNIT NO. 1

COAL STORAGE

CONVEYOR

CAR POSITIONER

ROTARY DUMPER

ASH POND

WEST 345-KV SUB-STATION

EAST 345-KV SUB-STATION

COOLING TOWERS UNIT NO. 1

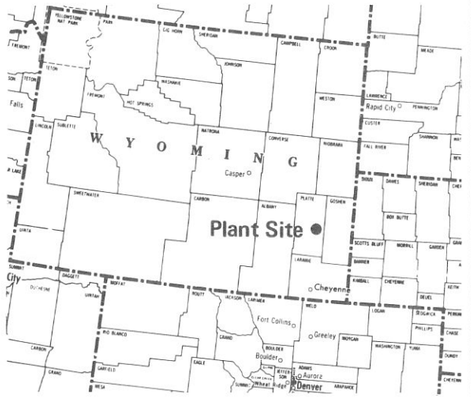
COAL STORAGE SILOS

CONSTRUCTION ACCESS ROAD

COOLING TOWERS UNIT NO. 2

COAL LOOP

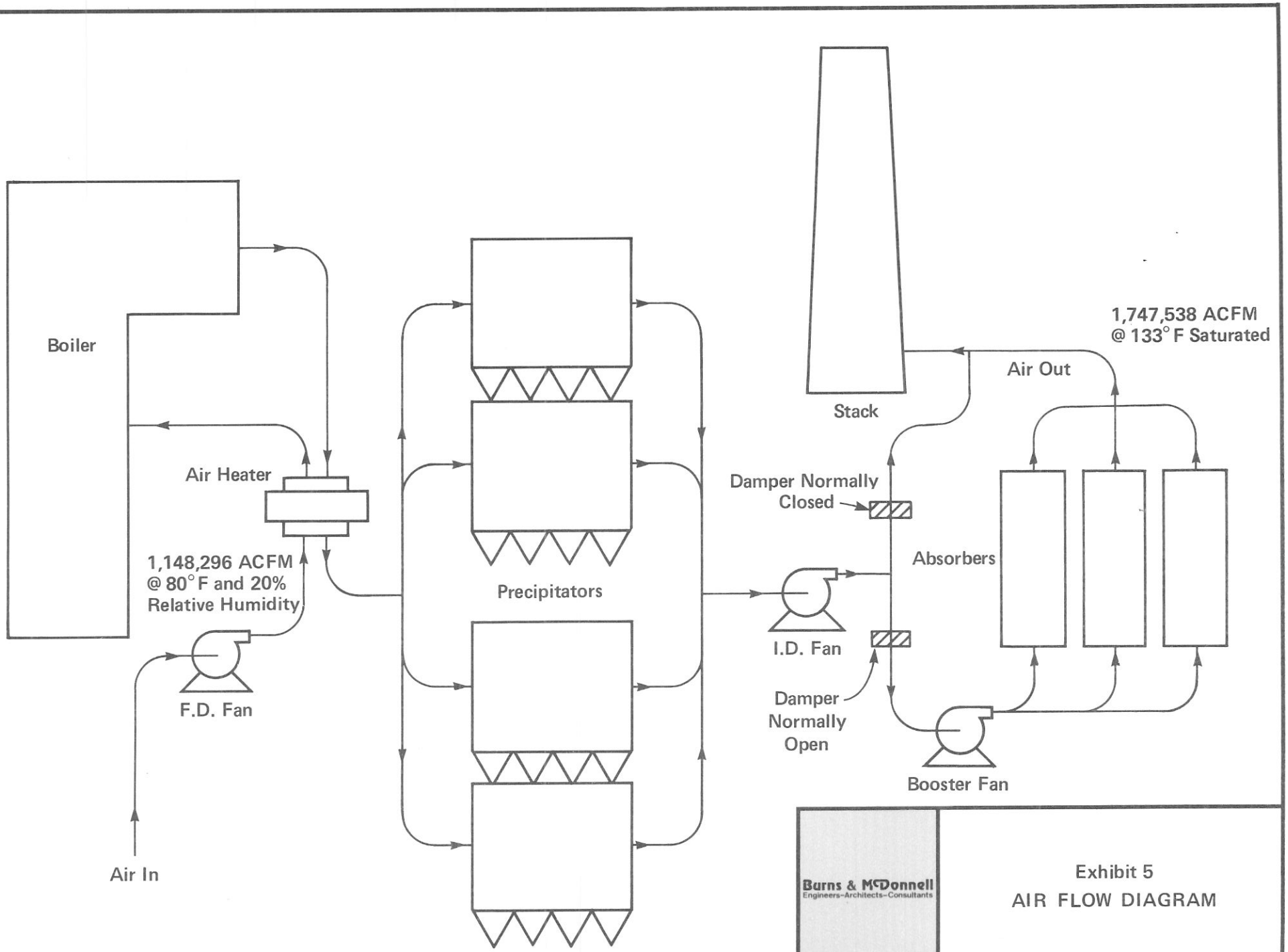
PROPERTY OWNED BY OTHERS

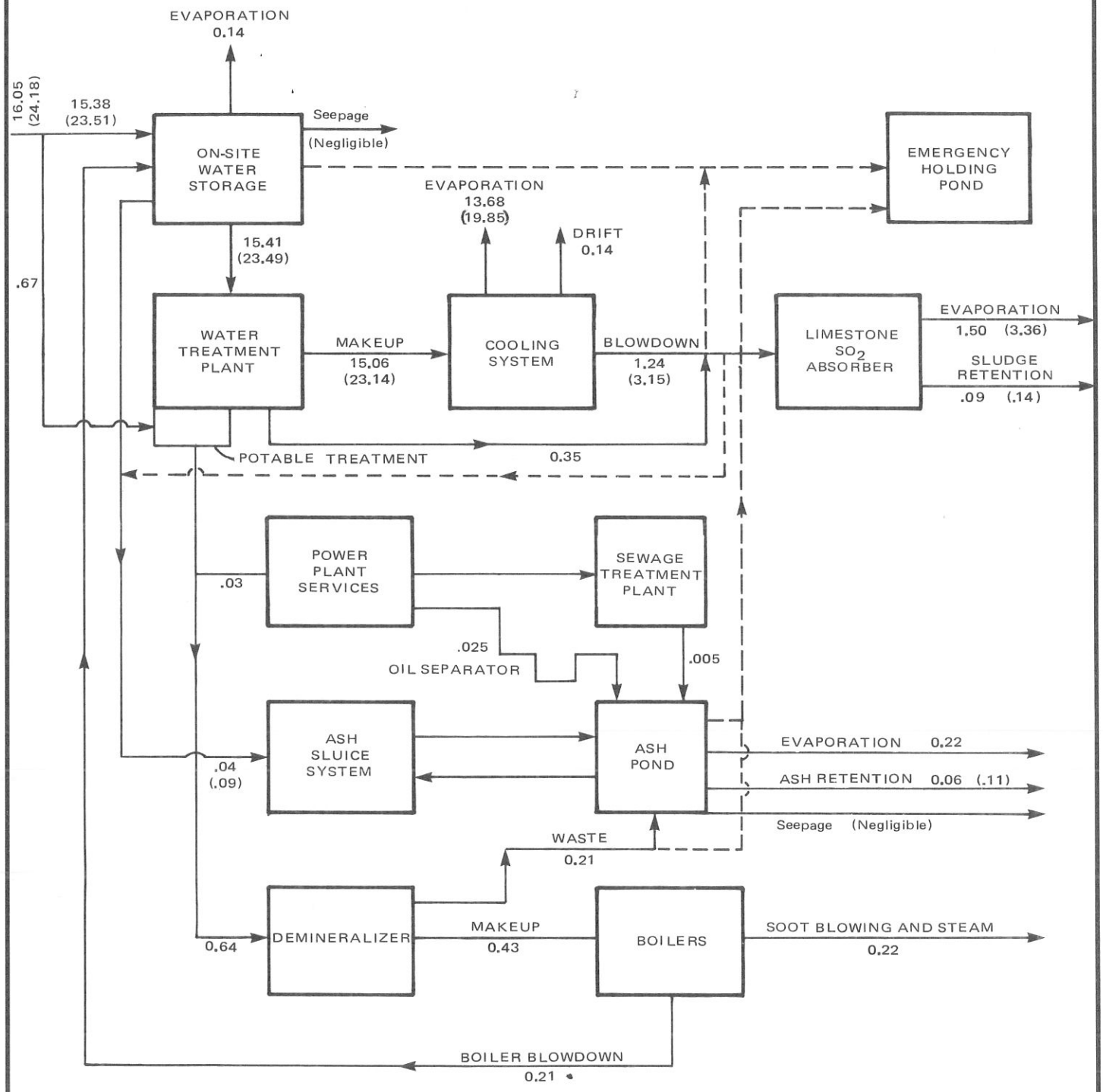


BASMBPP SITING APP. 74-012-1 REVISED 2/2/76

Burns & McDonnell
Engineers-Architects-Consultants

Exhibit 4
SITE PLAN


Boiler
Air Heater
1,148,296 ACFM
@ 80° F and 20%
Relative Humidity
F.D. Fan
Air In
Precipitators
Stack
1,747,538 ACFM
@ 133° F Saturated
Air Out
Damper Normally
Closed
Absorbers
I.D. Fan
Damper
Normally
Open
Booster Fan
Burns & McDonnell
Engineers-Architects-Consultants
Exhibit 5
AIR FLOW DIAGRAM



NOTES:

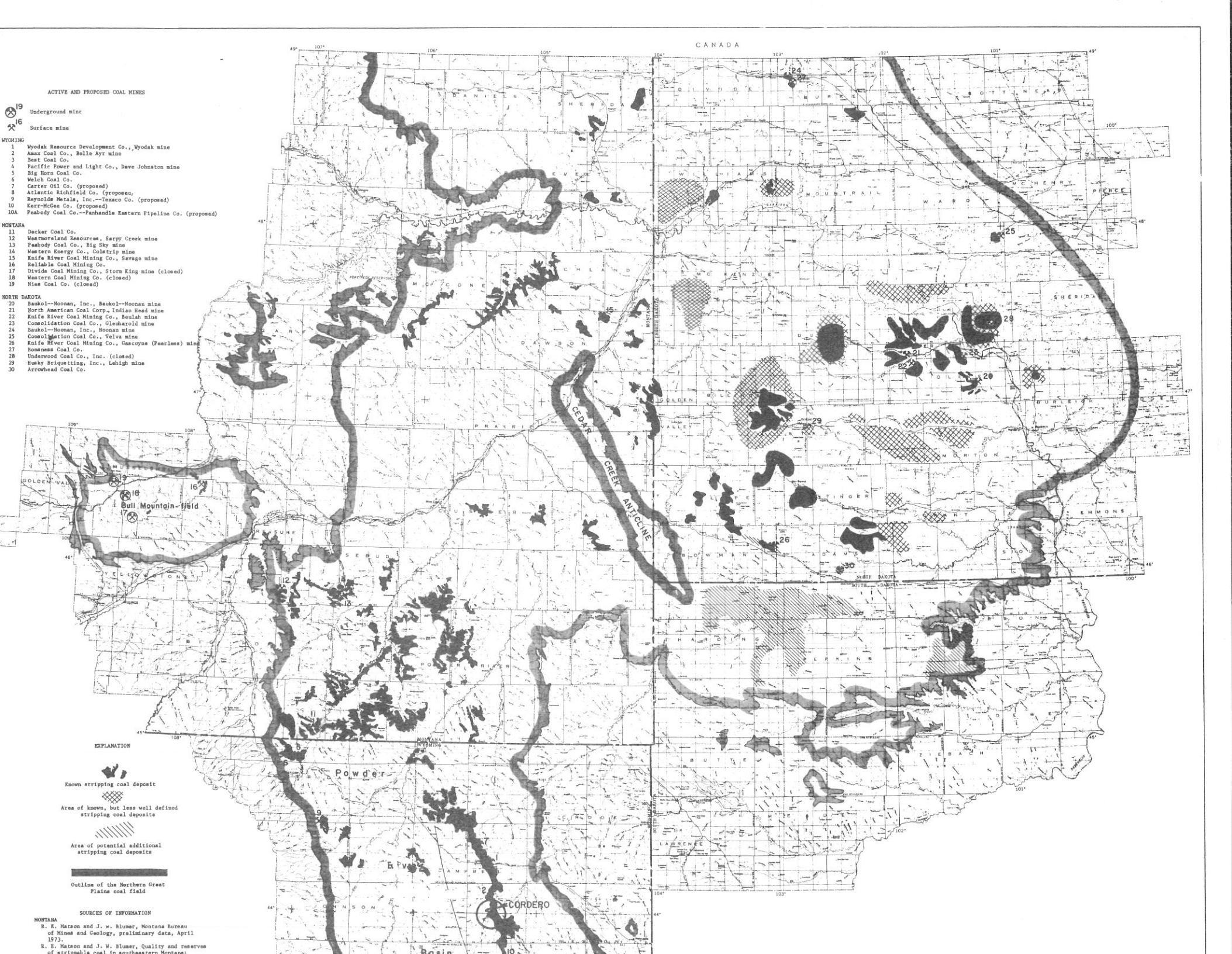
1. All flows in Millions of Gallons/Day
2. Average flows based on 85% load factor.
3. Maximum flows in parentheses

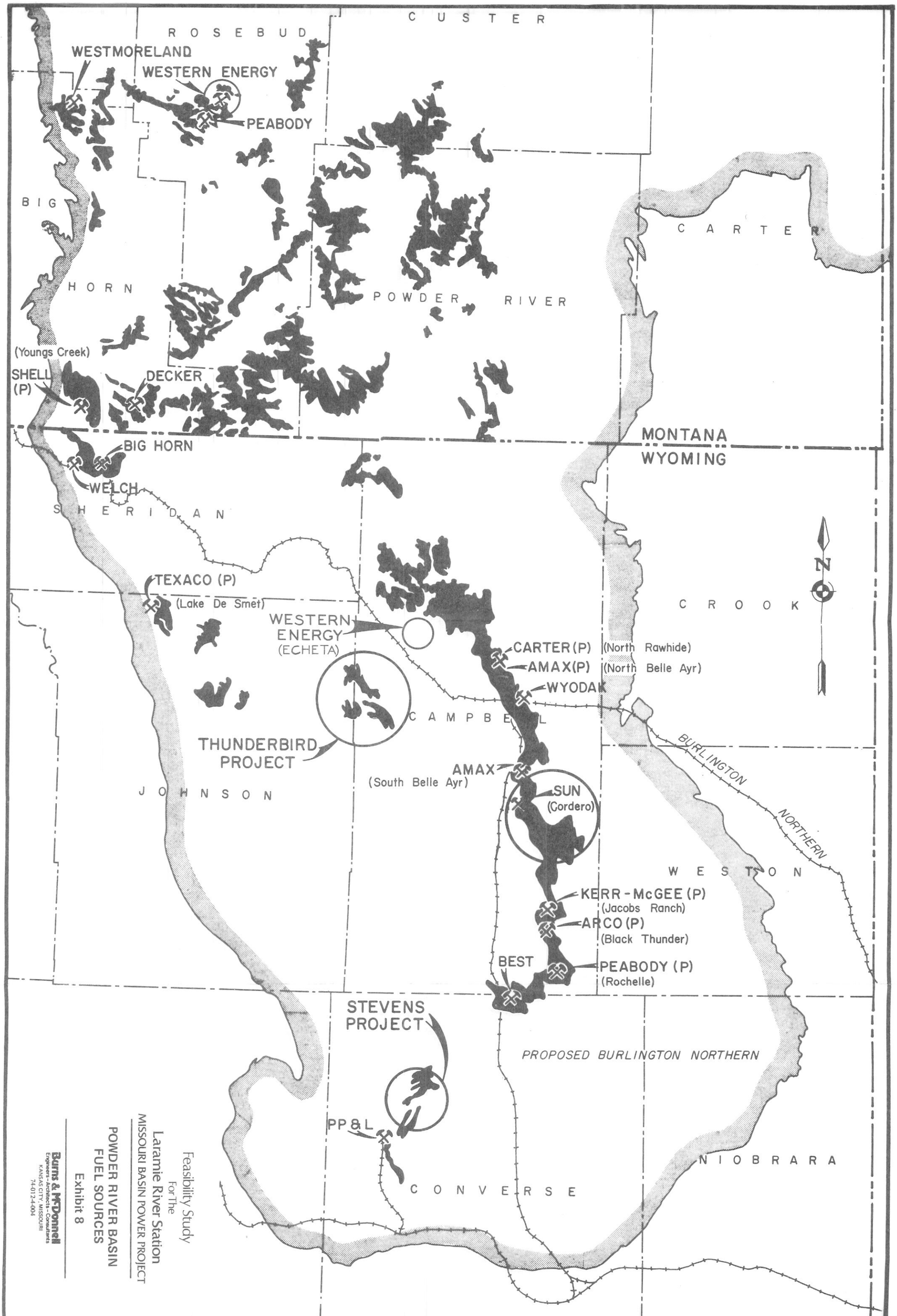
Burns & McDonnell
Engineers–Architects–Consultants

Exhibit 6

WATER FLOW SCHEMATIC
LIMESTONE SO_2 ABSORBER

BASMBPP SITING APP. 74-012-1


ACTIVE AND PROPOSED COAL MINES
Underground mine
Surface mine
WYOMING
1 Wyodak Resource Development Co., Wyodak mine
2 Amax Coal Co., Belle Ayr mine
3 Best Coal Co.
4 Pacific Power and Light Co., Dave Johnston mine
5 Big Horn Coal Co.
6 Welch Coal Co.
7 Carter Oil Co. (proposed)
8 Atlantic Richfield Co. (proposed)
9 Reynolds Metals, Inc.--Texaco Co. (proposed)
10 Kerr-McGee Co. (proposed)
10A Peabody Coal Co.--Panhandle Eastern Pipeline Co. (proposed)
MONTANA
11 Decker Coal Co.
12 Westmoreland Resources, Sarpy Creek mine
13 Peabody Coal Co., Big Sky mine
14 Western Energy Co., Colstrip mine
15 Knife River Coal Mining Co., Savage mine
16 Reliable Coal Mining Co.
17 Divide Coal Mining Co., Storm King mine (closed)
18 Western Coal Mining Co. (closed)
19 Nies Coal Co. (closed)
NORTH DAKOTA
20 Baukol--Noonan, Inc., Baukol--Noonan mine
21 North American Coal Corp., Indian Head mine
22 Knife River Coal Mining Co., Beulah mine
23 Consolidation Coal Co., Glenharold mine
24 Baukol--Noonan, Inc., Noonan mine
25 Consolidation Coal Co., Velva mine
26 Knife River Coal Mining Co., Gascoyne (Pearless) mine
27 Bonsness Coal Co.
28 Underwood Coal Co., Inc. (closed)
29 Husky Briquetting, Inc., Lehigh mine
30 Arrowhead Coal Co.
CANADA
Bull Mountain field
CORDERO
Powder River Basin
CEDAR CREEK ANTICLINE
MONTANA
WYOMING
NORTH DAKOTA
SOUTH DAKOTA
EXPLANATION
Known stripping coal deposit
Area of known, but less well defined stripping coal deposits
Area of potential additional stripping coal deposits
Outline of the Northern Great Plains coal field
SOURCES OF INFORMATION
MONTANA
R. E. Matson and J. W. Blumer, Montana Bureau of Mines and Geology, preliminary data, April 1973.
R. E. Matson and J. W. Blumer, Quality and reserves of strippable coal in southeastern Montana:

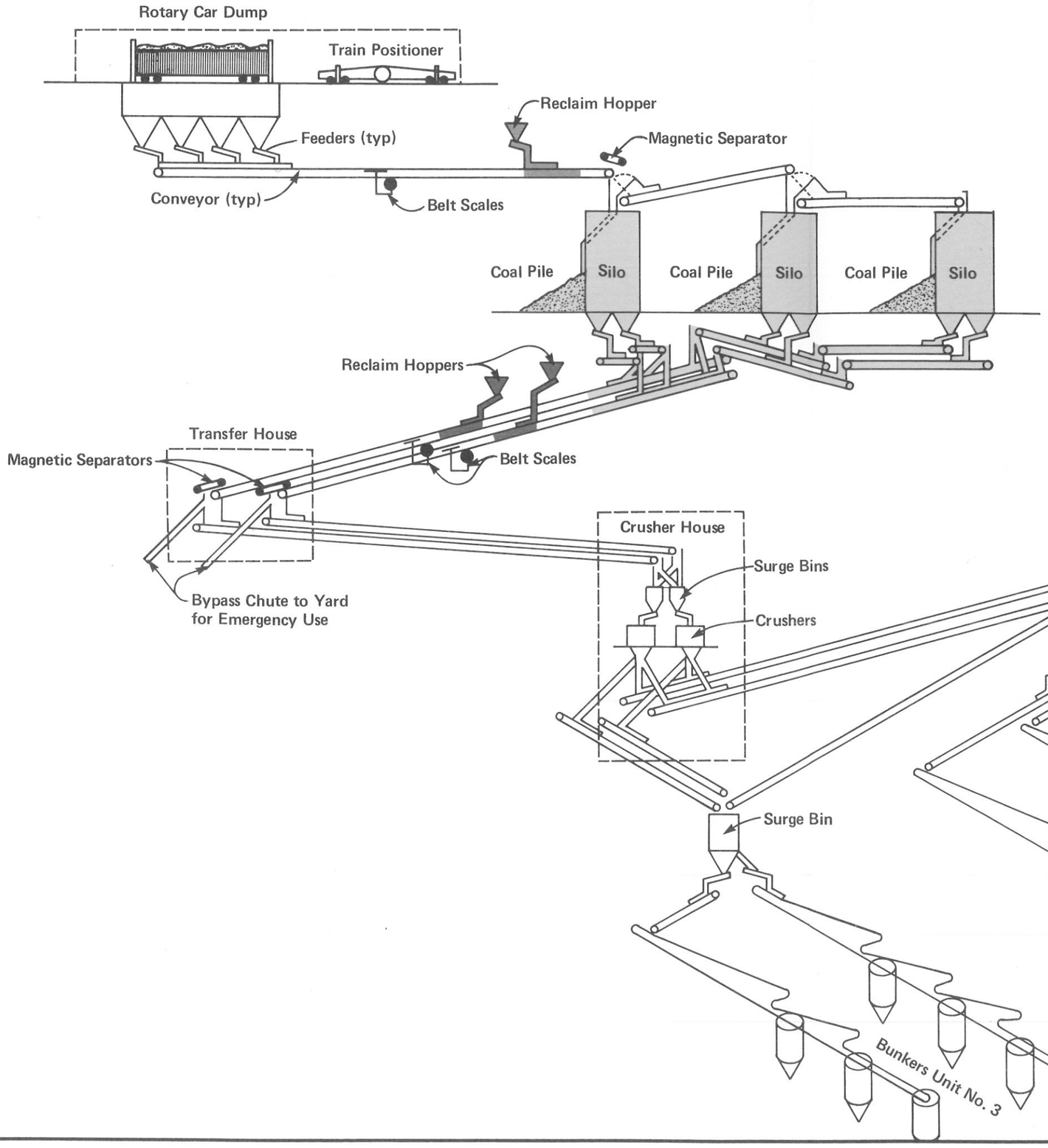


Feasibility Study
For The
Laramie River Station
MISSOURI BASIN POWER PROJECT

POWDER RIVER BASIN
FUEL SOURCES

Exhibit 8

Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI
74-012-4-004



ALTERNATE BLENDING POINTS

Reclaim Hopper and Conveyor to Storage Silo

Silo Discharges - Separately or Simultaneously

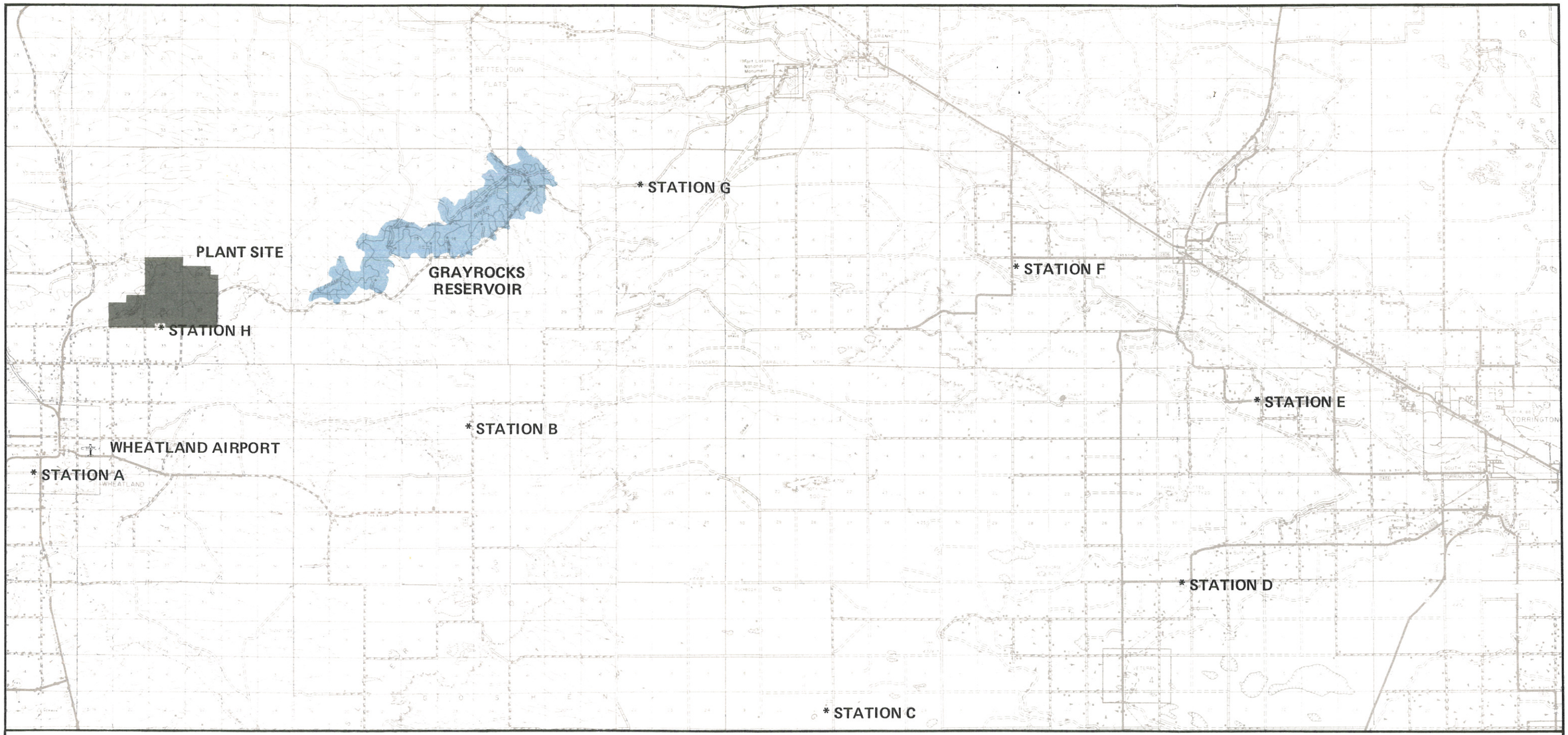
Reclaim Hopper and Conveyor Transfer House

BASMBPP SITING APP. 74-012-1

Burns & McDonnell
Engineers–Architects–Consultants

Exhibit 9

COAL HANDLING SYSTEM
SCHEMATIC
ALTERNATE BLENDING POINTS



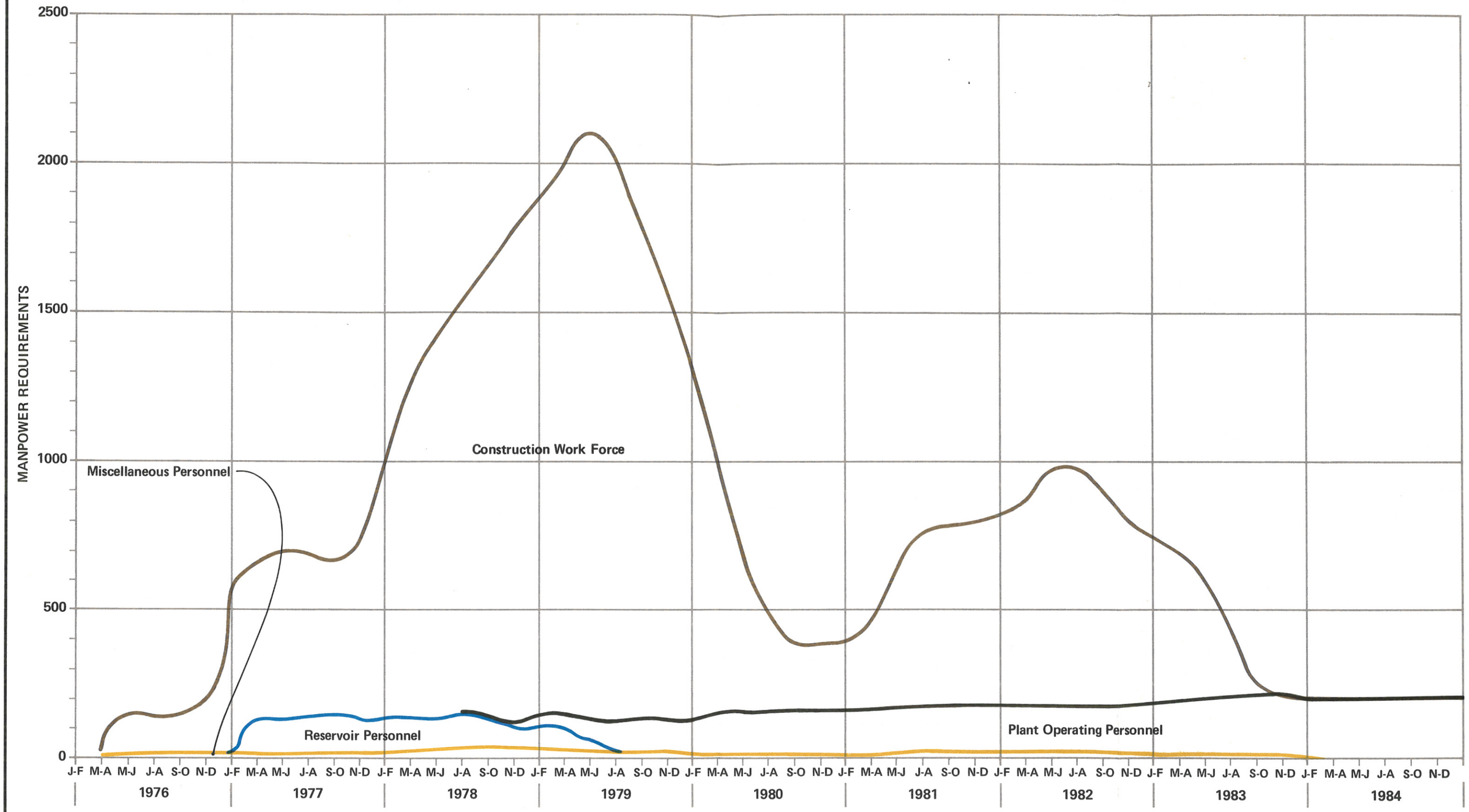
1. Beckman SO_2, NO_2 Analyzers, and Recorder Located at Station "A"
2. Temperature, Barometer and Humidity Recorder Located at Station "A"
3. Bendix Tape Sampler Located at Station "A"
4. Wind Speed and Direction Instrument with Recorder Located at Wheatland Airport
5. Theodolite Located at Wheatland Airport
6. SO_2 and NO_2 Gas Sampling Trains Located at Stations A, B, C, D, E, F, G, and H
7. Hi-Volume Samplers Located at Stations B, C, D, E, F, G, and H

Environmental Analysis
For The
Laramie River Station
MISSOURI BASIN POWER PROJECT

AMBIENT AIR
TEST SITES

Exhibit 10

Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI
74-012-4-001



Burns & McDonnell
Engineers–Architects–Consultants

Exhibit 11
TOTAL PLANT WORK FORCE

BASMBPP SITING APP. 74-012-1

R68W R67W R66W R65W R64W R63W R62W R61W

T26N

T25N

T24N

T23N

1 2 3 4 5 6 7 8 9 10 11 12 13

BETTELYOUN FLATS

WHEATLAND

TORRINGTON

N

Scale in Miles

1 0 1 2 3 4

Sites Selected By

Burns & McDonnell

Dr. Robert Lavigne
Dr. Morton May

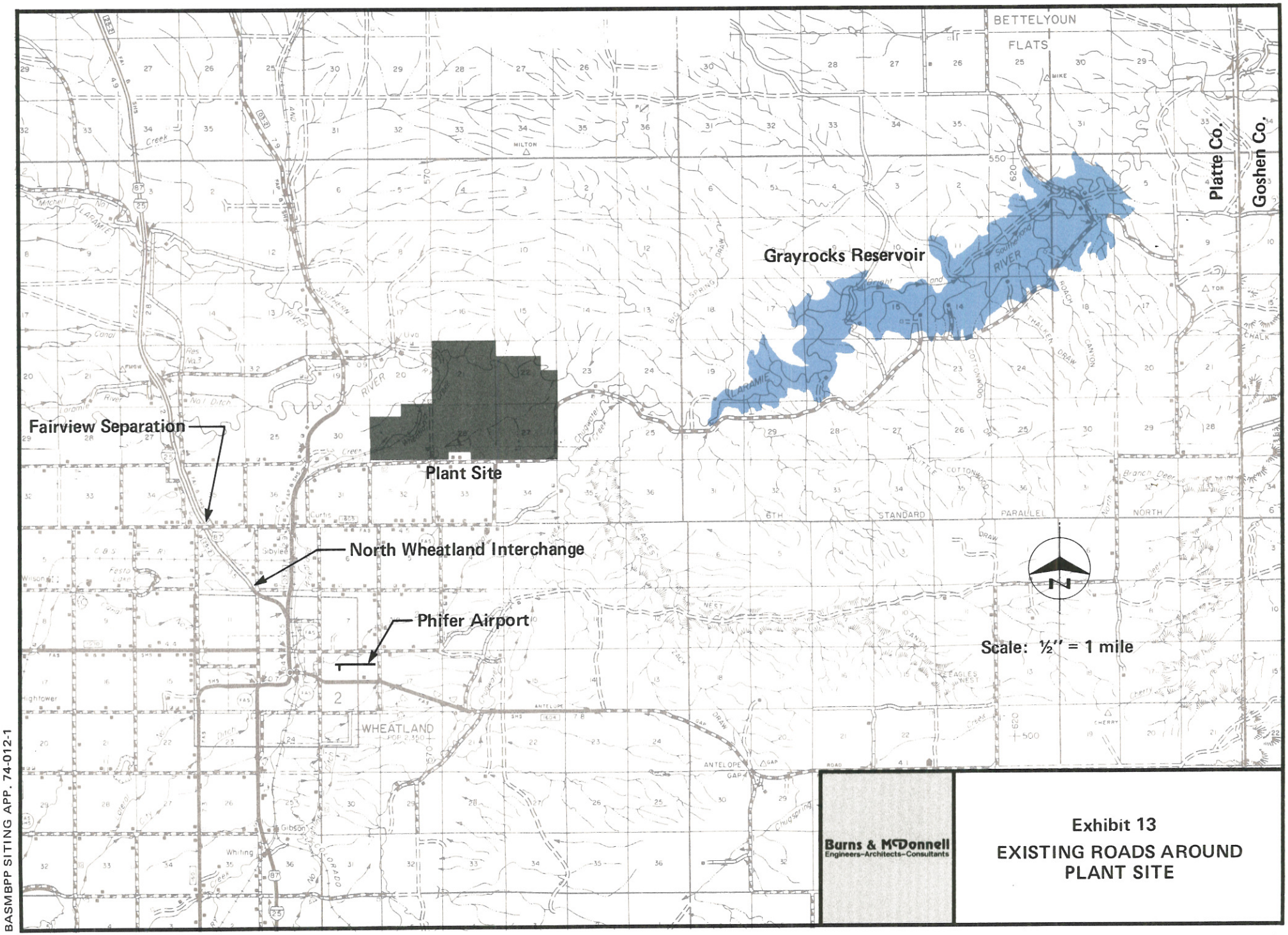
Preferred Sites

Other Sites

Environmental Analysis
For The
Laramie River Station
MISSOURI BASIN POWER PROJECT

PROPOSED PLANT SITES
Exhibit 12

Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI
74-012-4-001



BASMBPP SITING APP. 74-012-1

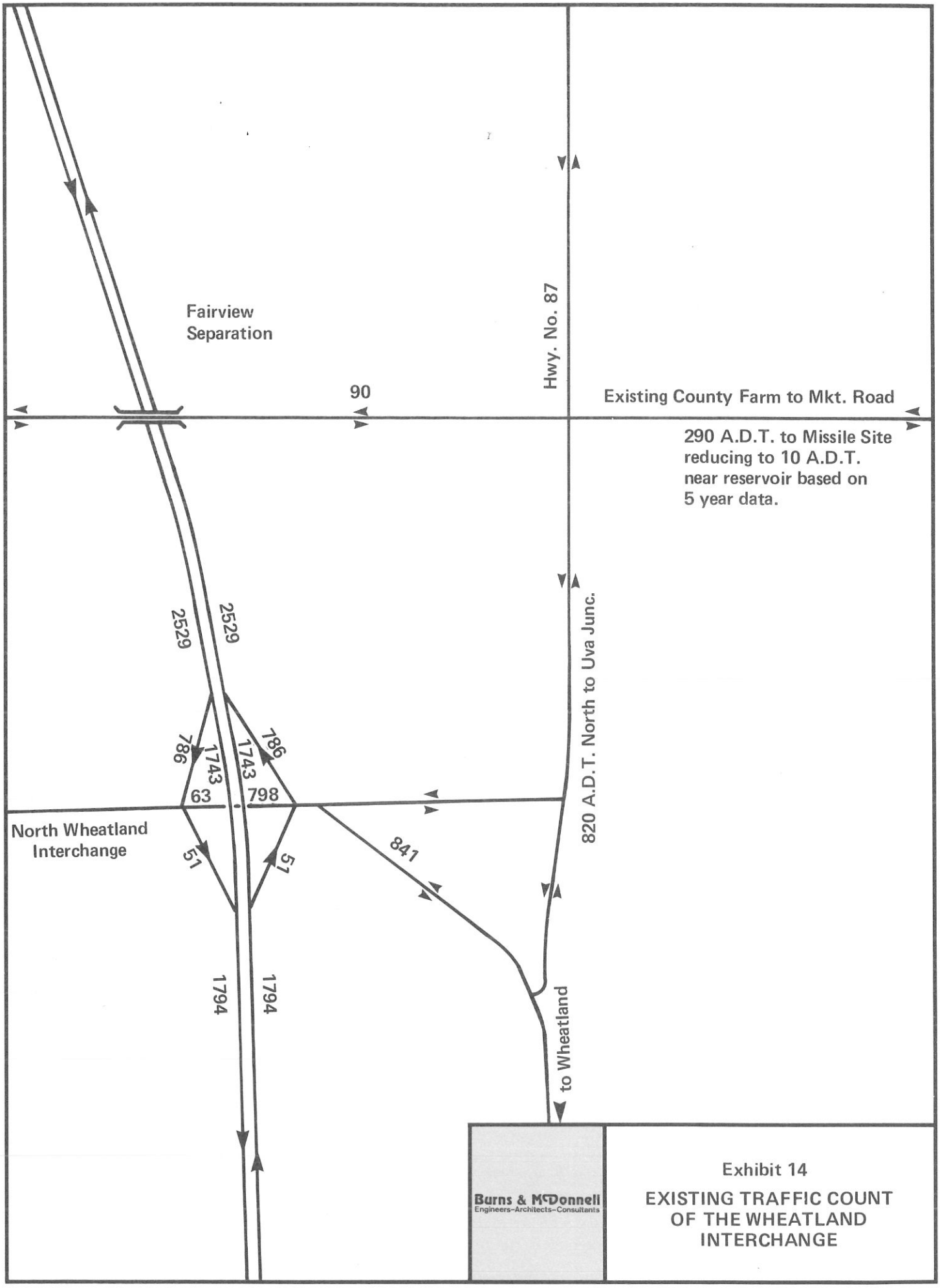
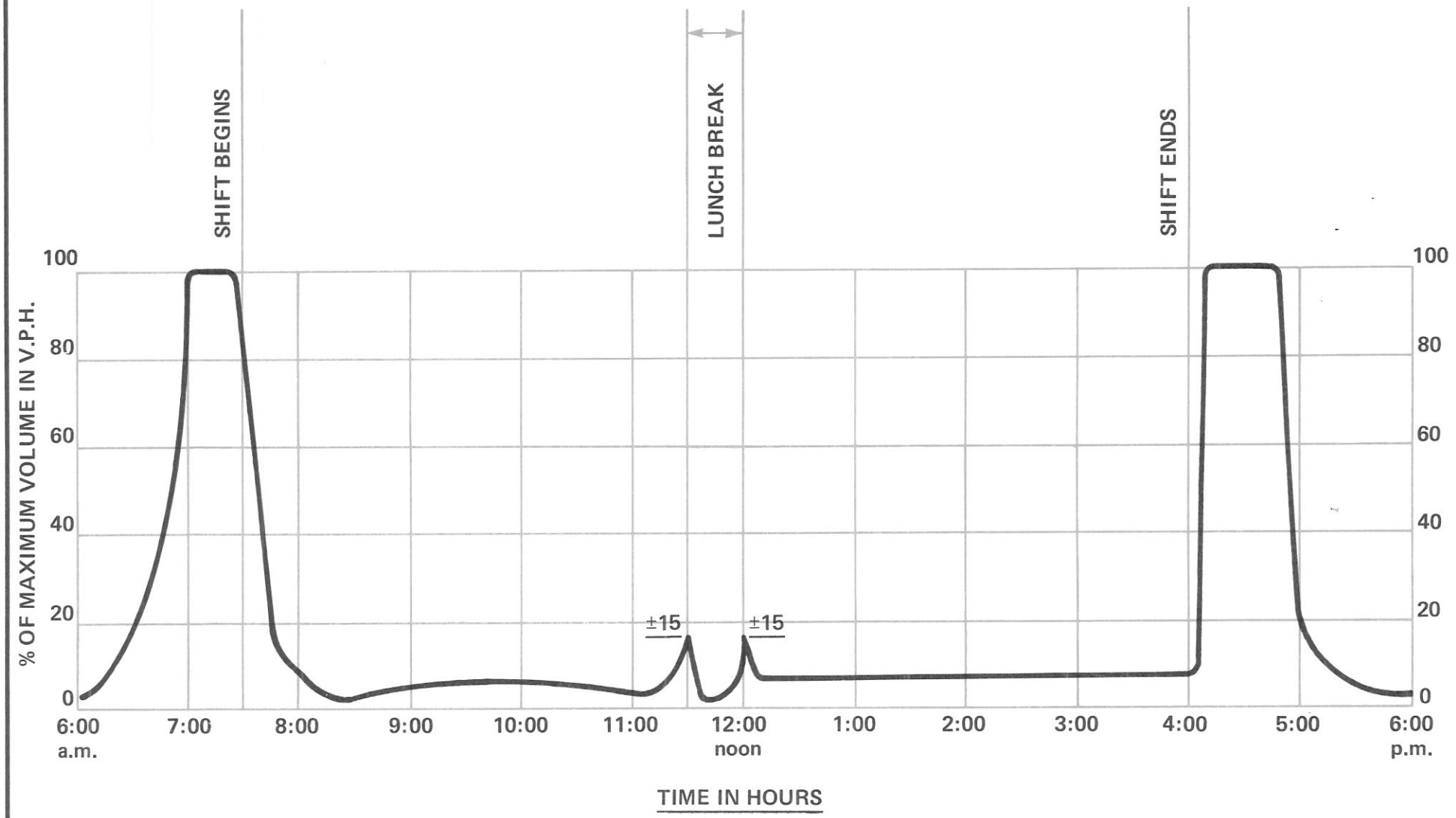


Exhibit 14

EXISTING TRAFFIC COUNT
OF THE WHEATLAND
INTERCHANGE

Burns & McDonnell
Engineers–Architects–Consultants

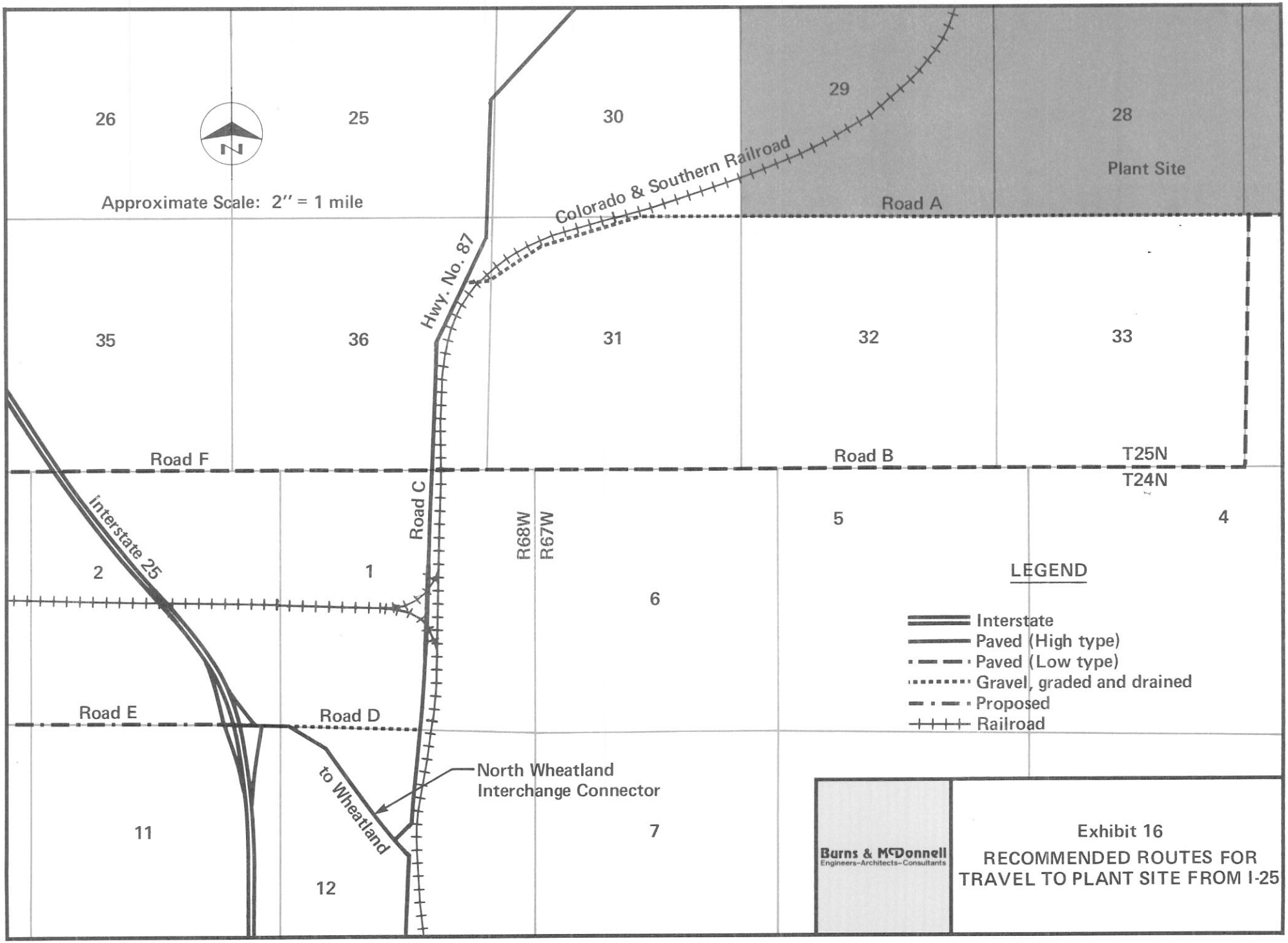
BASMBPP SITING APP. 74-012-1



Burns & McDonnell
Engineers–Architects–Consultants

Exhibit 15
PROJECTED DAILY TRAFFIC FLOW PATTERN

BASMBPP SITING APP. 74-012-1


26
25
30
29
28
Plant Site
N
Approximate Scale: 2" = 1 mile
Colorado & Southern Railroad
Road A
Hwy. No. 87
35
36
31
32
33
Road F
Road B
T25N
T24N
Road C
R68W
R67W
5
4
Interstate 25
2
1
6
LEGEND
Interstate
Paved (High type)
Paved (Low type)
Gravel, graded and drained
Proposed
Railroad
Road E
Road D
to Wheatland
North Wheatland
Interchange Connector
11
12
7
Burns & McDonnell
Engineers-Architects-Consultants
Exhibit 16
RECOMMENDED ROUTES FOR
TRAVEL TO PLANT SITE FROM I-25
BASMBPP SITING APP. 74-012-1

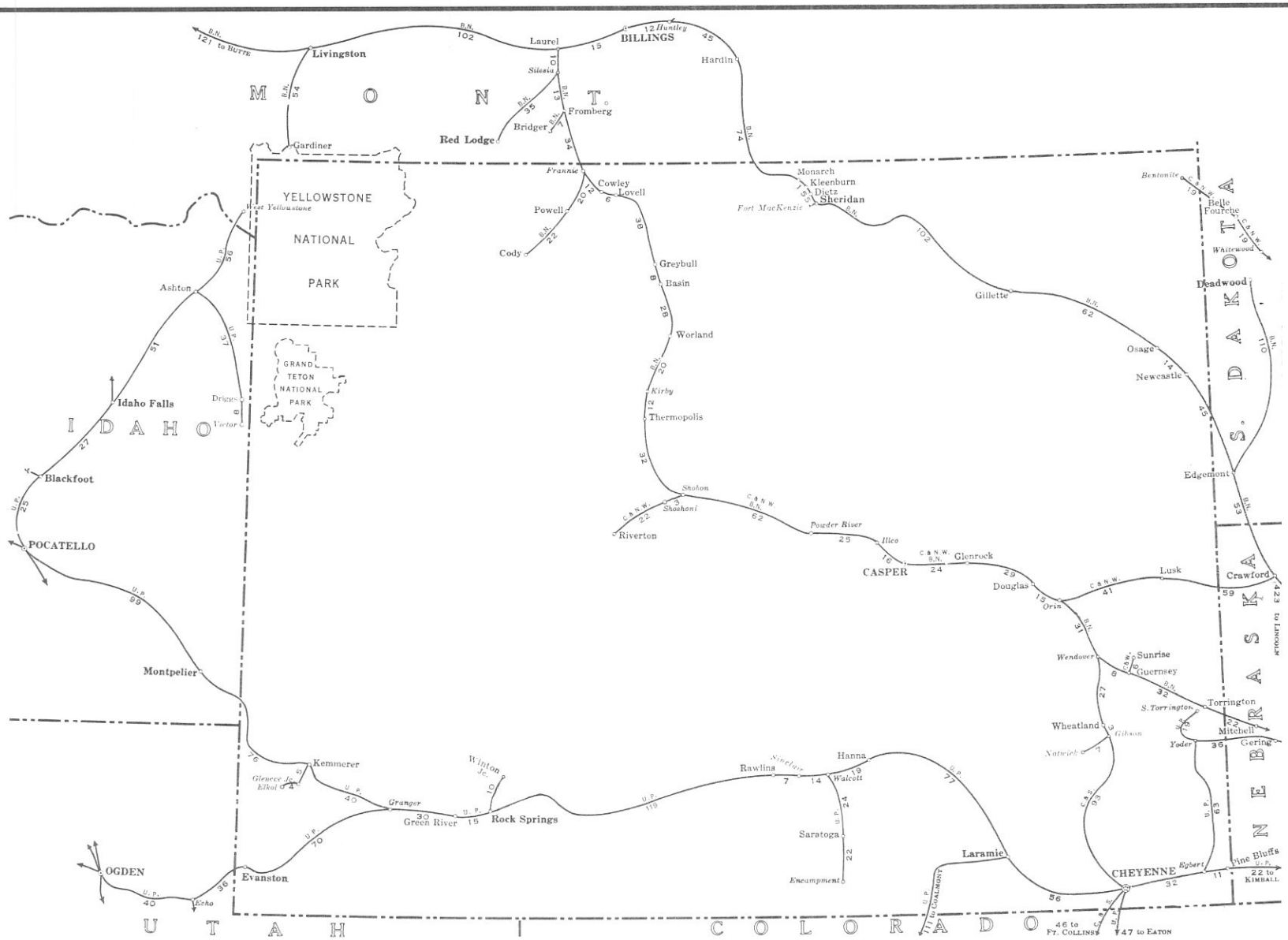
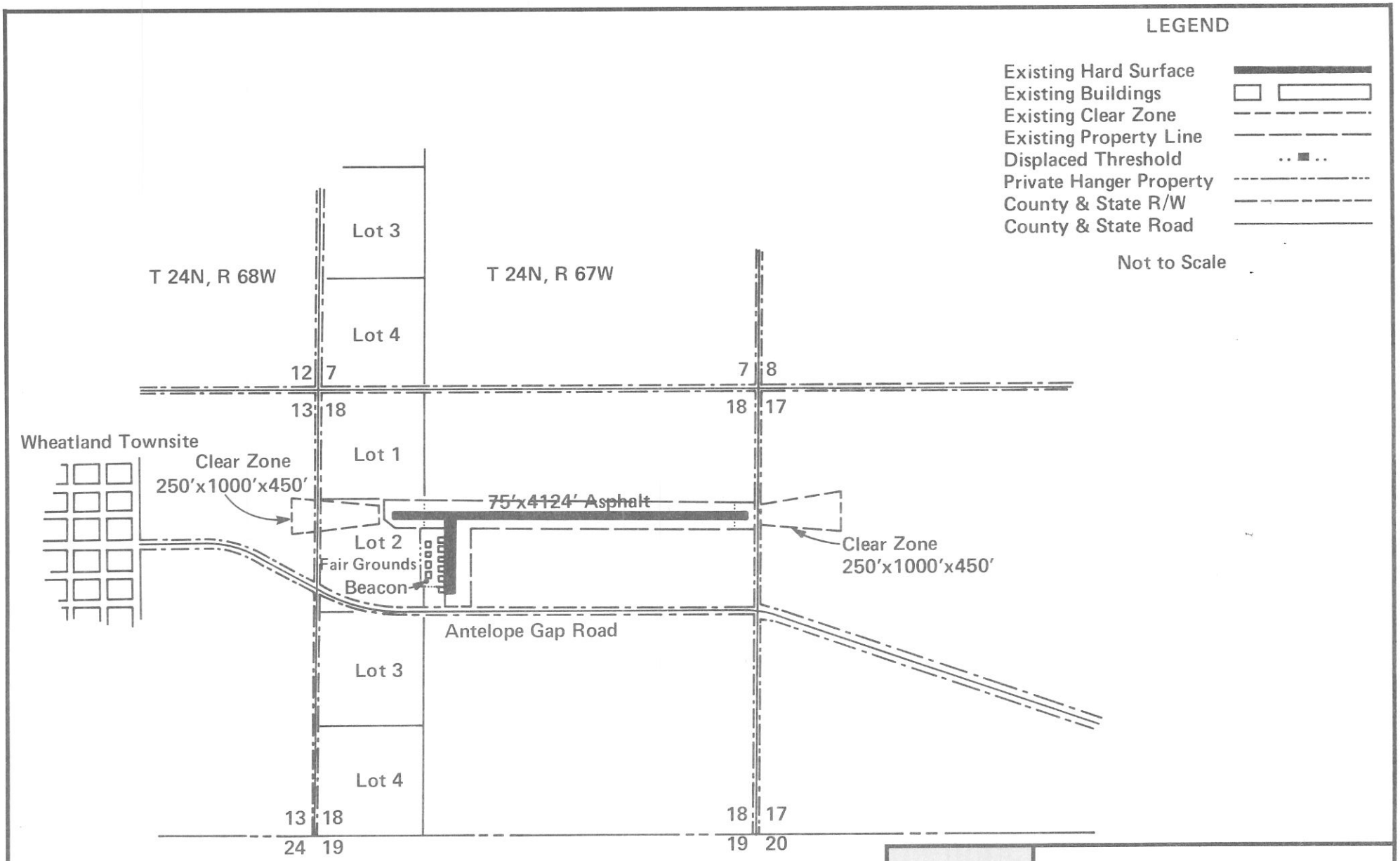


Exhibit 17

EXISTING WYOMING RAILROAD SYSTEMS

Burns & McDonnell
Engineers–Architects–Consultants

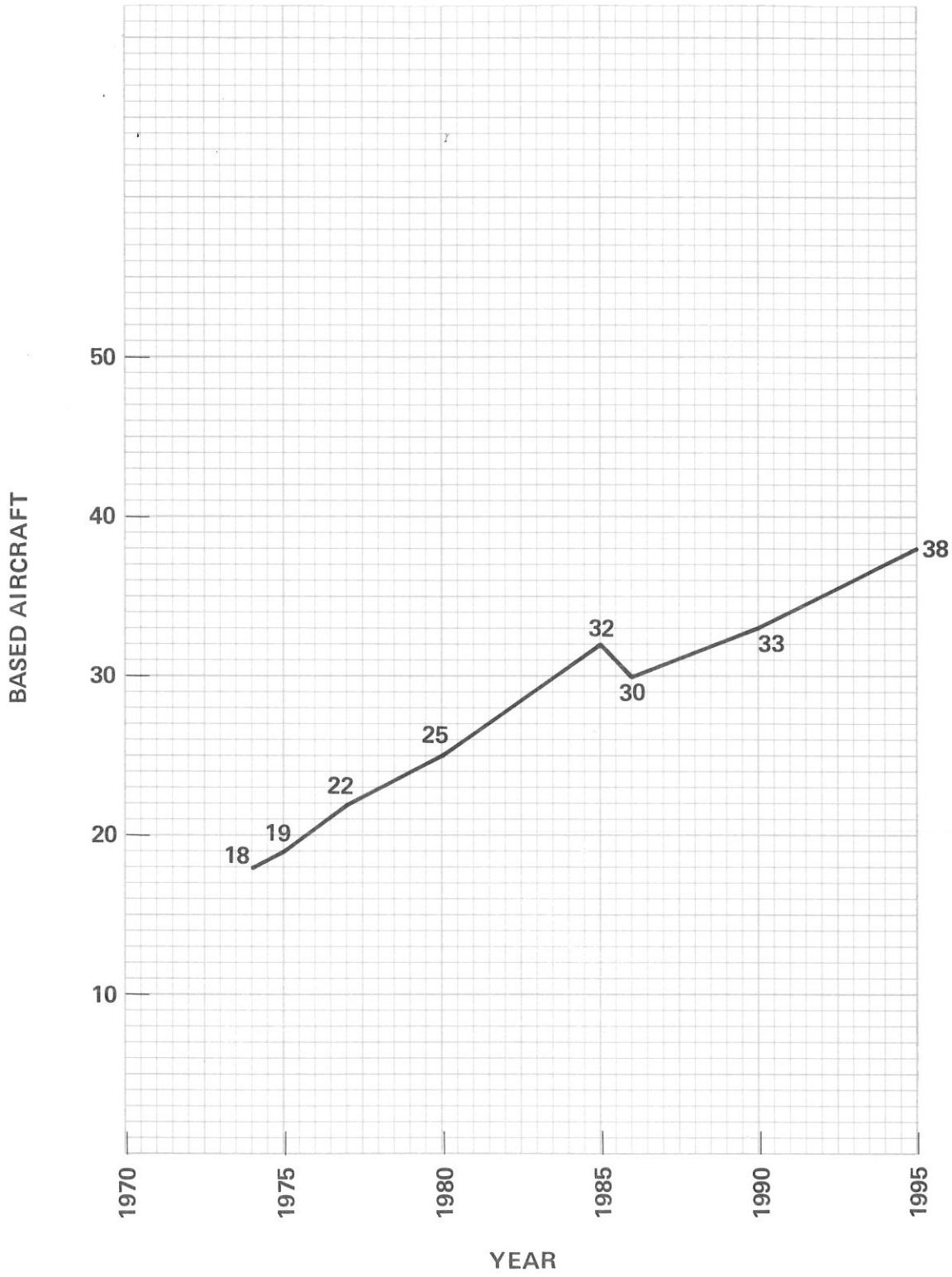
BASMBPP SITING APP, 74-012-1



Barns & McDonnell
Engineers-Architects-Consultants

Exhibit 18
PRESENT AIRPORT
WHEATLAND, WYOMING

BASMBPP SITING APP. 74-012-1



SOURCE:

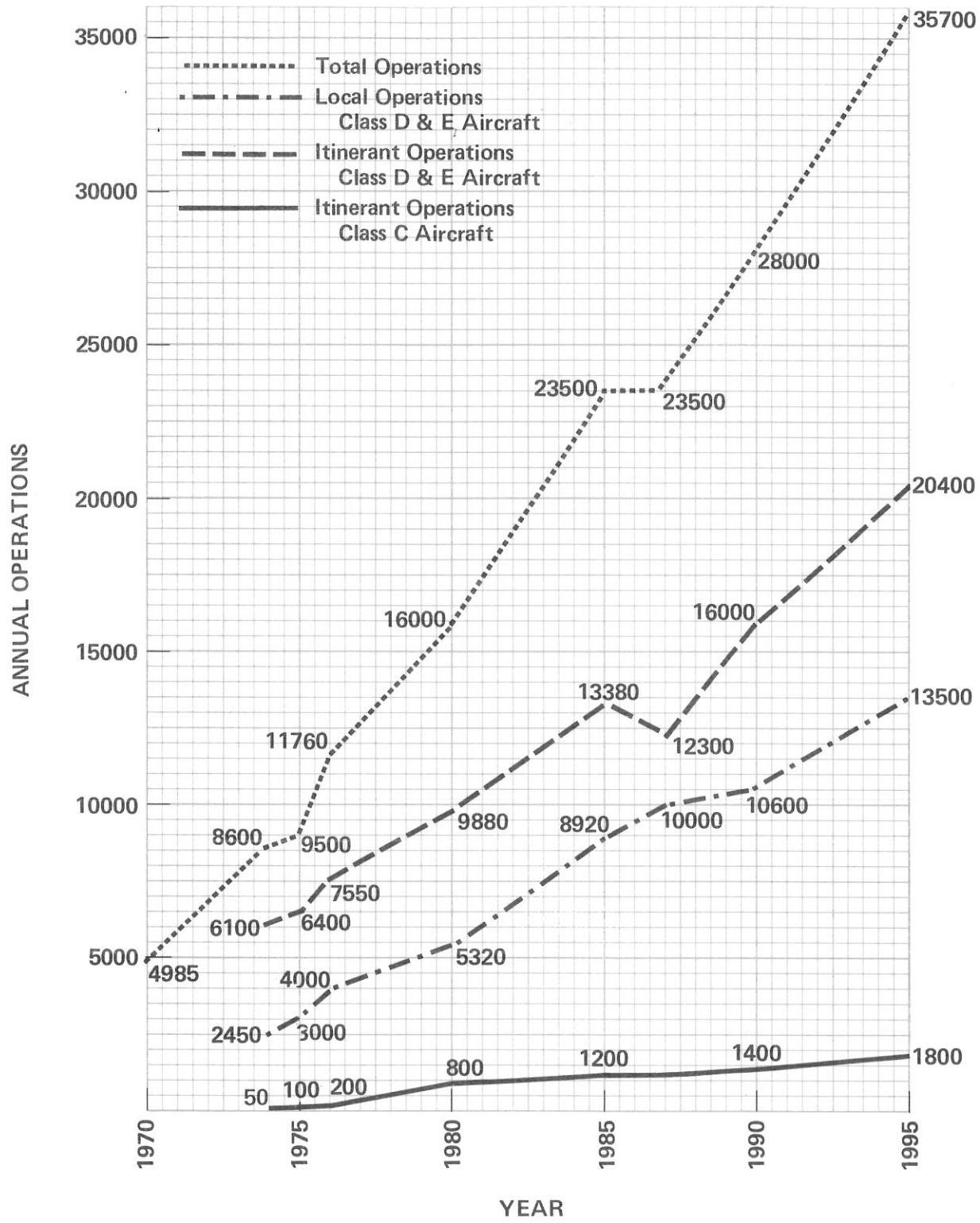
Thomas & Lockwood Consulting Engineers
Rapid City, South Dakota

Burns & McDonnell
Engineers–Architects–Consultants

Exhibit 19

BASED AIRCRAFT
WHEATLAND, WYOMING

BASMBPP SITING APP. 74-012-1



SOURCE:

Thomas & Lockwood Consulting Engineers
Rapid City, South Dakota

Burns & McDonnell
Engineers–Architects–Consultants

Exhibit 20

AIRCRAFT OPERATIONS
WHEATLAND, WYOMING

BASMBPP SITING APP. 74-012-1

Scale: 1" = 1,564'

EXPLANATION

1

Flood-plain deposits

Silt, fine-grained sand, and some gravel in the present flood plains, bars and islands of the principal streams

2

Tributary valley alluvium

Silt, sand, and gravel along intermittent streams; includes some unstratified silt, sand, and talus veneer on slopes

3

Sand and loess

Fine-grained residual sand and loess which form soil on drainage divides

4

Terrace gravel

Pebble, cobble, and boulder deposits containing some silt, fine-grained sand, and lenses of bentonitic clay

5
6

Arikaree Formation

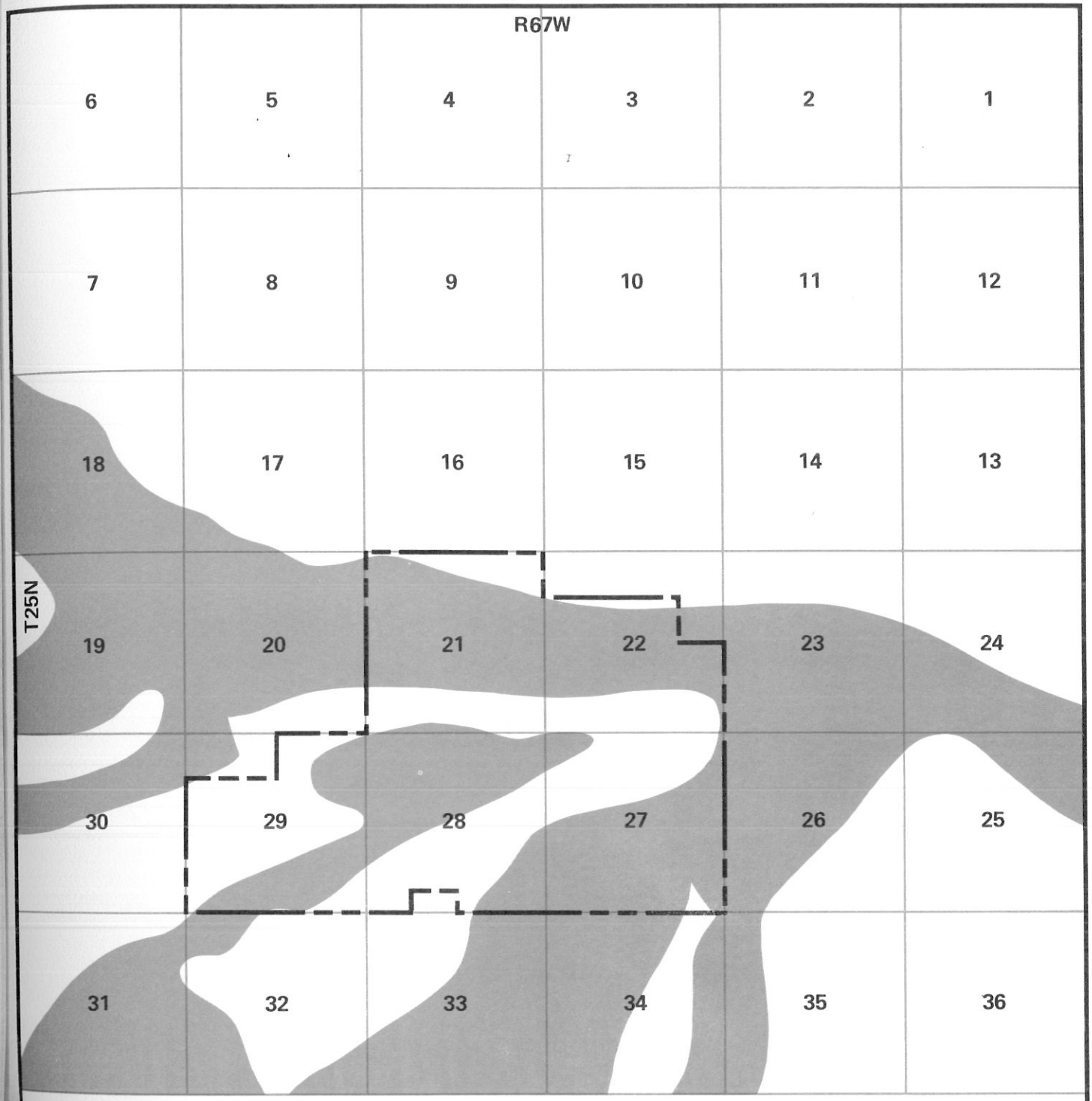
5 Tau, *upper part; light- to greenish- and yellowish-gray fine- to coarse-grained poorly cemented sandstone interbedded with and interfingering with orange-gray argillaceous siltstone; contains some coarse hard brownish-gray sandstone and conglomerate in channels; in adjacent areas contains beds of gray to yellowish-gray and green claystone, dense gray fresh-water limestone, blue-gray anorthosite conglomerate and, in uppermost part, beds of white to dark-gray volcanic ash; approximately equivalent to the Sheep Creek Formation of Nebraska; about 200 feet thick*

6 Tal, *lower part; light- to orange-gray medium- to fine-grained poorly to well cemented tuffaceous sandstone containing many hard "pipy" calcareous sandstone concretions and siliceous root casts; lithologically similar and approximately equivalent in age to Arikaree Group of Nebraska; about 400 feet thick*

Burns & McDonnell
Engineers–Architects–Consultants

Exhibit 21
GENERAL PLANT SITE GEOLOGY MAP

BASMBPP SITING APP. 74-012-1 REVISED 2/2/76



LEGEND

PLANT SITE BOUNDARY

ALLUVIAL DEPOSITS – Unconsolidated and poorly consolidated clay, silt, sand and gravel, mainly in floodplains, fans and terraces.

MIOCENE ROCKS – White massive soft tuffaceous sandstone and white marl; coarse-grained arkosic sandstone and conglomerate in lower part.

Source: Map—U.S.G.S. Geologic Map of Wyoming, Love, J.D. et al. 1955

N

Approximate Scale: 1¼" = 1 mile

Burns & McDonnell
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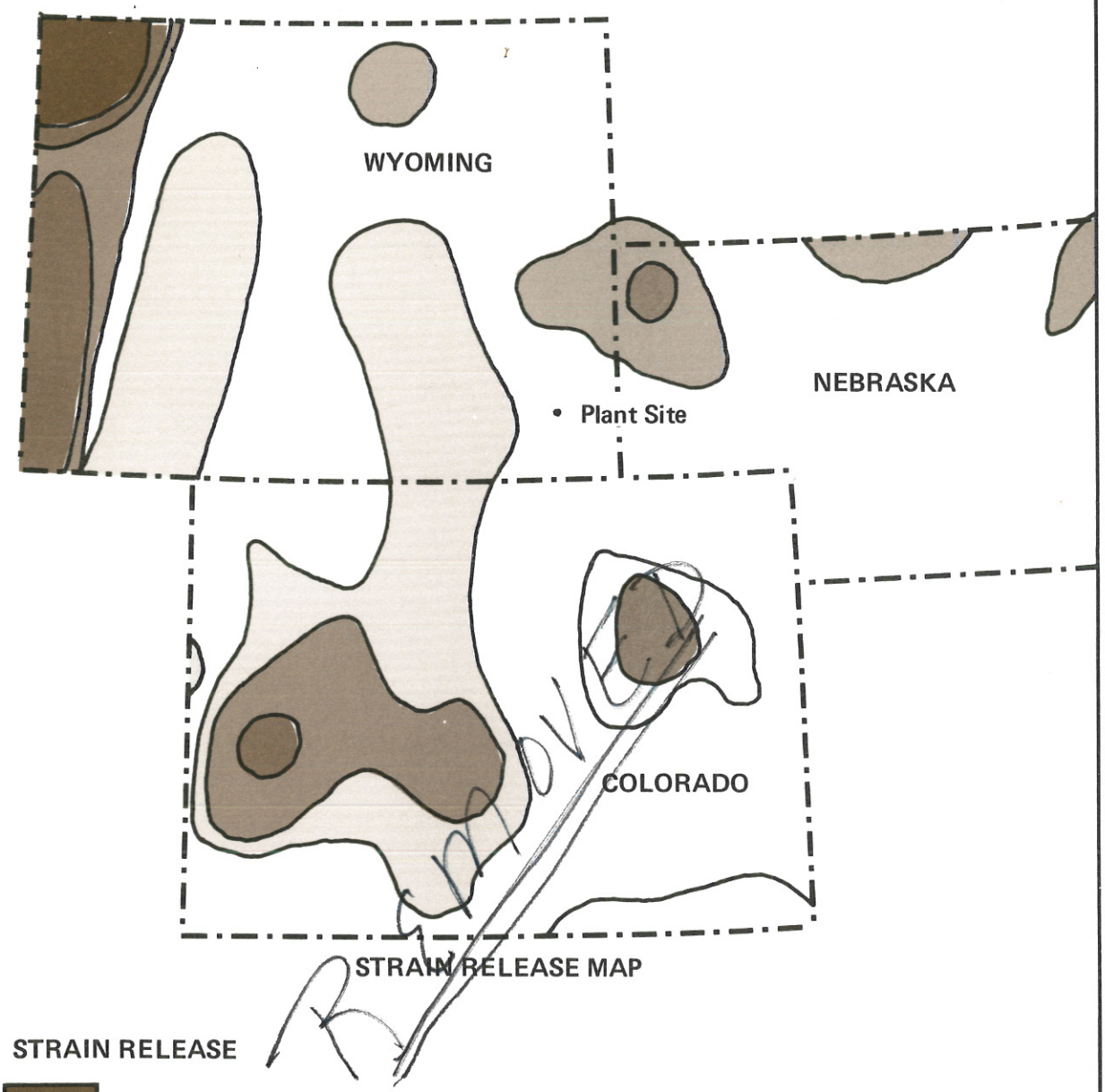
Exhibit 21

GENERAL PLANT SITE GEOLOGY MAP

BASMBPP SITING APP. 74-012-1



KEY: STRAIN RELEASE

- >64
- 16-64
- 4-16
- 1-4
- .25-1
- <.25

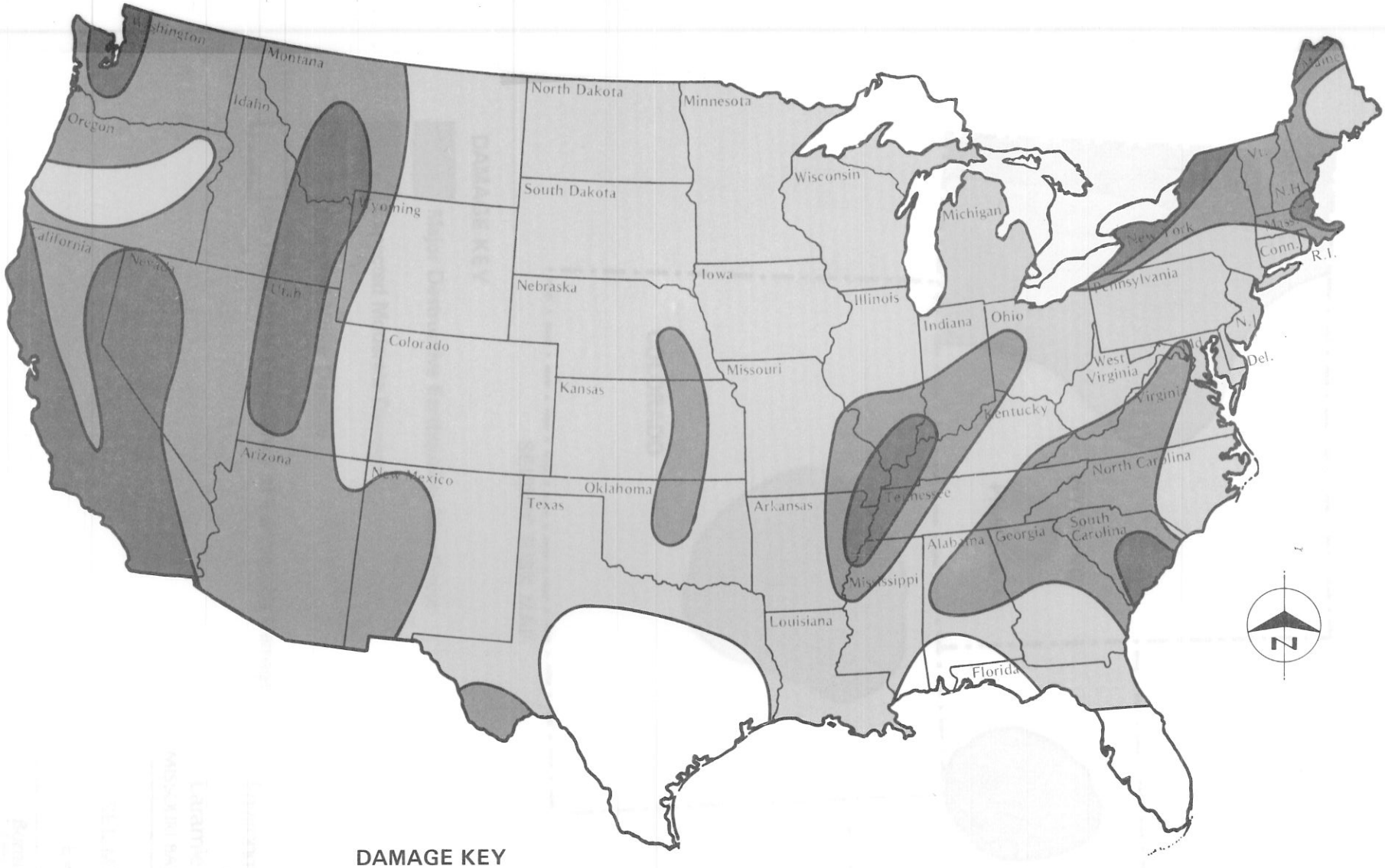
NOTE: Numbers are unitless. They express the energy released by an earthquake.

Environmental Analysis
For The
Laramie River Station
MISSOURI BASIN POWER PROJECT

STRAIN RELEASE MAP

Exhibit 22

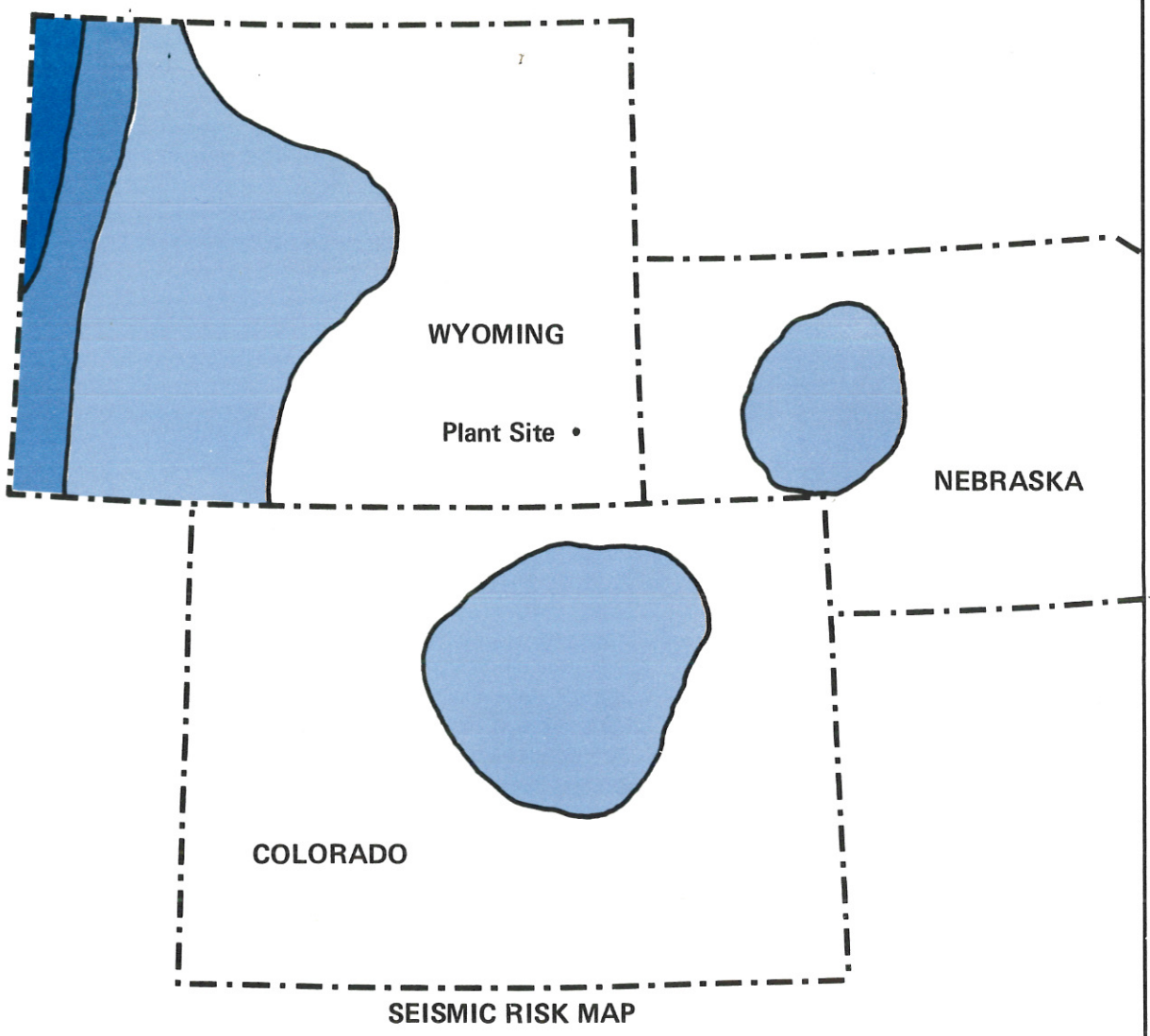
Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI
74-012-4-001



Burns & McDonnell
Engineers–Architects–Consultants

SEISMIC RISK MAP
FOR CONTIGUOUS U.S.
Exhibit 23

BASMBPP SITING APP. 74-012-1 REVISED 2/2/76



SEISMIC RISK MAP

DAMAGE KEY

- Major Destructive Earthquakes May Occur
- Expected Moderate Damage
- Expected Minor Damage
- No Reasonable Expectancy of Earthquake Damage

Environmental Analysis
For The
Laramie River Station
MISSOURI BASIN POWER PROJECT

SEISMIC RISK MAP

Exhibit 23

Burns & McDonnell
Engineers – Architects – Consultants
KANSAS CITY, MISSOURI
74-012-4-001

R68W R67W R66W R65W R64W R63W R62W

T26N

T25N

T24N

T23N

T22N

GRAYROCKS RESERVOIR

PLANT SITE

BETTELYOUN FLATS

CAMP GUERNSEY TRAINING AREA

FORT LARAMIE

Fort Laramie National Monument

WHEATLAND

TORRINGTON

YODER

N

Scale in Miles

1 0 1 2 3 4

SOIL MAP LEGEND

1. Loamy soils on uplands, primarily rolling moderately deep, well-drained with outcroppings of bedrock and with deep sandy soils developing in swales and draws.
2. Loamy soils, gravelly phase, flat rolling or steep, high terraces or outwash plains, earthy gravel at depths of 10 inches to 3½ feet.
3. Sandy and loamy soils on uplands, deep to shallow, well-drained to excessively-drained. Hard bedrock may occur at depths ranging from 10 inches to over 4 feet.
4. Deep sand and loamy soils on alluvial fans, foot slopes, and valley fills, nearly level to gently sloping, well drained.
5. Deep, sandy, loamy and clayey soils developing in flood deposited material on major stream bottoms, nearly level, well drained.

Environmental Analysis
For The
Laramie River Station
MISSOURI BASIN POWER PROJECT

SOILS MAP
Exhibit 24

Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI
74-012-4-001

Stream Bank Vegetation Type

Silver Sagebrush Vegetation Type

Shortgrass Plains Vegetation Type

Rough Breaks Vegetation Type

"Cultivated Zones" Vegetation Type

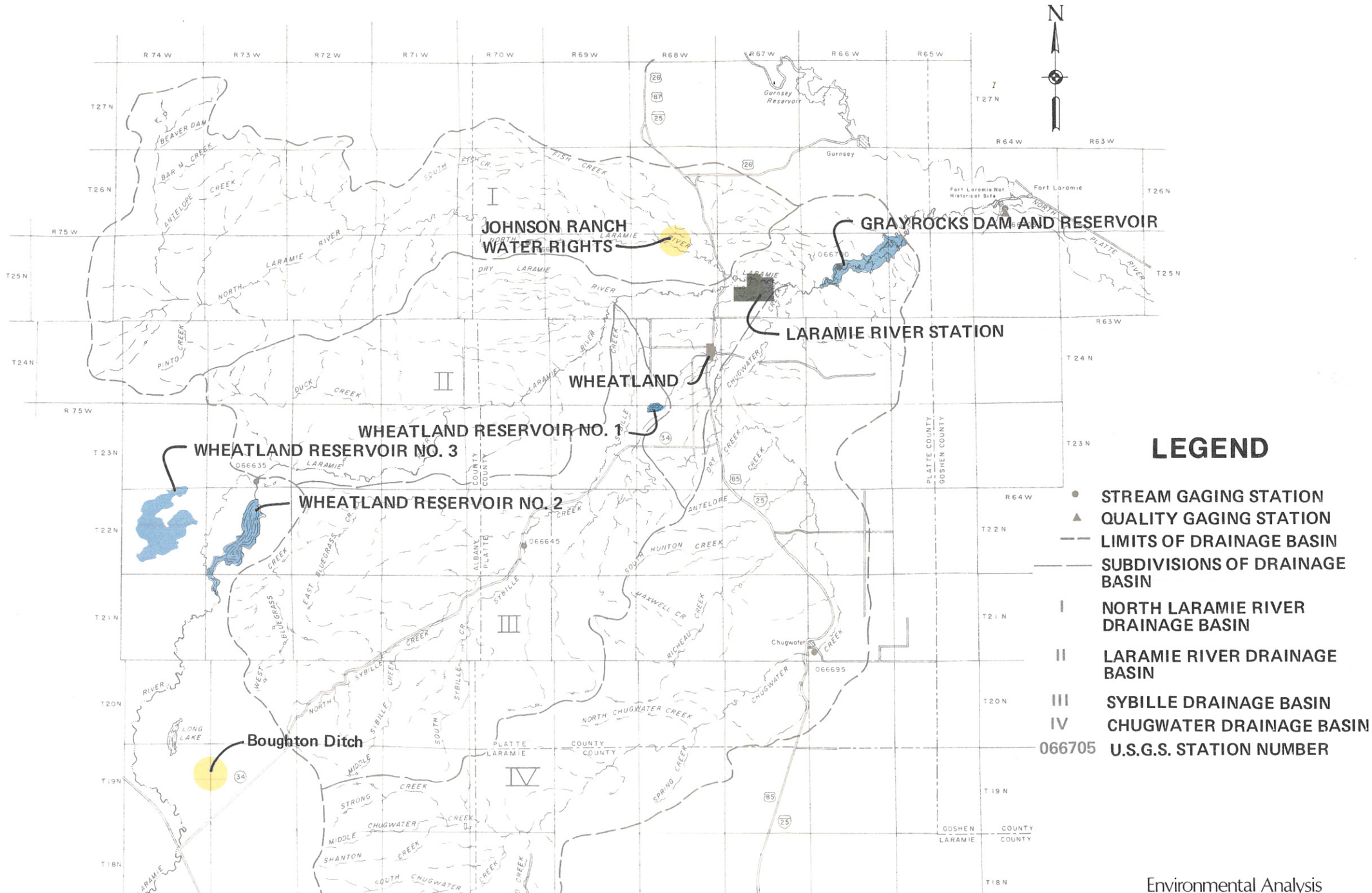
Plant Site

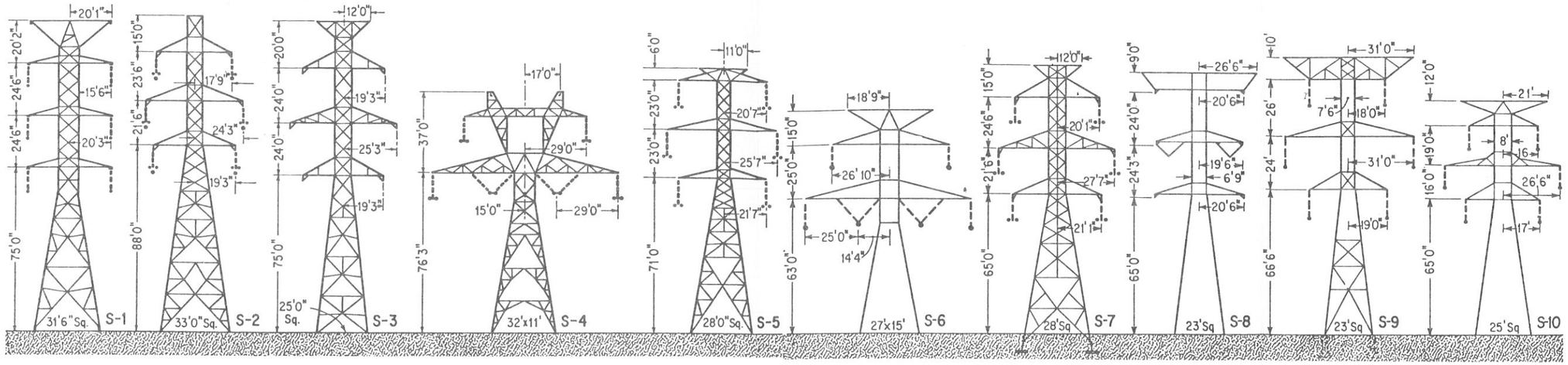
N

BASMBPP SITING APP. 74-012-1

Burns & McDonnell
Engineers-Architects-Consultants

Exhibit 25
GENERAL PLANT SITE
VEGETATION MAP


JOHNSON RANCH
WATER RIGHTS
GRAYROCKS DAM AND RESERVOIR
LARAMIE RIVER STATION
WHEATLAND
WHEATLAND RESERVOIR NO. 1
WHEATLAND RESERVOIR NO. 3
WHEATLAND RESERVOIR NO. 2
Boughton Ditch
LEGEND
STREAM GAGING STATION
QUALITY GAGING STATION
LIMITS OF DRAINAGE BASIN
SUBDIVISIONS OF DRAINAGE BASIN
I NORTH LARAMIE RIVER DRAINAGE BASIN
II LARAMIE RIVER DRAINAGE BASIN
III SYBILLE DRAINAGE BASIN
IV CHUGWATER DRAINAGE BASIN
066705 U.S.G.S. STATION NUMBER
Environmental Analysis



BASMBPP SITING APP. 74-012-1

Barns & McDonnell
Engineers-Architects-Consultants

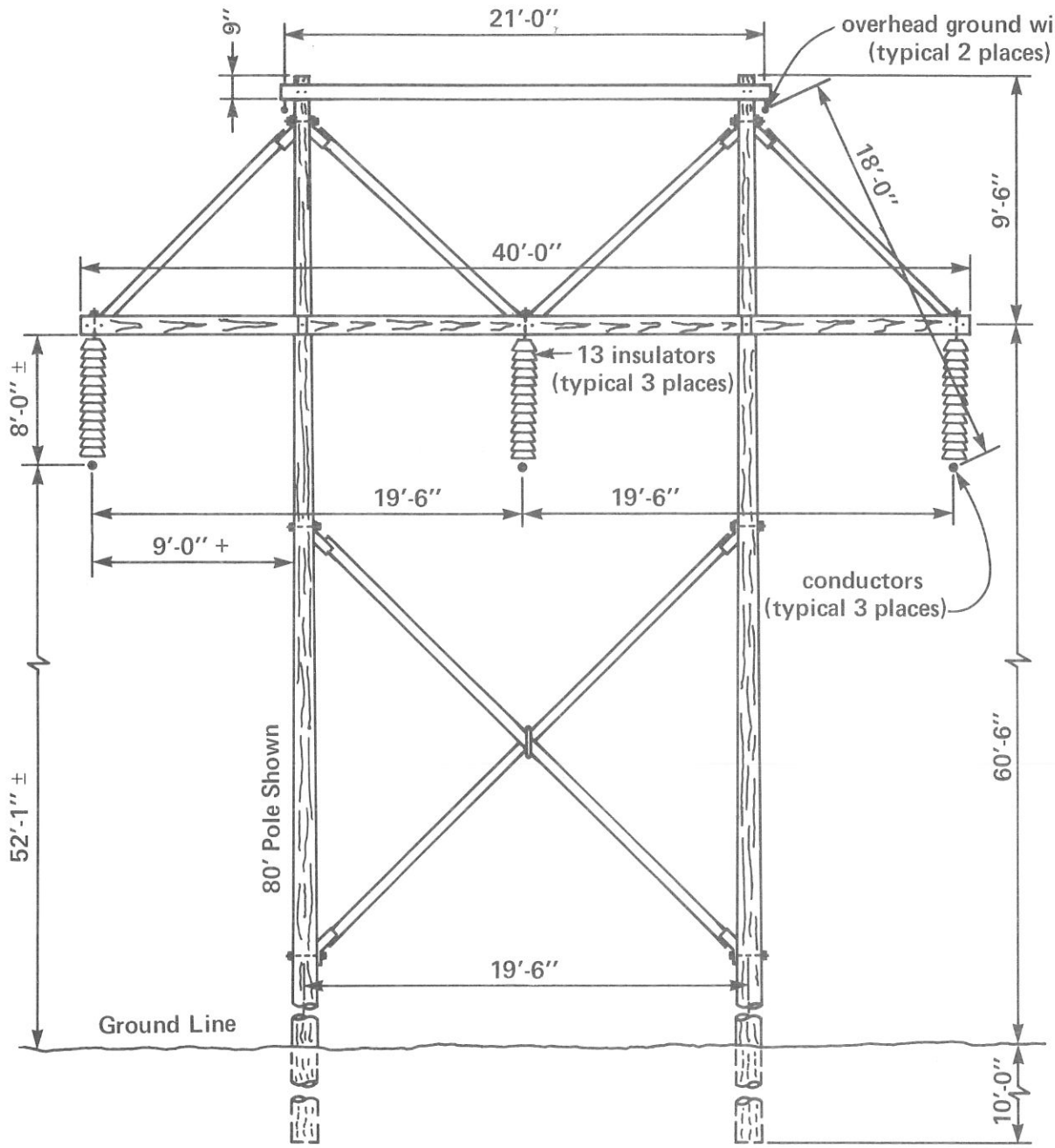
Exhibit 27
GENERAL STRUCTURE DESIGN

Approx. Scale: 3/8" = 10 miles

Environmental Analysis
For The
Electric Transmission
Facilities
of the
MISSOURI BASIN POWER PROJECT

LOCATION OF PROPOSED ROUTES
Exhibit 28

Burns & McDonnell
Engineers – Architects – Consultants
KANSAS CITY, MISSOURI
74-064-4-000



230 kV H-Frame Two-Pole Structure
REA Type TH-230

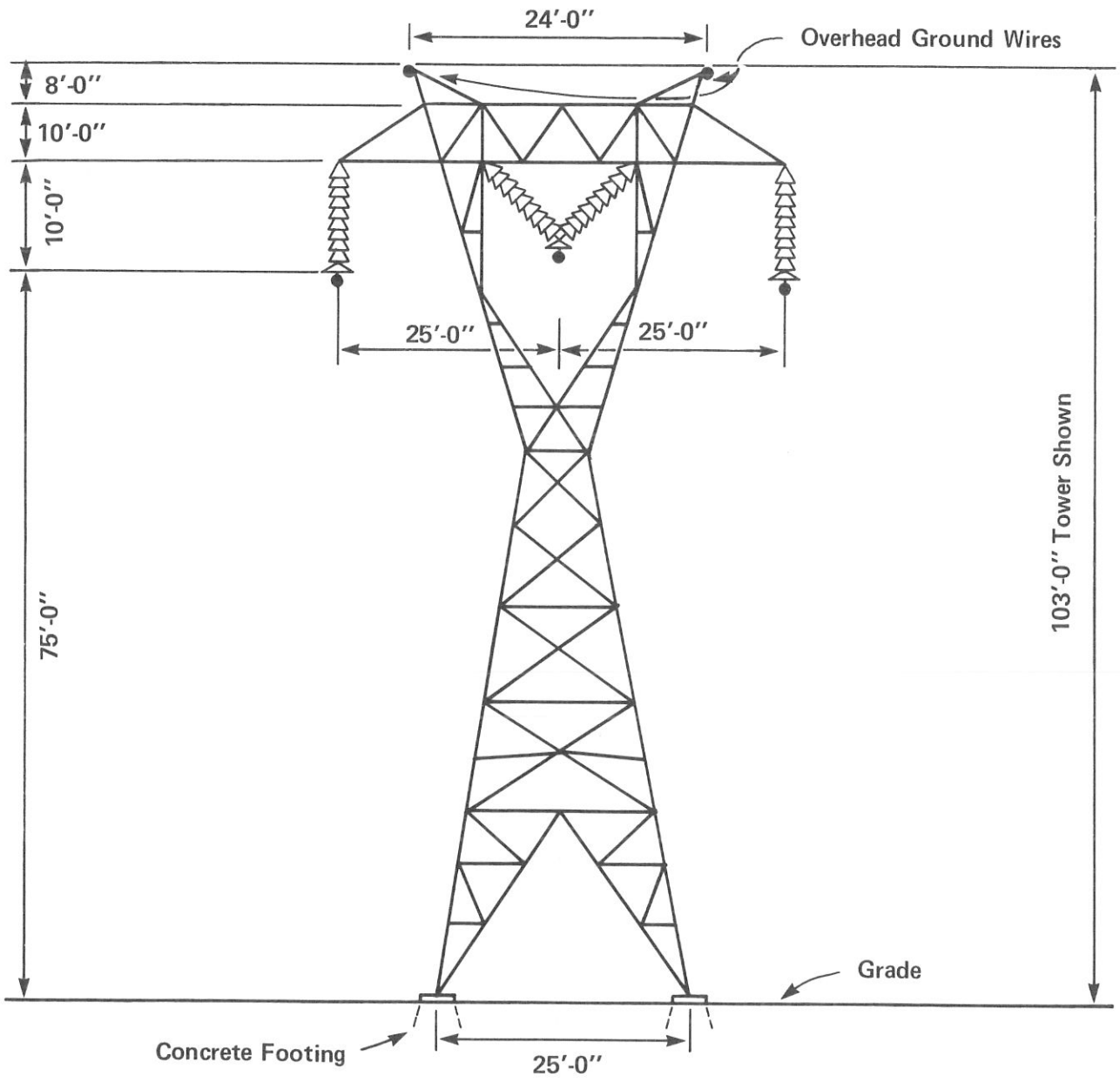
This Drawing Not To Scale

Burns & McDonnell
Engineers–Architects–Consultants

Exhibit 29

TYPICAL WOOD POLE
STRUCTURE 230 kV ac

BASMBPP SITING APP. 74-012-1



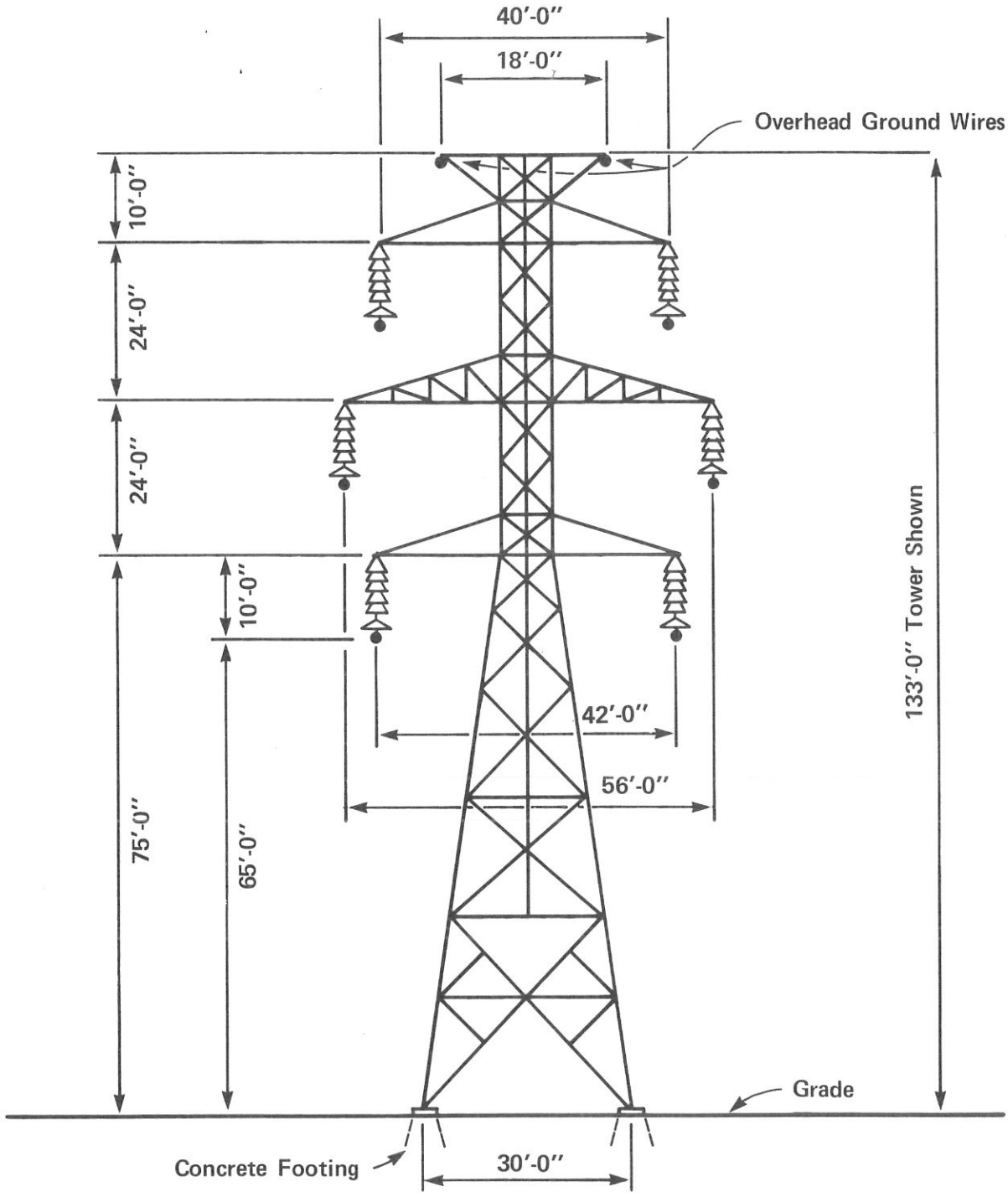
Not to Scale

Burns & McDonnell
Engineers-Architects-Consultants

Exhibit 30

TYPICAL STEEL LATTICE STRUCTURE 345 kV ac

BASMBPP SITING APP. 74-012-1



Not to Scale

Burns & McDonnell
Engineers–Architects–Consultants

Exhibit 31

TYPICAL DOUBLE CIRCUIT
345 kV LATTICE STEEL TOWER

BASMBPP SITING APP. 74-012-1

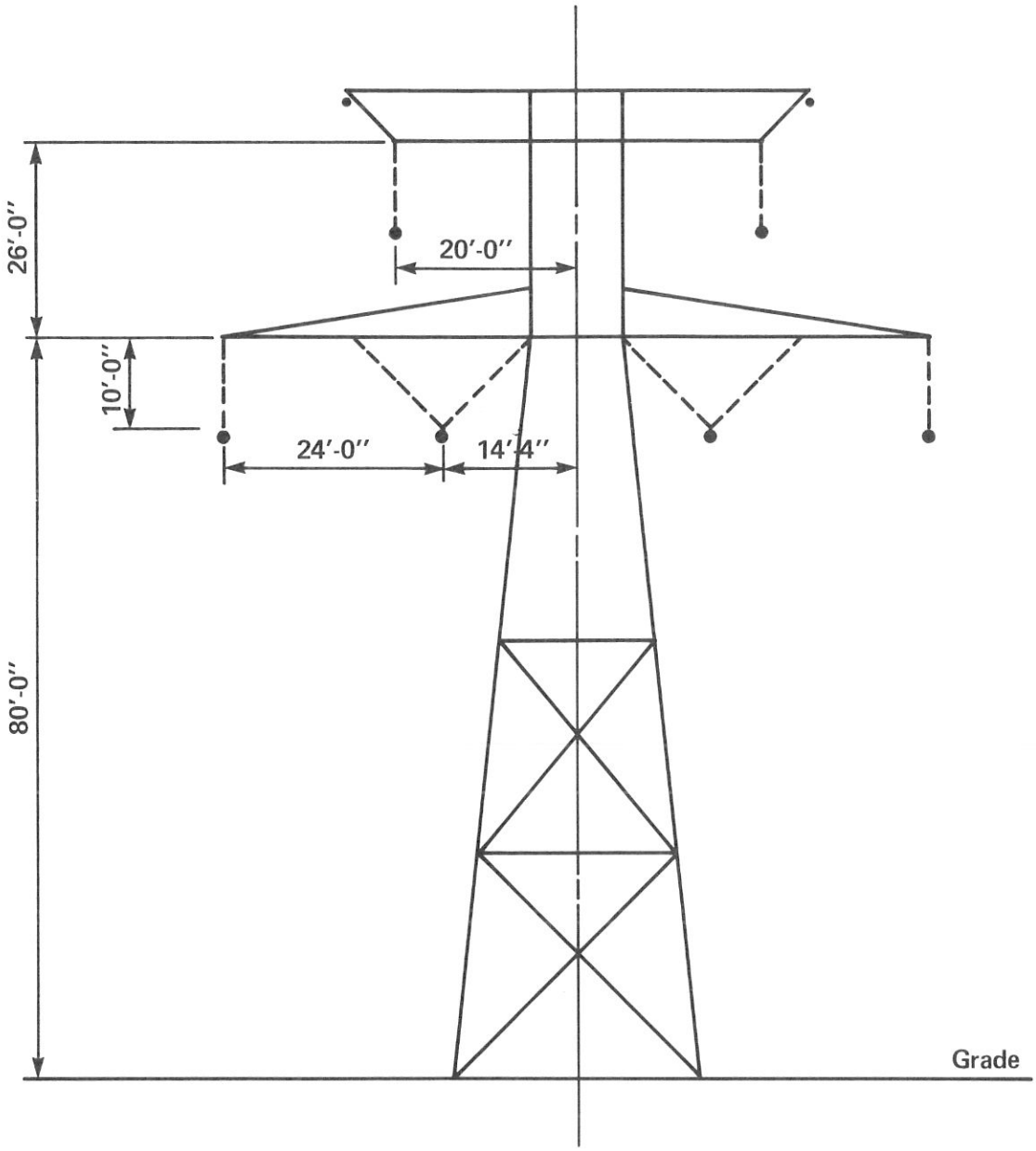


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Exhibit 32

TYPICAL TRANSMISSION TOWER
DOUBLE CIRCUIT 345-kV

BASMBPP SITING APP. 74-012-1

APPENDIX

APPENDIX:

I. Description of the Regenerable FGD Systems:

The Regenerable FGD systems under consideration for the Laramie River Station are described below. Several of these systems have been successfully demonstrated on pilot or prototype scale. In addition, the Shell-UOP and the Wellman Lord systems have been demonstrated on oil-fired units in Japan. None of these systems have been fully demonstrated on coal-fired utility boilers in accordance with the National Academy of Engineering criteria as commercial.

Westvaco: Activated Carbon Process (See Exhibit 1)

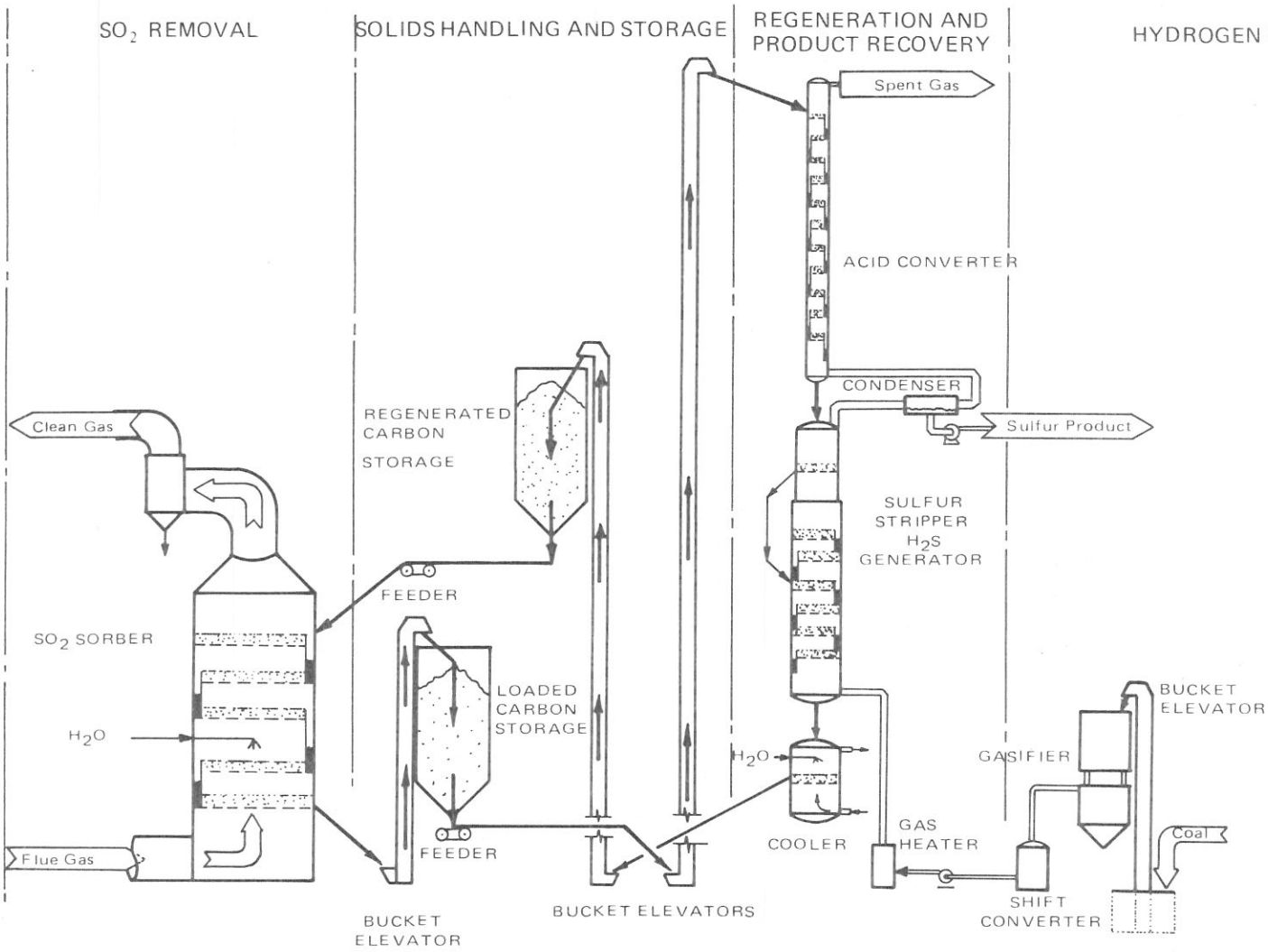
The Activated Carbon Process of desulfurization by Westvaco is a dry, regenerative process which uses activated carbon granules to remove SO_2 from flue gas. The process produces elemental sulfur.

Flue gas enters the adsorber in the first step of the process, and flows through a staged, fluidized bed. The SO_2 and O_2 in the flue gas react because of the carbon, which serves as a catalyst, to form SO_3. Water vapor is present as well in the flue gas, and the SO_3 and water vapor react to give sulfuric acid. This acid remains adsorbed in the carbon granules. The temperature can be adjusted in this reactor to optimize SO_2 removal rates.

These granules are then moved to another fluidized reactor. In this second reactor the granules are contacted with H_2S and react to form elemental sulfur. The sulfur remains adsorbed in the carbon granules, but the water vapor, which also results from the reaction, is exhausted through the stack. The temperature at this stage must be near 300° F.

The required H_2S for the above reaction is generated in a third fluidized bed reactor operating at 1000° F. In this reaction sulfur-laden carbon product is mixed with hydrogen gas in the sulfur stripper H_2S generator. Hydrogen gas for the reaction is obtained from gasifiers of coal or other fossil fuels.

The carbon serves as an adsorbent and a catalyst in this process, but it is not directly involved in any of the reactions. The carbon is recycled each time and its activity is restored to the original level. Carbon consumption is minimal.



SOURCE: WESTVACO CORPORATION
RESEARCH CENTER
NORTH CHARLESTON, SOUTH CAROLINA

MISSOURI BASIN POWER PROJECT
LARAMIE RIVER STATION
WHEATLAND, WYOMING
WESTVACO ACTIVATED CARBON PROCESS

BURNS & McDONNELL ENGINEERING COMPANY
Engineers - Architects - Consultants
Kansas City Missouri
1975

74-012-1-000 Exhibit 1

Foster Wheeler: Char/Sulfur (See Exhibit 2)

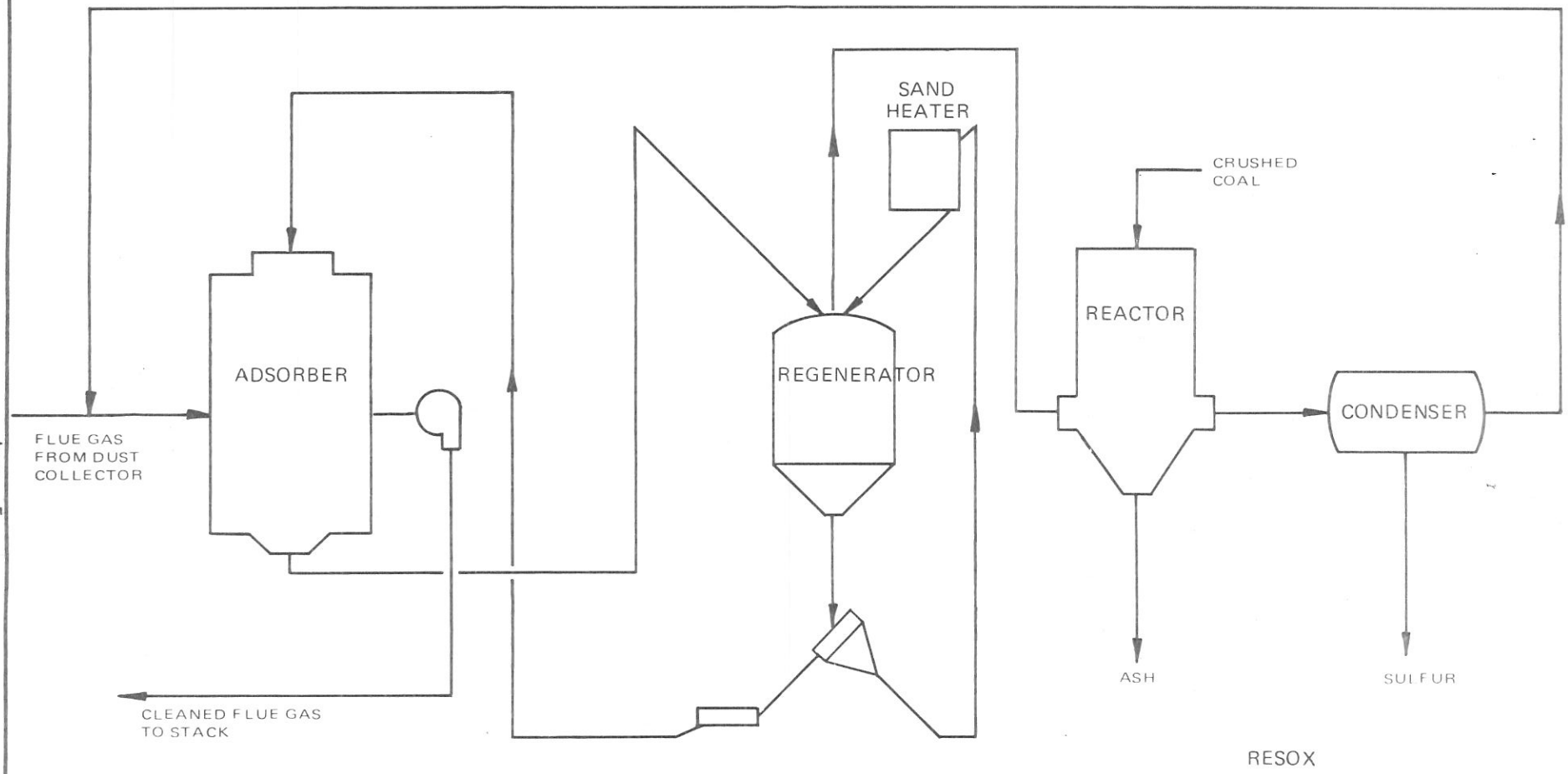
The Bergbau Forschung - Foster Wheeler sulfur dioxide removal process is a dry, regenerative process which uses carbon char pellets to adsorb SO_2 from the flue gas. The process produces elemental sulfur having a purity of 99.7%.

Flue gas enters the adsorber in the first step of the process and flows through the char pellet bed. The char pellets flow downward in parallel vertical beds. The char pellets themselves are approximately 3/8"x3/8"x5/8". Sulfur dioxide and nitrous oxides are adsorbed in the pellets and particulate matter is collected on the surface of the pellet. This process occurs at temperatures from 250-350° F. The cleaned flue gas passes on to the stack.

The pellets move on to a refractory-lined vessel where sand which has been heated to 1500° F is contacted with the char pellets to accomplish thermal regeneration. When the SO_2 was previously adsorbed water vapor and oxygen were also adsorbed, and the SO_2 became SO_3 and then H_2SO_4. Now that the pellets are heated these reactions are reversed and an off-gas is produced.

From here the sand and char are separated by their size difference and are reused while the off-gas is passed through crushed coal. This yields elemental gaseous sulfur while the liberated oxygen reacts with the coal to form carbon dioxide.

The gases leaving the reactor flow to a sulfur condenser where sulfur changes from a gas to a liquid. This moten sulfur is kept at constant temperature in a tank for shipment. The remaining gases are recycled to the adsorber. Any remaining sulfur is adsorbed again while the other gases, N_2, H_2O, and CO_2 flow on to the stack. An advantage of this system is that it uses coal as a reductant.



MISSOURI BASIN POWER PROJECT
LARAMIE RIVER STATION
WHEATLAND, WYOMING

FW-BF DRY ADSORPTION SYSTEM

BURNS & McDONNELL ENGINEERING COMPANY
Engineers - Architects - Consultants
Kansas City Missouri
1975

74-012-1-000 Exhibit 2

SOURCE: FOSTER WHEELER ENERGY CORPORATION

Chemico: Magox (See Exhibit 3)

The Magnesium Oxide Process of desulfurization by Chemico is a wet, regenerative process which uses magnesium oxide in solution to absorb SO_2 and form primarily magnesium sulfite. The process produces elemental sulfur or sulfuric acid.

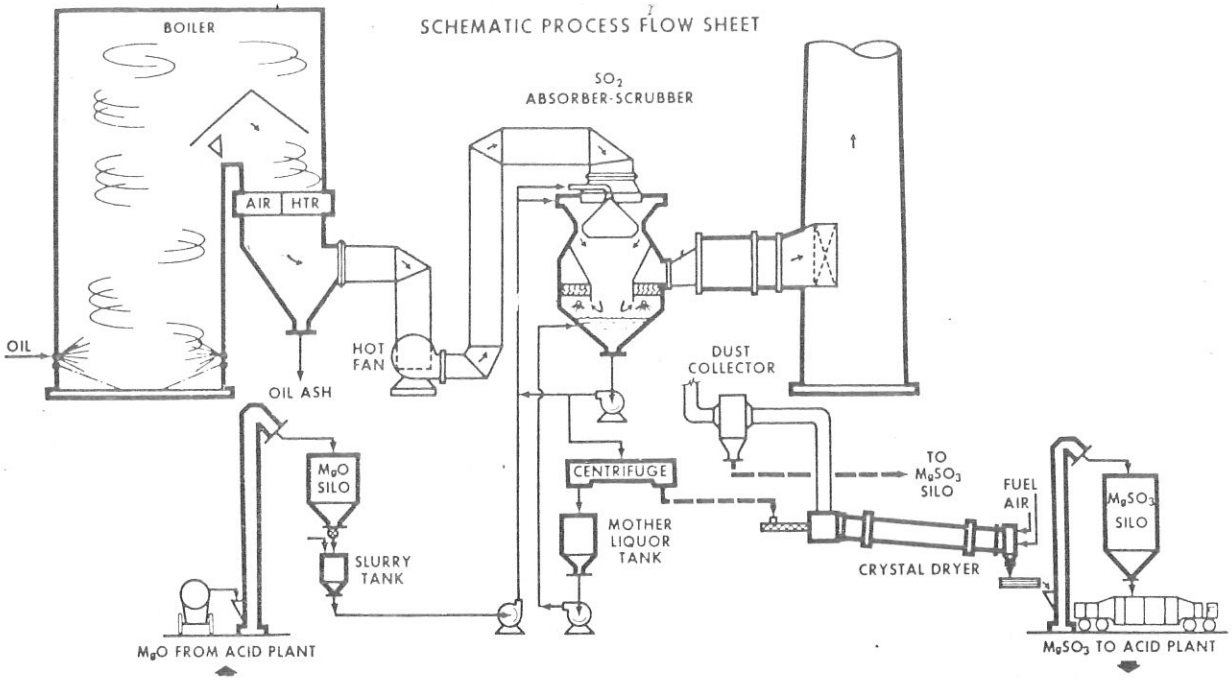
Flue gas leaving an electrostatic precipitator enters the absorber. The flue gas stream is accelerated and contacts the slurry of magnesium oxide in the throat of the absorber, forcing the liquid into droplets. SO_2 is absorbed in these droplets and reacts to yield magnesium sulfite. Some $MgSO_4$ is formed from the reaction of SO_3 with MgO and also oxidation of $MgSO_3$.

A small stream of slurry is continuously bled off to a centrifuge where the solids are separated from the slurry and consequently dried. The dried product is sent to a storage silo while off-gas from the dryer passes through dust collectors and is directed back to the absorber. The collected dust is also stored in the product silo. This product is subsequently taken to a calciner to generate SO_2. Coke is added to reduce the $MgSO_4$ present to SO_2 and CO_2.

Finally, the regenerated SO_2 is cleaned in a hot cyclone and cooled to saturation in a venturi for entrance to the acid plant. The regenerated MgO is directed back to a slurry tank for reuse in the absorber.

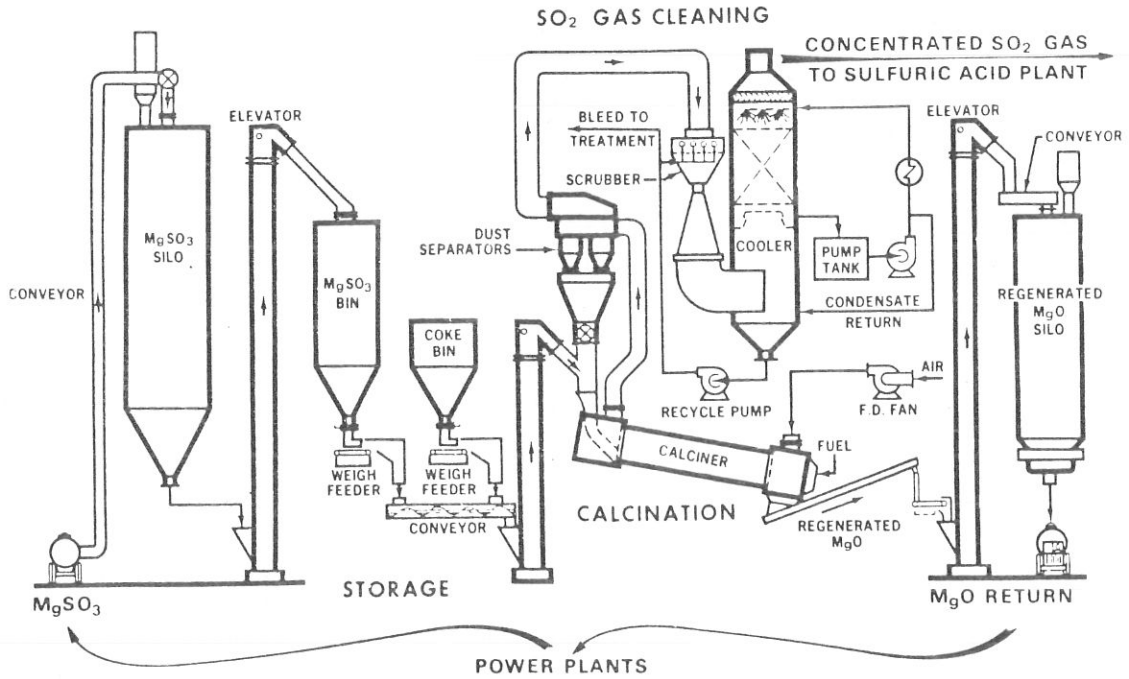
MgO ADDITIVE
SCRUBBER SYSTEM FOR SO_2 RECOVERY
OIL FIRED BOILER

SCHEMATIC PROCESS FLOW SHEET



REGENERATION SYSTEM

MgO RECYCLE PROCESS, FOR PRODUCTION OF 98% SULFURIC ACID



SOURCE: CHEMICAL CONSTRUCTION CORPORATION
AIR POLLUTION CONTROL COMPANY

MISSOURI BASIN POWER PROJECT
LARAMIE RIVER STATION
WHEATLAND, WYOMING

MAGNESIUM OXIDE PROCESS

BURNS & McDONNELL ENGINEERING COMPANY
Engineers - Architects - Consultants
Kansas City Missouri
1975

74-012-1-000

Exhibit 3

Wellman-Lord (See Exhibit 4)

The Wellman-Lord desulfurization process is a wet, regenerative process in which sodium sulfite in solution reacts with absorbed SO_2. The process produces elemental sulfur or sulfuric acid and has an excessive sulfate purge. The cleaned flue gas requires reheating and the system uses large amounts of water.

As raw flue gas leaves the electrostatic precipitator, large booster fans give the gas the needed force to make up for the large pressure drop of the system. Fly ash removal and cooling of the flue gas is also necessary before the flue gas enters the absorber. To accomplish this, a prescrubber is used. This prescrubber may be located in the lower section of the absorber, and it operates by contacting the flue gas with a recirculating water/fly-ash acidic slurry. This slurry cools the gas to its saturation temperature. As the slurry is replaced with fresh water, neutralization is necessary before disposal. Flue gas leaving the prescrubber is further cleaned of fly-ash by demisters.

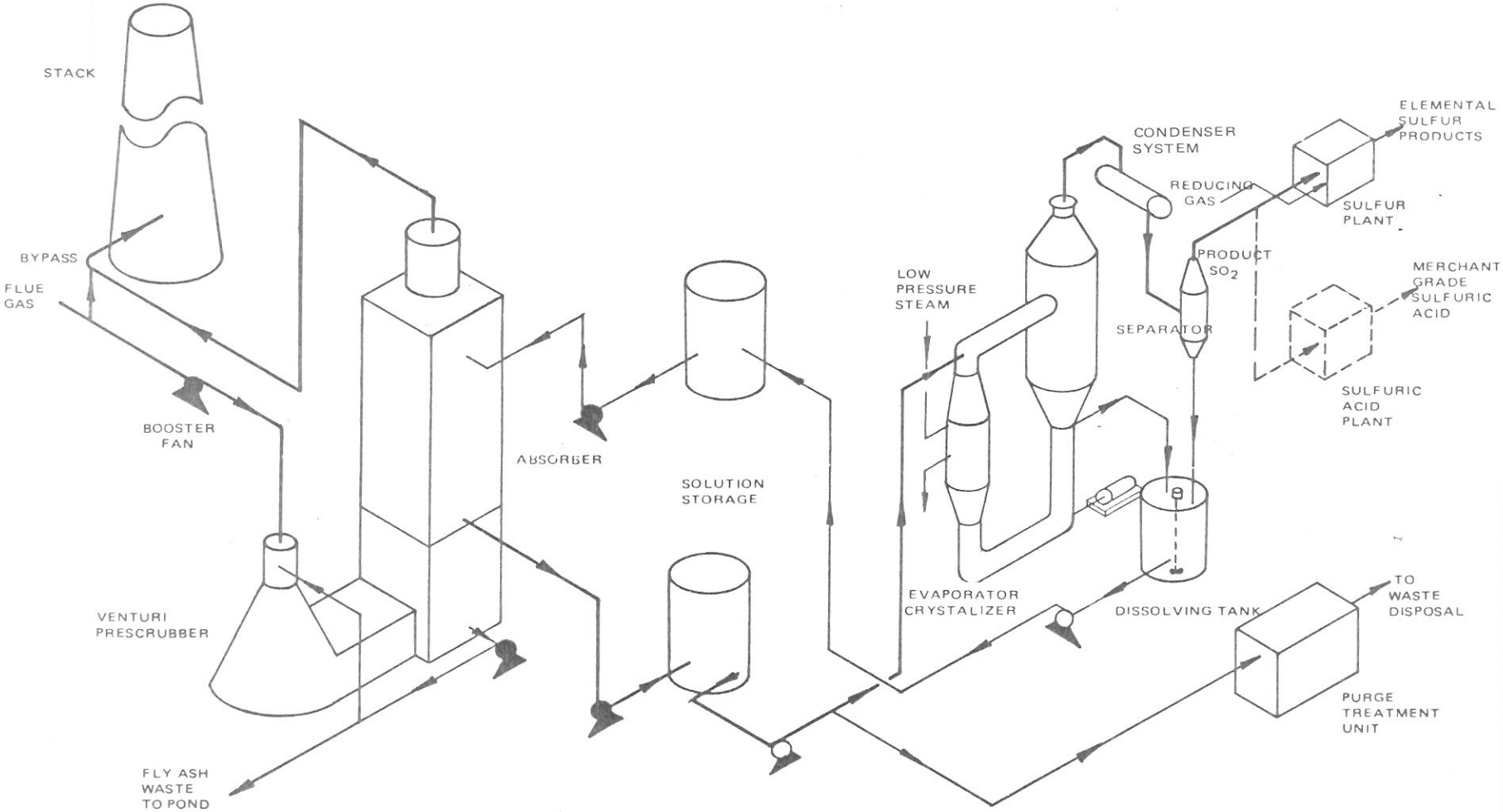
The particulate free flue gas then enters the absorber where the gas passes through a series of valve-type trays. The solution, maintained 4-12° F above the flue gas saturation temperature, absorbs the SO_2 from the flue gas.

Sodium sulfite in the solution reacts with the SO_2 and water to yield sodium bisulfite, which leaves the bottom of the absorber with a desired concentration of bisulfite. The spent absorbententers a surge tank while the cleaned flue gas is heated approximately 50° F before exiting through the stack.

A steady flow of spent absorbent leaves the surge tank and flows to the evaporator. The solution is heated by steam to regenerate SO_2 and sodium sulfite. A large sulfate purge is removed to be treated for disposal. The SO_2 is separated from the water vapor to yield a highly concentrated gas stream.

The remaining solution flows to a crystallizer where the sodium sulfite is precipitated. Then the sodium sulfite crystals and a sodium carbonate makeup are added in a dissolving tank to provide appropriate concentration of sodium ions to the regenerated absorbing solution. This solution is pumped to a surge tank to be recycled through the absorber.

The concentrated SO_2 can be processed using hydrogen to form elemental sulfur in a Claus unit. The hydrogen is produced from either a coal gasifier or from a natural gas supply.



SOURCE: DAVY POWERGAS INC.

MISSOURI BASIN POWER PROJECT

LARAMIE RIVER STATION

WHEATLAND, WYOMING

WELLMAN-LORD SO_2 RECOVERY PROCESS

BURNS & McDONNELL ENGINEERING COMPANY
Engineers - Architects - Consultants
Kansas City Missouri
1975

74-012-1-000 Exhibit 4

Shell/UOP: Cupric Oxide Process (See Exhibit 5)

The desulfurization process of Shell is a dry, regenerative process which uses copper oxide on alumina in a fixed, packed bed to absorb SO_2 and NO_x from flue gas. The process produces elemental sulfur or liquid SO_2 and operates at temperatures around 750° F.

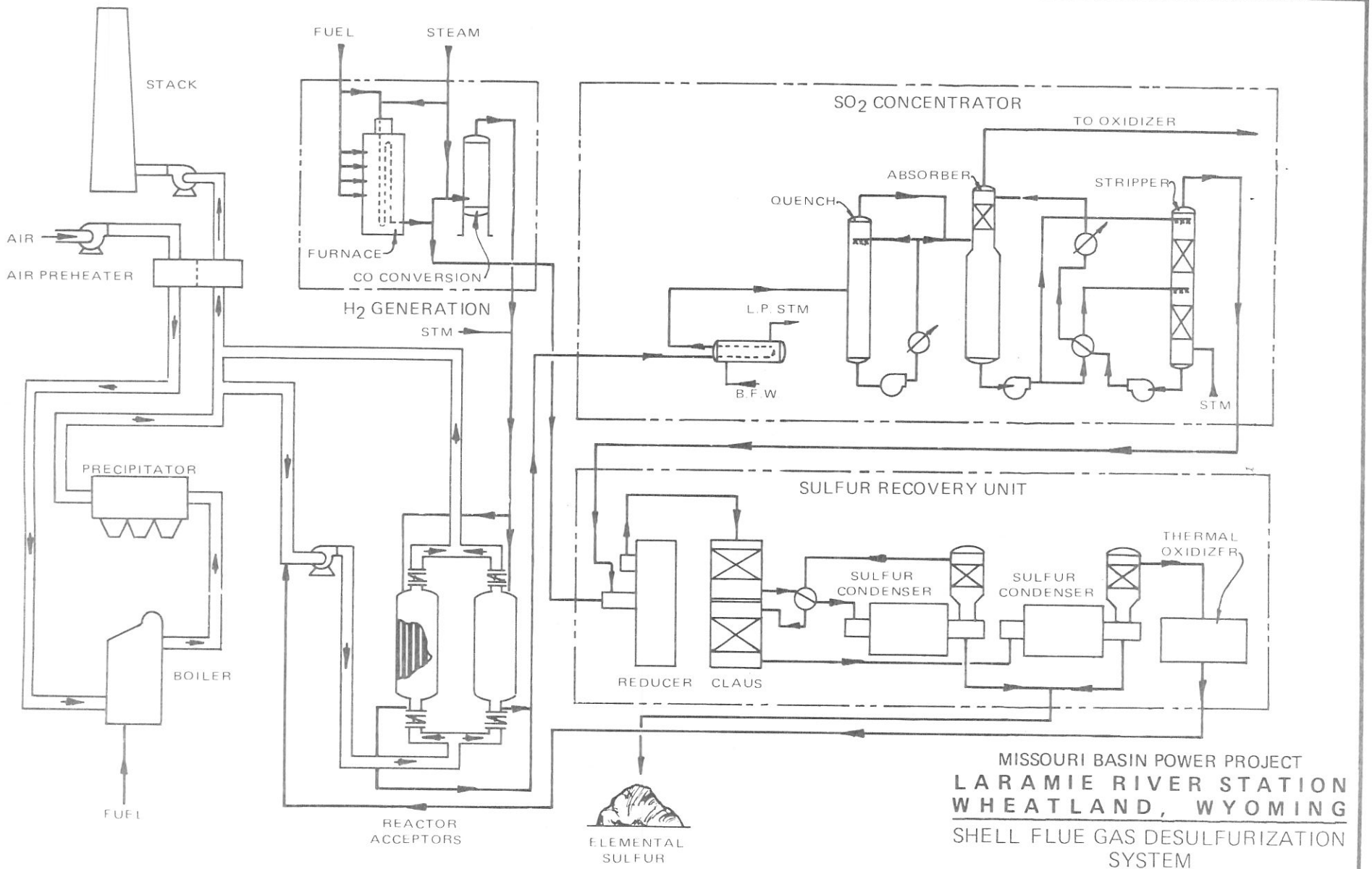
This process uses several reactors, none of which permit continuous gas flow. Rather, each reactor is cyclic, admitting flue gas for a specified period. By using several reactors in staggered sequence the total gas flow is uniform.

The first step is oxidation, where flue gas enters the reactor. The copper oxidizes and the SO_2 becomes SO_3. Next the CuO and SO_3 react to give copper sulfate.

This reaction continues until equilibrium is reached, and the reactor is closed to gas flow. The reactor is then purged by steam to remove remaining flue gas. Regeneration to elemental copper occurs with the introduction of reducing gas containing hydrogen. Sulfur dioxide is also reproduced in a more concentrated form and is removed to the recovery plant. Any remaining SO_2 is stripped from the reactor by steam purging, and the cycle is repeated.

The SO_2 product gas is cooled and dried in a quencher and dehumidification tower and then sent to a variable volume holding tank. This tank levels out SO_2 concentration differences from the various reactors. The dry, uniform SO_2 gas is then fed to a Claus plant for conversion to sulfur.

SHELL FLUE GAS DESULFURIZATION SYSTEM



SOURCE: AIR CORRECTION DIVISION
UNIVERSAL OIL PRODUCTS COMPANY

MISSOURI BASIN POWER PROJECT
LARAMIE RIVER STATION
WHEATLAND, WYOMING

SHELL FLUE GAS DESULFURIZATION SYSTEM

BURNS & McDONNELL ENGINEERING COMPANY
Engineers - Architects - Consultants
Kansas City Missouri
1975

74-012-1-000

Exhibit 5

App. 12

Research-Cottrell: Ammonia/Sulfur (See Exhibit 6)

The Ammonia Process of desulfurization by Research-Cottrell is a wet, regenerative process which uses ammonia to absorb SO_2 from flue gas. The process produces elemental sulfur.

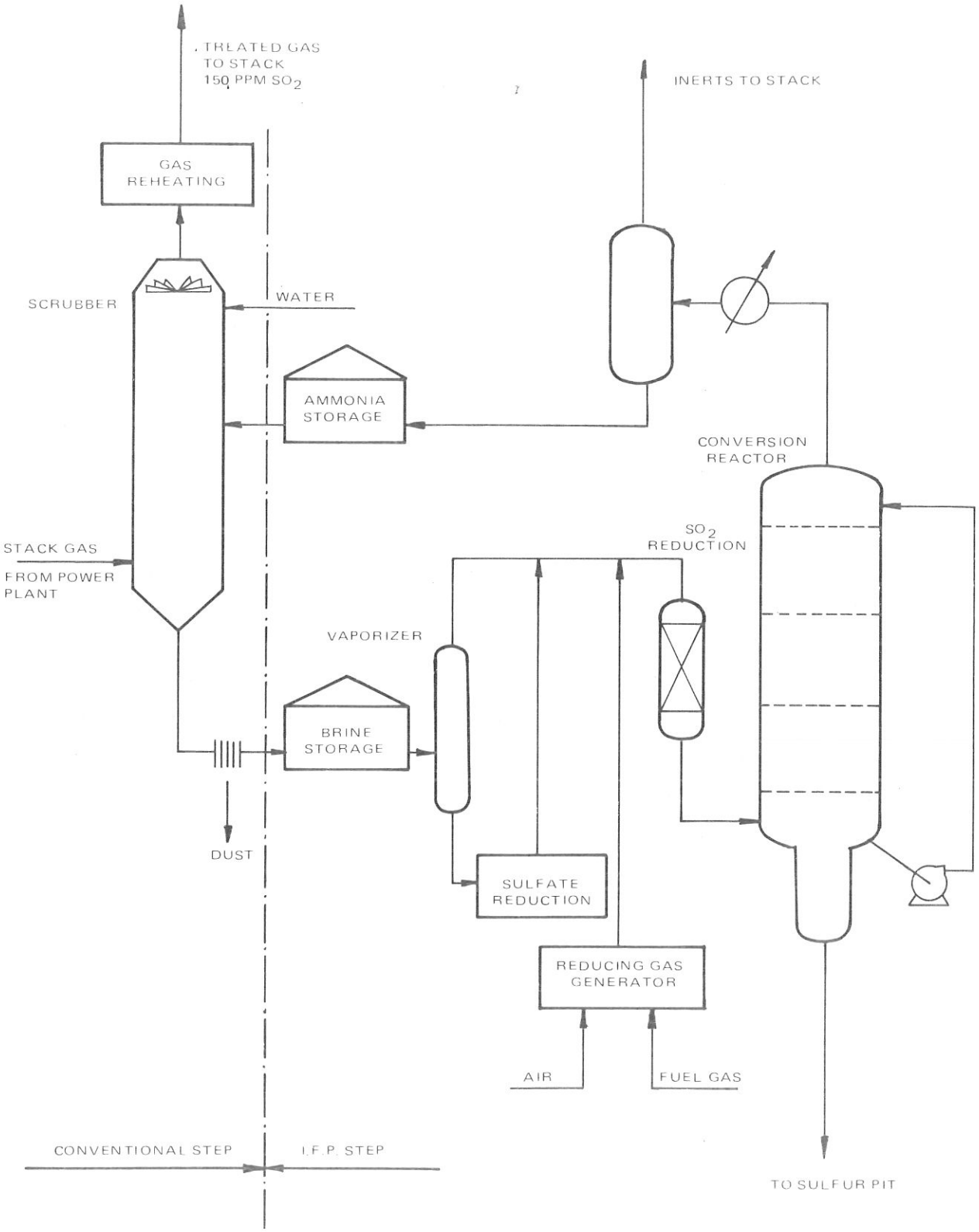
Flue gas enters a liquid Venturi device in the first step. This device cools and saturates the flue gas by evaporation of water. This water is continuously replaced by water at the saturation temperature of the flue gas.

The saturated flue gas then enters a multiple staged column and flows upward, while ammonia scrubbing liquor flows downward in a cascade pattern. Fresh brine is added at each stage as needed. The cleaned gas flows out to the stack and the spent brine exits as an underflow.

This underflow is brought into an evaporative section where the overhead consists of H_2O, NH_3, and SO_2. From the evaporative section the spent brine stream, which is about 10% ammonium sulfate, enters a submerged combustion reactor. A slipstream of sulfur is also fed into the reactor, and a reaction occurs with the products being H_2O, SO_2, and NH_3 which join with the overhead stream of the evaporative section.

Reducing gas is added to this stream with a catalyst to convert 2/3 of the SO_2 to H_2S. The H_2S, NH_3, and H_2O then enter a liquid phase Claus reactor where the elemental sulfur is decanted in molten form.

The remaining vapor stream from the Claus reactor is cooled and processed. The ammonia is recovered and sent back to the absorber for reuse. The off-gas from the ammonia recovery unit is directed to the boiler for incineration.



MISSOURI BASIN POWER PROJECT
LARAMIE RIVER STATION
WHEATLAND, WYOMING

RC/IFP PROCESS

BURNS & McDONNELL ENGINEERING COMPANY
Engineers - Architects - Consultants
Kansas City Missouri
1975

74-012-1-000 Exhibit 6

SOURCE: RESEARCH COTTRELL
AIR POLLUTION CONTROL DIVISION

Atomics International: (See Exhibit 7)

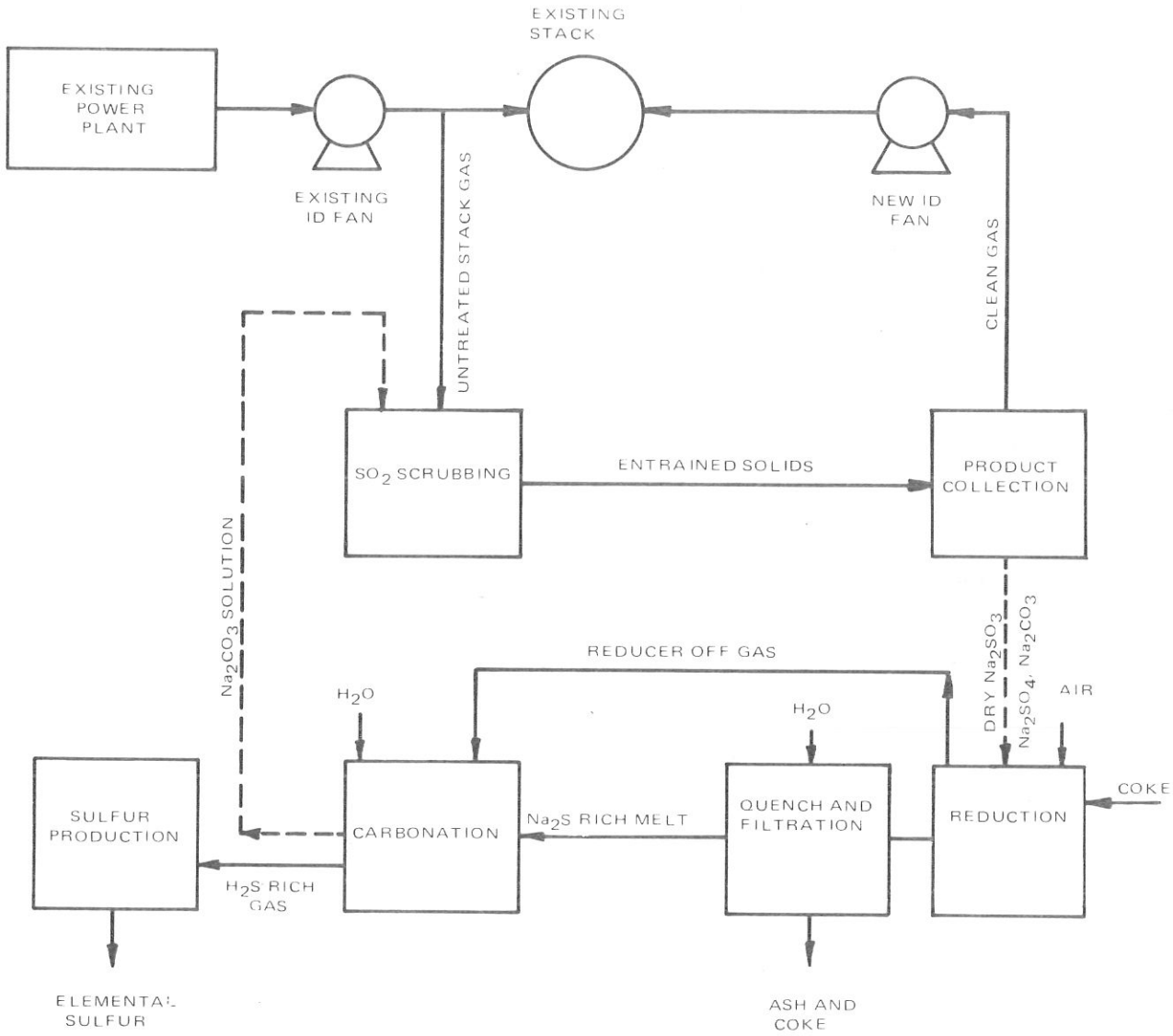
The Aqueous Carbonate Process by Atomics International is a wet-dry, regenerative process which uses sodium carbonate solution to absorb SO_2 from flue gas. The process produces elemental sulfur.

In the first step, flue gas enters a spray-dryer scrubber where it is contacted with sodium carbonate spray. The sodium carbonate reacts with the SO_2. Heat from the flue gas evaporates the water leaving dry sodium sulfite, sodium sulfate, unreacted sodium carbonate, and agglomerated ash. This stream of particulate is entrained in the flue gas and carried to a two-stage product collection system. This system may be a bank of cyclones with either an electrostatic precipitator, or a wet particulate scrubber. The cleaned gas is then moved to the stack.

The dry product is sent to a reducer to be melted in the next phase of the process. Temperatures from 1700-1900° F are necessary for this step. Carbon is mixed with the melt and reacts to form molten sodium sulfide. The melt is then quenched and dissolved in water. This solution is then filtered to remove insoluble ash and carbon.

Next the clarified solution goes to the carbonator. Here CO_2 off-gases from the reducing step carbonates the solution and regenerates the sodium carbonate solution to be recycled to the scrubber. Carbonation also produces an H_2S gas stream. This stream is sent to a Claus unit and converted to elemental sulfur.

A tail-gas stream comes from the Claus plant and is combined with other off-gas streams. This gas stream is incinerated in the boiler and returns to the gas cleaning system.



SOURCE: ATOMICS INTERNATIONAL DIVISION
ROCKWELL INTERNATIONAL

MISSOURI BASIN POWER PROJECT
LARAMIE RIVER STATION
WHEATLAND, WYOMING
ATOMIC INTERNATIONAL AQUEOUS CARBONATE PROCESS

BURNS & McDONNELL ENGINEERING COMPANY
Engineers - Architects - Consultants
Kansas City Missouri
1975

74-012-1-000 Exhibit 7

Chemico: Phosphate Process (See Exhibit 8)

The Phosphate Process of desulfurization by Chemico-Stauffer is a wet, regenerative process which uses a sodium phosphate buffer solution to remove SO_2 from flue gas. The process produces elemental sulfur and a sulfate which must be purged.

Flue gas enters the humidifier in the first step of the process. The humidifier is actually a quench chamber or Venturi scrubber which cools and saturates the flue gas by water evaporation in a process known as adibatic saturation. The evaporated water is continually replaced by water at the saturation temperature of the flue gas.

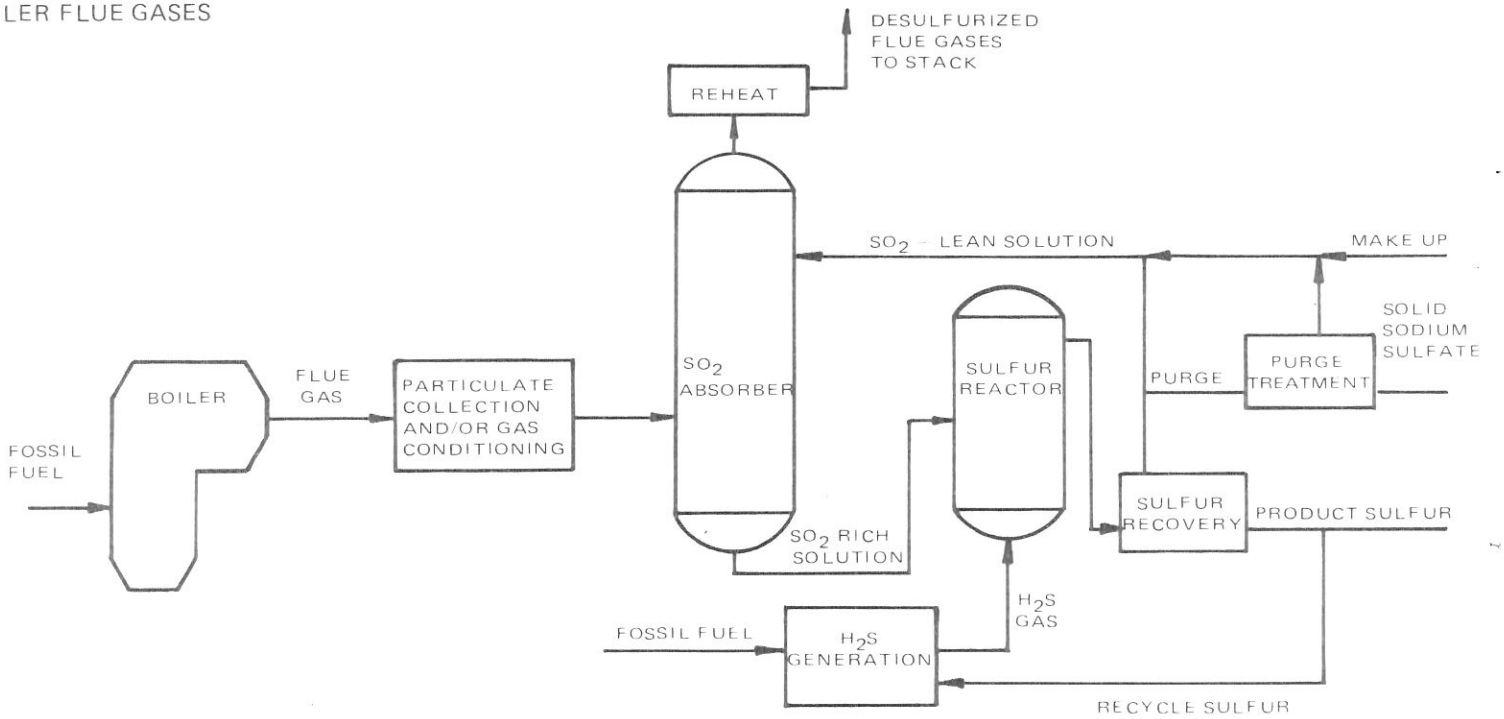
Saturated flue gas then enters the absorber tower and flows upward. Sodium phosphate solution flows downward through the packed tower and absorbs the SO_2 from the flue gas. This effluent, rich in SO_2, flows from the absorber tower to the reactor while the cleaned gas passes on to the stack.

Once in the reactor section, the absorbent solution mixes with H_2S gas. This gas is derived from a sulfur slipstream mixing with a gasified fossil fuel in the generator section. Sulfur precipitates when this H_2S gas mixes with the SO_2 in the absorbent solution.

In the final two steps, the sulfur is separated by vacuum filtration or centrifugation, and then the sulfur is autoclaved at elevated temperature and pressure.

Sulfate accumulates because of the presence of the SO_3 in the flue gas and is purged in a stream from the sulfur recovery section and treated to form a marketable, solid sodium sulfate.

PHOSPHATE PROCESS FOR INTEGRATED
AIR POLLUTION CONTROL
FROM BOILER FLUE GASES



SOURCE: CHEMICO AIR POLLUTION CONTROL COMPANY

MISSOURI BASIN POWER PROJECT
LARAMIE RIVER STATION
WHEATLAND, WYOMING
CHEMICO PHOSPHATE PROCESS
BURNS & McDONNELL ENGINEERING COMPANY
Engineers - Architects - Consultants
Kansas City Missouri
1975
74-012-1-000 Exhibit 8

MISSOURI BASIN POWER PROJECT

LLOYD A. ERNST
Manager, Wyoming Operations Office
Phone: 307-635-4231

1310 Capitol Avenue
Cheyenne, Wyoming 82001

November 19, 1975

PROJECT MANAGER

James L. Grahl
General Manager
Basin Electric Power Cooperative

PROJECT PARTICIPANTS

Tri-State G & T Association
Box 29199 Denver, CO 80229
Phone: 303-452-6111

Missouri Basin
Municipal Power Agency
309 South Duluth Avenue
Sioux Falls, SD 57104

Heartland Consumers
Power District
Drawer E Madison, SD 57042

Lincoln Electric System
1401 "O" Street
Lincoln, NB 68501

Basin Electric Power Cooperative
Provident Life Building Suite 624
316-5th Street
Bismarck, ND 58501

Mr. William Johnson, President
Platte County School District #1
Glendo, WY 82213

Dear Mr. Johnson:

This letter is intended to confirm certain understandings reached in various meetings and discussions conducted during the past several months concerning anticipated impact on the facilities of the Platte County School District #1, as a result of construction of the Laramie River Power Station and associated facilities.

It is understood that to accommodate new students that are expected to reside within the District as a result of this impact, a new elementary school building will be required several years earlier than had been previously anticipated by the District. We understand this new elementary school will be needed within the next two or three years, and, for this reason, it is imperative that planning and development efforts begin as soon as possible.

We believe that the increased enrollment for the Wheatland schools projected by the Division of Business and Economic Research of the University of Wyoming in its Socioeconomic Impact Studies associated with the Missouri Basin Power Project provide a reasonable basis for planning. As you know, these projections (hereto attached as Attachment "A") are that there will be an influx of several hundred additional elementary students beginning as early as the 1977-78 school year. The study further projects that following construction, expected long-term enrollment increases clearly substantiate the need for such a new elementary school.

The management of the Missouri Basin Power Project recognizes that the Platte County School District #1, due to previous construction programs including a new high school to be available soon, has incurred indebtedness very nearly approaching the legal and constitutional maximum limits possible under Wyoming law. The Project further recognizes that this current financial condition presents unusual problems of financing and it therefore wishes to provide reasonable and necessary assistance to assure that school facilities will be available to accommodate children of construction workers, MBPP staff personnel, consultants, and others associated with the Project.

Such being the circumstances, this letter is also written to express the intent of the Project to provide such assistance to provide a basis for the District to implement a program to include planning and development of the school facility. It is anticipated that the construction and development of the Project will very substantially increase the ad valorem tax base in School District #1 of Platte County, Wyoming, from its present valuation. It is the plan of the parties herein to continue the development of long-range financing plans and agreements whereunder architectural services, site purchase, site development, construction costs and other school costs are to be financed by mutually-acceptable arrangements.

It is anticipated that the financing can be accomplished by the Project assisting the District to secure the necessary financing from other sources by underwriting or guaranteeing the repayment of the loans, by possible "overpayment" of ad valorem taxes, or by other mutually acceptable arrangements including a "lease-purchase" plan from the Project to the School District. These plans shall be initiated, to the extent permitted by law, so that the Project, after the tax base has increased to the extent necessary, can recover the value of the actual cost of its purchase and development of the elementary school building site, architects fees, and any other moneys advanced by the terms of this agreement.

The District is hereby authorized to negotiate a written agreement with an architect for the development of the necessary plans, specifications, cost estimates and design for the new elementary school, which agreement shall be entered into subject to the written approval of the Project. From the effective date of the agreement, all progress reports by the architect shall be made both to the District and to the Project with all billings for the architect's services being directed to the Project and paid by the Project. Assuming that the proposed site for an elementary school located in the proposed Black Mountain Addition to the Town of Wheatland is acceptable to the District, the Project will make the site available to

It is further agreed between the parties that except for the recovery method or methods to be pursued as set forth in the foregoing paragraph, the District shall have no obligation to repay either for the contribution of the elementary school building site or the moneys advanced by the Project to the architect; however, title to the elementary school site shall remain in the Project until the recovery method or methods are finalized.

It is further understood and agreed that due to the very limited time available, these final arrangements should be consummated within the next 10-12 months. Nevertheless, even without final financing plans, it is agreed that the District should proceed at once with site acquisition and development of architectural plans. If the elementary school site in the Black Mountain Addition is not acceptable to the District, the District shall select another site and the Project will cooperate with the District in working out a mutually agreeable arrangement for the financing of the acquisition. It is intended that the District and the Project shall diligently and collectively pursue financing arrangements, including but not limited to, investigating such potential sources as creation of a Joint Powers Board to establish eligibility for obtaining loan funds from the Wyoming State Farm Loan Board; borrowing from the newly created Wyoming Community Development Authority; and any other possible sources so as to achieve optimum terms and conditions for long-term financing and full recovery of financial commitments by the Project.

The above expresses the intent of the Project and School District as to a course of action to make possible beginning developing of necessary school facilities.

The parties to this letter understand that it is necessary that the Project obtain necessary permits, approvals and certificates from state and federal agencies in order to construct and operate the Laramie River Power Station. In the event that the Project is unable to obtain any of the following:

a) Siting Permit from the Wyoming Industrial Siting Council.

b) Certificate of Public Convenience and Necessity from the Wyoming Public Service Commission.

c) Construction and Operating Permits from the Department of Environmental Quality of the State of Wyoming.

d) Necessary permits and approvals from the Environmental Protection Agency.

e) All other permits and approvals required by law from state and federal agencies.

or is otherwise prevented from proceeding with any phase of the Project for any reason, the Project shall have the right to terminate its commitments under the terms of this letter and shall be thereupon absolved from any liability from and after the date of such termination; however, the Project agrees that it will honor all outstanding commitments under this letter which were made prior to the date of such termination.

In order to expedite the intent of this agreement, a committee consisting of three representatives of the Project and three representatives of the Platte County School District #1 is hereby named as follows:

Project Representatives	School District
1. Bob Valeu	1.
2. Don Sherard	2.
3. Jack Askew	3.

Sincerely,

By _____
Lloyd A. Ernst, Manager
Wyoming Operations Office
Missouri Basin Power Project

By _____
William Johnson, President
Platte County School District
#1

PERMITS APPROVED
AS OF NOVEMBER 14, 1975

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

State Engineer's Office

STATE OFFICE BUILDING EAST CHEYENNE, WYOMING 82002

November 3, 1975

J. T. Banner & Assoc.
P. O. Box 550
Laramie, Wyoming 82070

Attention: Forrest M. Kepler, Jr

Dear Frosty:

This letter will serve as your notice of an extension of time for Permit No. 24814 to December 31, 1975 as you requested.

Your request for an additional 1,785,600 gallons cannot be allowed since it is not the policy of the State Engineer to increase the amount of the appropriation beyond the amount established at the time of the filing of the application.

If you need this additional water, it will be necessary to file an enlargement application and secure a permit with a later priority for the additional amount of water.

If you have any questions or if we can be of any further assistance, we would be pleased to hear from you.

Very truly yours,

James H. Aduddell
Assistant State Engineer

JHA/llp

Form S W. 1
Rev. 5-73

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

APPLICATION FOR PERMIT TO APPROPRIATE SURFACE WATER

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

Filing/Priority Date

THE STATE OF WYOMING,
STATE ENGINEER'S OFFICE } SS.

This instrument was received and filed for record on the 26th day of August, A.D. 1975, at 2:15 o'clock P. M.

James H. Aduddell
James H. Aduddell, Assistant State Engineer

Recorded in Book 93 of Ditch Permits, on Page 43.

Fee Paid $ 2.00. Map Filed S.A.

WATER DIVISION NO. 1

DISTRICT NO. 4

Temp. Filing No. 22 5/96

PERMIT NO. 24815
S.A. Book # 4

F.CARR

NAME OF FACILITY M.B.P.P. Water Treatment Pilot Testing Plant Pipeline

1. The name(s) and complete mailing address(es) of the applicant(s) is/are

Basin Electric Power Cooperative
624 Provident Life Building
Bismarck, North Dakota 58501

(If more than one applicant, designate one to act as Agent for the others)

2. Name & address of agent to receive correspondence and notices

Forrest M. Kepler, Jr., P.O. Box 550, Laramie, Wyoming 82070

3. (a) The use to which the water is to be applied is Industrial

(b) If more than one beneficial use of water is applied for, the location and ownership of the point of use must be shown in item 10 of the application and the details of the facilities used to divert and convey the appropriation must be shown on the map in sufficient detail to allow the State Engineer to establish the amount of appropriation. In multiple use applications, stock and domestic purposes are limited to 0.056 cubic feet per second.

4. The source of the proposed appropriation is Laramie River, Tributary to the North Platte River

5. The point of diversion of the proposed works is located ~~See attached map. feet distant from the corner of section T. N., R. W., and is~~ in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ of Section 6 T. 25 N., R. 65 W.

6. Are any of the lands crossed by the proposed facility owned by the State or Federal Government? If so, describe lands and indicate whether State or Federally owned.

No

7. The carrying capacity of the ditch, canal, pipeline or other facility at the point of diversion is 0.09 cubic feet per second.

8. The accompanying map is prepared in accordance with the State Engineer's Manual of Regulations and Instructions for filing applications and is hereby declared a part of this application. The State Engineer may require the filing of detailed construction plans.

9. The estimated time required for commencement of work is 2 days for completion of construction is 2 days, and to complete the application of water to the beneficial uses stated in this application is 3 months.

24814

10. The land to be irrigated under this permit is described in the following tabulation. Give irrigable acreage in each 10-acre subdivision. Designate ownership of land, federal, State or private. If private, list names of owners and land owned separately. If application is for stock, domestic, or for purposes other than irrigation, indicate point of use by 10-acre subdivision and owner.

Township	Range	Sec.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
25	65	6														X			

X = Point of use for industrial. (Pilot water treatment testing program). Not to exceed 0.09 c.f.s.

Basin Electric Power Cooperative is owner.

Note; Testing plant is located as shown above

Number of acres to receive original supply ____

Number of acres to receive supplemental supply ____

Total Number of acres to be irrigated ____

REMARKS

The purpose of this permit is to obtain water from the Laramie River to use in a pilot water treatement testing program. The pilot testing equipment will be located as shown on the accompanying map. Testing operations will involve the pumpage of water from the Laramie River through a 3-inch plastic pipeline for about 50 feet to the test plant. The test plant will consist of a refrigeration unit and one or more water treatment units. About 20 gpm will be required for water treatment and about 20 gpm will be required for cooling purposes.

~~All sludge generated in the pilot testing program will be collected in two or more stock tanks and retained for ultimate disposal during land-clearing operations for the future reservoir. Supernatant from the settled sludge, along with treated water and cooling water, will be used to irrigate nearby grassland.~~ FC

All river water receiving treatment will undergo hardness reduction and clarification. Treated water will, therefore, be of better water quality than the original river water. All river water used for cooling will undergo no change in water quality.

We expect the pilot testing program to run through approximately three months of continuous operation. Our tentative start date is the first week in September 1975.

Water will be diverted from the Laramie River at a rate of 0.09 c.f.s. (40 gpm) not to exceed 57,600 gallons per day, for a total of 5,184,000 gallons. The total amount of water to be diverted over a period of 90 days, the time required to complete the testing program.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Signature of Applicant or Agent

August 22, 1975
Date

THE STATE OF WYOMING,
STATE ENGINEER'S OFFICE } SS.

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant ~~refer~~ the same subject to the following limitations and conditions:

This permit grants only the right to use the water available in the stream after all prior rights are satisfied.

The amount of appropriation shall be limited to the amount used for a temporary industrial (water treatment pilot testing plant) purpose, not to exceed 0.09 cubic feet of water per second of time, 57,600 gallons per day, or a total of 5,184,000 gallons.

The appropriation granted under this permit shall extend for only the period of time required to complete the testing program, with the plant located in the NW¼ NE¼ Section 6, T.25N., R.65W., and in no case will extend beyond November 30, 1975 and will be automatically cancelled on that date unless extended by proper request for extension of time.

This permit is granted with the condition that the permittee must notify the District Water Commissioner prior to diverting water during the irrigation season. No water shall be diverted unless there is surplus water in the system.

The notices of commencement, completion and beneficial use are waived and will not be required because of the type of conveyance facilities.

No final proof of appropriation to be accepted under this permit.

~~The time for commencement of construction work shall terminate on _____.~~

~~The time for completing the work shall terminate on December 31, 19_____.~~

~~The time for completing the application of water to beneficial use shall terminate on December 31, 19_____, and final proof of appropriation shall be made within 5 years thereafter.~~

Witness my hand this 28th day of August, A.D. 19 75.

George L. Christopulos, State Engineer

Permit No. 24814

Page No. 43

PERMIT NO. 24814
S.A. Book # 4

PERMIT STATUS

Priority Date August 26, 1975 Approval Date August 28, 1975

NOTICE

A Manual of Regulations and Instructions for filing applications will be furnished by the State Engineer's Office upon request. By carefully complying with the instructions contained in the Manual, much trouble and delay will be saved the applicant, the professional engineer or land surveyor, and the State Engineer's Office.

This application must be accompanied by maps in duplicate, prepared in accordance with the Manual, and by a filing fee of Two Dollars ($2.00).

Applications returned for corrections must be resubmitted to the State Engineer within 90 days with the corrections properly made; otherwise the filing will be canceled.

This application, when approved, does not constitute a complete water right. It is your authority to begin construction work, which must be commenced within the time allowed in the permit.

All appropriations for irrigation are limited to 1 cubic foot per second of time for each 70 acres of land irrigated, except as provided in Section 41-181, Wyo. Statutes, 1957. Appropriations for other uses are limited to the amount of water beneficially used in accordance with the terms of this permit.

Notice of commencement of work, completion of the work, and of application of the water to the beneficial uses described in the permit, must be filed in the State Engineer's Office before the expiration of the time allowed in the permit.

If extensions of time beyond the time limits set forth in the permit are required, requests for same must be in writing, stating why the additional time is required, and must be received in the State Engineer's Office before the expiration of the time allowed in the permit.

To perfect your water right, notify your Water Division Superintendent that you are ready to submit final proof. This notice should be sent to the Superintendent as soon as possible after you apply the water to the beneficial uses described in your permit. When you have submitted your proof before the Superintendent, it will be considered by the State Board of Control, and, if found to be satisfactory, the Board will issue to you a Certificate of Appropriation which will constitute a completed water right.

The granting of a permit does not constitute the granting of right-of-way. If any right-of-way is necessary in connection with the application it should be understood that this responsibility is the applicant's.

NOTE: "DO NOT FOLD THIS FORM. --ONLY FORMS COMPLETED WITH TYPEWRITER OR NEATLY LETTERED WITH BLACK WATER-PROOF INK WILL BE ACCEPTED."

F.CARR

Form C-1
Rev. 3-71

MICRO FILMED FB 2675

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

Filing/Priority Date

THE STATE OF WYOMING } SS.
STATE ENGINEER'S OFFICE }

This instrument was received and filed for record on the 24 day of April, A.D. 19 73, at 9:00 o'clock A.M.

James H. Aduddell

James H. Aduddell, Asst. State Engineer

Recorded in Book 31 of Reservoirs, on Page 103. Fee Paid $ 2.00. Map Filed F.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

APPLICATION FOR PERMIT TO APPROPRIATE SURFACE WATER

WATER DIVISION NO. 1

PERMIT NO. 7649 F RESERVOIR

DISTRICT NO. 4

Temp. Filing No. 21 1/220

NAME OF FACILITY

THE GRAYROCKS RESERVOIR

I, Forrest M. Kepler, Jr.

of Laramie (City or Town), County of Albany

State of Wyoming, for myself, or in behalf of the applicant or applicants named in Item 1, do say:

1. The name(s) and complete mailing address(es) of the applicant(s) is/~~are~~ Basin Electric Power Cooperative
~~Wheatland Rural Electric Association~~ 624 Provident Life Building
~~Wheatland, Wyoming 82201~~ Bismarck, North Dakota 58501

(If more than one applicant, designate one to act as Agent for the others)

2. The use to which the water is to be applied is Industrial and ~~Energy~~ Recreation

3. The source of the proposed appropriation is Laramie River, tributary to the North Platte River.

4. The outlet of the proposed reservoir is located S. 34° 00' W. - 3,430 feet distant from the Northeast corner of Section 32 T. 26 N., R. 65 W., and is in the NW¼ of the SE¼ of Section 32 T. 26 N., R. 65 W.

The formation at the outlet consists of Bedrock and Alluvium

5. Fill out either (a) or (b).

(a) The reservoir is located in the channel of Laramie River

(b) The reservoir is to be filled through the ——— Canal, which has a carrying capacity of ——— cubic feet per second.

6. (a) The area of the high-water line of the reservoir is 3796.7 acres.

(b) The total available capacity of the reservoir is 115,178 acre-feet.

(c) If enlargement, the capacity of the enlargement is ——— acre-feet.

(d) Reservoir Capacity Breakdown by Uses
Dead Storage - 3524.5 (Recreatio
Industrial ~~and Energy~~ - 111,653.5

7. (a) The dam is to be constructed as follows: Earth embankment, 104 feet high at the maximum height. Natural stone riprap will protect the upstream water surface

Contents = 1,700,000 Cubic Yards.

(b) The water face of the dam is to be protected from wave action in the following manner:
Rock riprap 4' thick with 2' bedding

8. The estimated cost of said work is 7,500,000.00 Dollars.

~~9. Construction work will begin within 1 year from date of approval of this application.~~

10. The estimated time required for completion of the works is two year(s).

11. The accompanying map is prepared in accordance with the State Engineer's Manual of Regulations and Instructions for filing applications and is hereby declared a part of this application.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Signature of Applicant or Agent

Date

Permit No. 7649 Ex

Page No. 103

THE STATE OF WYOMING,)
) SS
STATE ENGINEER'S OFFICE)

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant ~~approved~~ the same subject to the following limitations and conditions:

This permit grants only the right to use the water available in the stream after all prior rights are satisfied below elevation 434
Since the plans show that no outlet works are contemplated, the State Engineer may upon proper complaint by other interested water appropriators or appropriator, or when in his judgment it is necessary, require the later installation of such necessary outlet works as will permit proper regulation.

This permit is granted with the condition that the permit will be amended by petition to the State Engineer to amend the dam location, contours and capacity within one hundred and eighty days of approval of this application. Final construction plans must be filed for review and approval by the State Engineer one hundred and eighty days prior to the commencement of construction.

The time allowed for commencing construction under this permit shall expire on December 31, 19 76.

The time for completing the construction of the reservoir shall terminate on December 31, 19 77.

Witness my hand this 11th day of FEBRUARY, A. D. 19 75.

George L. Christopulos
State Engineer.
George L. Christopulos, Acting,

Permit No. 7649 Res.

Page No. 103
(Leave Blank)

NOTE: If construction under this application is for enlargement of an existing reservoir a consent to this enlargement should be attached hereto from the present owners.

REMARKS

PERMIT NO. 7649 RES.
F

PERMIT STATUS

Priority Date April 24, 1973 Approval Date February 11, 1975

November 13, 1974 - The Wheatland Rural Electric Association does hereby transfer and assign all their right, title and interest of whatsoever nature in and to Permit No. 7649 Res., to the Basin Electric Power Cooperative of Bismarck, North Dakota, their heirs, transfers or assigns forever. See Miscellaneous Notices, Permit No. 7649 Res.

NOTICE

A Manual of Regulations and Instructions for filing applications will be furnished by the State Engineer's Office upon request. By carefully complying with the instructions contained in the Manual, much trouble and delay will be saved the applicant, the professional engineer or land surveyor, and the State Engineer's Office.

This application must be accompanied by maps in duplicate, prepared in accordance with the Manual, and by a filing fee of Two Dollars ($2.00).

Applications returned for corrections must be resubmitted to the State Engineer within 90 days with the corrections properly made; otherwise the filing will be canceled.

This application, when approved, does not constitute a complete water right. It is your authority to begin construction work, which must be commenced within one year from the date of approval of this application.

Notice of commencement of work, completion of the work, described in the permit, must be filed in the State Engineers Office before the expiration of the time allowed in the permit.

If extensions of time beyond the time limits set forth in the permit are required, requests for same must be in writing, stating why the additional time is required, and must be received in the State Engineer's Office before the expiration of the time allowed in the permit.

To perfect your water right, notify your Water Division Superintendent that you are ready to submit final proof. This notice should be sent to the Superintendent as soon as possible after the terms of the permit have been complied with. When you have submitted your proof before the Superintendent, it will be considered by the State Board of Control, and, if found to be satisfactory, the Board will issue to you a Certificate of Construction which will constitute a completed water right.

The granting of a permit does not constitute the granting of right-of-way. If any right-of-way is necessary in connection with the application it should be understood that this responsibility is the applicant's.

NOTE: "DO NOT FOLD THIS FORM. --ONLY FORMS COMPLETED WITH TYPEWRITER OR NEATLY LETTERED WITH BLACK WATER-PROOF INK WILL BE ACCEPTED."

P. H. Thompson

Form A-1
Rev. 3-71

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

Filing/Priority Date

THE STATE OF WYOMING } SS.
STATE ENGINEER'S OFFICE }

The original of
/ This instrument was received and filed for record on the 2 day of April, A.D. 1973, at 10:00 o'clock A. M.

James H. Aduddell, Ass't. State Engineer

Recorded in Book 91 of Applications, on Page 511. Fee Paid $ 2.00. Map Filed E.
Sub. Application rec. 1-13-75 @ 1:00 P.M.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

SUBSTITUTE AMENDED

/ APPLICATION FOR PERMIT TO APPROPRIATE SURFACE WATER

WATER DIVISION NO. 1

PERMIT NO. 24551

E-16

DISTRICT NO. 4

Temp. Filing No. 21 6/214

NAME OF FACILITY Laramie River Pipeline

I, Forrest M. Kepler, Jr.

of Laramie (City or Town), County of Albany

State of Wyoming, for myself, or in behalf of the applicant or applicants named in Item 1, do say:

1. The name(s) and complete mailing address(es) of the applicant(s) is/are Basin Electric Power Cooperative, Suite 624, Provident Life Building 316 North Fifth Street, Bismarck, North Dakota 58501

(If more than one applicant, designate one to act as Agent for the others)

2. The use to which the water is to be applied is Industrial ~~for cooling by evaporation & other pur~~ SEE REMARKS

3. The source of the proposed appropriation is Laramie River - Tributary of North Platte River

4. The point of diversion of the proposed works is located N 27°15' E 1750 feet distant from the NE corner of Section 26 T. 25 N., R. 67 W., and is in the ~~NWSW~~ NW¼ SW¼ of Section 24 T. 25 N., R. 67 W.

5. The said ditch, canal, pipeline or other facility is to be 1.8 miles long.

6. (a) The carrying capacity of the ditch, canal, pipeline or other facility at the point of diversion is 50 cubic feet per second.

(b) If pipeline, size of pipe 36 inches.

7. The estimated cost of said work is $4,675,000.00 Dollars.

~~8. Construction work will begin within 1 year from date of approval of this application.~~

9. The estimated time required for completion of the works is 3 year(s).

10. The estimated time required to complete the application of water to the beneficial uses stated in this application is 5 year(s).

11. The accompanying map is prepared in accordance with the State Engineer's Manual of Regulations and Instructions for filing applications and is hereby declared a part of this application.

17. The land to be irrigated under this permit is described in the following tabulation: (Give irrigable acreage in each 40 acre subdivision. Designate ownership of land, federal, State or private. If private, give names of owners.) If application is for stock or domestic purposes, indicate point of use [illegible] acre subdivision.

Township	Range	Sec.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			~~FOR INDUSTRIAL PURPOSES ONLY WITHIN THE POWER PLANT SITE~~																
			~~BOUNDARY AS SHOWN ON THE ACCOMPANYING PLAN AND AS GENERALLY~~																
			~~DEFINED BELOW, NOT TO EXCEED 50.0 C.F.S.~~																
			~~Applicant is owner~~																
~~25~~	~~67~~	~~27~~	~~ALL~~			~~(Primary point of use is Power Plant located~~											~~x~~	~~x~~	
~~25~~	~~67~~	~~28~~	~~ALL~~																
~~25~~	~~67~~	~~29~~	~~ALL~~																
~~25~~	~~67~~	~~21~~	~~ALL OF THE SECTION LYING SOUTH OF THE LARAMIE RIVER AS BELOW~~																
					~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	
~~25~~	~~67~~	~~22~~	~~ALL OF THE SECTION LYING SOUTH OF THE LARAMIE RIVER AS BELOW~~																
					~~x~~	~~x~~			~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	
			FOR INDUSTRIAL PURPOSES ONLY AT THE POINT OF USE DESCRIBED																
			BELOW, NOT TO EXCEED 50.0 C.F.S.																
			Applicant is owner:																
25	67	27							Point of Industrial Use----------								x	x	

Number of acres to receive original supply ---

Number of acres to receive supplemental supply ---

Total Number of acres to be irrigated ---

REMARKS

The industrial use will primarily be evaporative cooling, plant support purposes such as, fire protection, drinking, sanitation and for maintenance of grounds surrounding the plant, i.e., dust abatement, watering of lawns, trees, shrubs and flowers.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Signature of Applicant or Agent

11/13/15
Date

THE STATE OF WYOMING,)
STATE ENGINEER'S OFFICE) SS.

Substitute application. Original application filed in Miscellaneous Notices, Permit No. 24551

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant ~~reject~~ the same subject to the following limitations and conditions:

This permit grants only the right to use the water available in the stream after all prior rights are satisfied.

The amount of appropriation shall be limited to the amount beneficially used for industrial purposes on or before December 31, 1977, not to exceed 50 cubic feet of water per second of time.

The time allowed for commencing construction under this permit shall expire on December 31, 1976.

~~Construction of proposed work shall begin within 1 year from the date of approval.~~

The time for completing the work shall terminate on December 31, 19 77

The time for completing the application of water to beneficial use shall terminate on December 31, 19 77 and final proof of appropriation shall be made within 5 years thereafter.

~~The amount of appropriation shall be limited to 1 cubic foot per second of time for each 70 acres of land reclaimed on or before December 31, 19____, except as provided in Section 41-184, Wyoming Statutes, 1957, and the additional volume used for _____ purposes on or before said date.~~

Witness my hand this 11th day of FEBRUARY, A. D. 1975.

George L. Christopulos

George L. Christopulos, Acting State Engineer

Permit No. 24551

Page No. 510 (Leave Blank)

PERMIT NO. 24551

E-16

PERMIT STATUS

Priority Date April 2, 1973 Approval Date February 11, 1975

January 26, 1974 -- Assignment of all right, title, and interest in and to this application (permit) from Wheatland Irrigation District to Basin Electric Power Cooperative received and filed in Miscellaneous Notices, Permit No. 24551.

NOTICE

A Manual of Regulations and Instructions for filing applications will be furnished by the State Engineer's Office upon request. By carefully complying with the instructions contained in the Manual, much trouble and delay will be saved the applicant, the professional engineer or land surveyor, and the State Engineer's Office.

This application must be accompanied by maps in duplicate, prepared in accordance with the Manual, and by a filing fee of Two Dollars ($2.00).

Applications returned for corrections must be resubmitted to the State Engineer within 90 days with the corrections properly made; otherwise the filing will be canceled.

This application, when approved, does not constitute a complete water right. It is your authority to begin construction work, which must be commenced within one year from the date of approval of this application.

Notice of commencement of work, completion of the work, and of application of the water to the beneficial uses described in the permit, must be filed in the State Engineer's Office before the expiration of the time allowed in the permit.

If extensions of time beyond the time limits set forth in the permit are required, requests for same must be in writing, stating why the additional time is required, and must be received in the State Engineer's Office before the expiration of the time allowed in the permit.

To perfect your water right, notify your Water Division Superintendent that you are ready to submit final proof. This notice should be sent to the Superintendent as soon as possible after you apply the water to the beneficial uses described in your permit. When you have submitted your proof before the Superintendent, it will be considered by the State Board of Control, and, if found to be satisfactory, the Board will issue to you a Certificate of Appropriation which will constitute a completed water right.

The granting of a permit does not constitute the granting of right-of-way. If any right-of-way is necessary in connection with the application it should be understood that this responsibility is the applicant's.

Submitted
Nov 14, 1975

FORM APPROVED
OMB No. 158–R0100

FOR AGENCY USE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER

STANDARD FORM C – MANUFACTURING AND COMMERCIAL

SECTION I. APPLICANT AND FACILITY DESCRIPTION

Unless otherwise specified on this form all items are to be completed. If an item is not applicable indicate 'NA.'

ADDITIONAL INSTRUCTIONS FOR SELECTED ITEMS APPEAR IN SEPARATE INSTRUCTION BOOKLET AS INDICATED. REFER TO BOOKLET BEFORE FILLING OUT THESE ITEMS.

Please Print or Type

1. Legal Name of Applicant (see instructions)	101	Basin Electric Power Cooperative
2. Mailing Address of Applicant (see instructions) Number & Street	102a	1717 E. Interstate Avenue
City	102b	Bismarck
State	102c	North Dakota
Zip Code	102d	58501
3. Applicant's Authorized Agent (see instructions) Name and Title	103a	Mr. Albert D. Francis Manager of Design and Construction
Number & Street Address	103b	(Same as 2)
City	103c	"
State	103d	"
Zip Code	103e	"
Telephone	103f	701 (Area Code) 233-0441 (Number)
4. Previous Application If a previous application for a National or Federal discharge permit has been made, give the date of application. Use numeric designation for date.	104	75 (YR) 02 (MO) 28 (DAY)

I certify that I am familiar with the information contained in this application and that to the best of my knowledge and belief such information is true, complete, and accurate.

Albert D. Francis — Printed Name of Person Signing

102e — Manager of Design and Construction — Title

YR MO DAY

Signature of Applicant or Authorized Agent

102f — Date Application Signed

18 U.S.C. Section 1001 provides that:

Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and wilfully falsifies, conceals or covers up by any trick, scheme, or device a material fact, or makes any false, fictitious or fraudulent statement or representation, or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than five years, or both.

FOR AGENCY USE

OFFICE: ____ EPA Region Number
____ State

Received ____ YR MO DAY

FOR AGENCY USE

5. **Facility/Activity** (see instructions) Give the name, ownership, and physical location of the plant or other operating facility where discharge(s) does or will occur.

Name	105a	Laramie River Station Steam Electric Generating Facility
Ownership (Public, Private or Both Public and Private)	105b	☐ PUB ☐ PRV ☒ BPP
Check block if Federal Facility and give GSA Inventory Control Number	105c	☐ FED
	105d	N/A
Location Street & Number	105e	N/A
City	105f	Wheatland
County	105g	Platte
State	105h	Wyoming

6. **Nature of Business** State the nature of the business conducted at the plant or operating facility.

	106a	Electrical Power Generation and Transmission
	106b	AGENCY USE

7. **Facility Intake Water** (see instructions) Indicate water intake volume per day by sources. Estimate average volume per day in thousand gallons per day.

Municipal or private water system	107a	N/A thousand gallons per day
Surface water	107b	16,390± thousand gallons per day
Groundwater	107c	500± thousand gallons per day
Other*	107d	294± thousand gallons per day
Total Item 7	107e	17,184± thousand gallons per day
*If there is intake water from 'other,' specify the source.	107f	Stormwater

8. **Facility Water Use** Estimate average volume per day in thousand gallons per day for the following types of water usage at the facility. (see instructions)

Noncontact cooling water	108a	N/A thousand gallons per day
Boiler feed water	108b	430± thousand gallons per day
Process water (including contact cooling water)	108c	16,235± thousand gallons per day
Sanitary water	108d	5± thousand gallons per day
Other*	108e	N/A thousand gallons per day
Total Item 8	108f	16,670± thousand gallons per day
*If there are discharges to 'other,' specify.	108g	
If there is 'Sanitary' water use, give the number of people served.	108h	200± people served

FORM APPROVED
OMB No. 158-R0100

FOR AGENCY USE

9. All Facility Discharges and other Losses; Number and Discharge (see instructions) Volume Specify the number of discharge points and the volume of water discharged or lost from the facility according to the categories below. Estimate average volume per day in thousand gallons per day.

		Number of Discharge Points		Total Volume Used or Discharged, Thousand Gal/Day
Surface Water	109a1	1	109a2	294±
Sanitary wastewater transport system	109b1	1	109b2	0
Storm water transport system	109c1	N/A	109c2	N/A
Combined sanitary and storm water transport system	109d1	N/A	109d2	N/A
Surface Impoundment with no effluent	109e1	4	109e2	0
Underground percolation	109f1	4	109f2	790±
Well Injection	109g1	N/A	109g2	N/A
Waste acceptance firm	109h1	N/A	109h2	N/A
Evaporation	109i1	5	109i2	15,730±
Consumption	109j1	N/A	109j2	N/A
Other*	109k1	3	109k2	370±
Facility discharges and volume Total Item 9.	109l1	7	109l2	17,184±

*If there are discharges to 'other,' specify. 109m1 Cooling Tower Drift (140,000 gpd). Sludge Retention (230,000 gpd).

10. Permits, Licenses and Applications None to Date
List all existing, pending or denied permits, licenses and applications related to discharges from this facility (see instructions).

110	Issuing Agency (a)	For Agency Use (b)	Type of Permit or License (c)	ID Number (d)	Date Filed YR/MO/DA (e)	Date Issued YR/MO/DA (f)	Date Denied YR/MO/DA (g)	Expiration Date YR/MO/DA (h)
1.								
2.								
3.								

11. Maps and Drawings
Attach all required maps and drawings to the back of this application. (see instructions)

12. Additional Information

112 Item Number	Information
	See Attachment for complete explanation of Items 7, 8 and 9 and for additional information.

ATTACHMENT

Re: Standard Form C - Item #12 "Additional Information"

MISSOURI BASIN POWER PROJECT

Item 7 - Facility Intake Water:

107a. - Not applicable.

107b. - Intake water will be pumped from the proposed Grayrocks Reservoir approximately 15 miles east of the facility on the Laramie River (See Location Map). Water use will vary with plant loading and climatic conditions.

107c. - A well field will be developed at the Johnson Ranch northeast of the plant site (See Location Map). The wells will be used to augment the supply from the Grayrocks Reservoir. The maximum proposed yield from the well field would be 4,500,000 gpd. The frequency with which the well field is pumped will depend on climatic and hydrogeologic conditions.

Also a well is planned at the plant site for use during construction. The anticipated yield for the construction well is 290,000 gpd.

107d. - The rate of stormwater runoff will vary according to the yearly rainfall distribution storm intensity, and runoff characteristics of the drainage area. The present average annual rainfall runoff from the area is approximately 1.0 inch. The total area draining through the site is 3,950 acres. Some additional runoff in the form of irrigation water from locations off the immediate plant site is anticipated. Runoff from the coal pile will be segregated.

Item 8 - Facility Water Use:

108a. - Not applicable.

108b. - 430,000 gpd; boiler feed water for three 500 megawatt units. Of this amount, 210,000 gpd will be returned to the on-site water storage for retreatment and reuse.

108c. - Most of the water consumed will be used in the cooling system. The water will first be softened in the water treatment plant (See Water Flow Schematic). Some water will be lost in the treatment plant as sludge. This sludge, however, will be used by the limestone SO_2 absorber and will be accounted for later.

The process water will then be fed into the circulating cooling system. Consumption will be by evaporation and drift at the cooling towers. The rate of water consumption will vary with the plant loading and climatic conditions. To prevent scaling, some water will be bled off

the system. This water will be reused in the limestone SO_2 absorber and is accounted for later. The total consumptive use for the cooling water system is 13,820,000 gpd.

The limestone SO_2 absorber will use water to scrub the flue gas. The makeup water will be cooling tower blowdown and water treatment plant sludge. Consumption will be by evaporation and water retention in the sludge produced by the process. The total consumptive use for the limestone SO_2 absorber is 1,640,000 gpd.

The Demineralizer System will process ultra-pure water for use in the boilers. The system will probably utilize conventional exchange and reverse osmosis. Water consumption in the treatment process will occur as regeneration water and RO reject. Total consumption will be 640,000 gpd. The waste will be drained to the ash pond where it will be used for sluicing water.

Some water, indicated as Power Plant Services on the Water Flow Schematic, will be used for miscellaneous processes. This includes items such as pump, seal water and floor drain wastes. Consumption is estimated to be about 25,000 gpd. This water will go to an oil separator and then to the ash pond.

The Ash Sluice System uses water to transport ash from the plant to a disposal pond. The water is then recycled. Losses occur by evaporation, retention of water in the ash, and seepage from the pond.

108d. - Sanitary wastes account for the remainder of service water. Approximately 200 employees will regularly work at the proposed plant.

During construction, a maximum of 2000 people may be at the plant site. The sanitary sewage system will be built to handle the high construction load and, later on, be incorporated into the normal plant operation.

108e. - Not applicable.

108f. - The total Facility Water Use differs from the Facility Intake Water for the following reasons:

210,000 gpd of boiler blowdown is reused.

Approximately 140,000 gpd of intake water will be evaporated in the storage pond. Approximately 290,000 gpd of intake water will be lost as seepage.

Stormwater is not utilized (294,000 gpd).

Item 9 - All Facility Discharges and Other Losses:

109a. - The immediate plant site drains to a ditch west of the generating units. The discharge point is indicated on the attached site plan and is designated as follows:

Serial Number	Discharge Point Name
001	Unnamed Ditch to Laramie River (below runoff Retention Pond).

Stormwater discharges via discharge point 001 will pass through the Stormwater Retention Pond. The pond will be of sufficient volume to retain runoff from a 10-year rainfall of 24-hour duration. The impoundment will have a controlled discharge to release stored water after each runoff occurrence. Discharges from this point will be monitored for pH and suspended solids during construction.

A coal pile runoff retention pond will be provided to receive runoff from the coal storage area. This impoundment will be designed as an evaporative, nondischarging facility.

109b. - During construction, sanitary wastes will be conveyed to a treatment plant and then to an evaporative pond.

After construction, the sanitary waste flow will decrease substantially. The treatment plant will then discharge to the Ash Pond where the effluent will be used as Ash Sluicing water. The evaporative pond will be incorporated into an emergency holding pond.

109c. - Not applicable: No major stormwater transportation systems are included in the project. All stormwater will be conveyed as described in item 109a.

109d. - Not applicable.

109e. - There will be four (4) surface impoundments with no effluent. They are as follows:

Item
On-Site Raw Water Storage
Coal Pile Runoff Retention Pond
Bottom Ash Disposal Pond
Emergency Holding Pond (Construction Sewage Lagoon)

109f. - On-site ponds will be treated with a sealant to control underground percolation. The seepage rates shown on the Schematic of Water Flow are based on a Coefficient of Permeability of 7.3×10^{-6}. It is anticipated that this relatively low permeability can be achieved with the use of sealants.

A groundwater monitoring program is planned to check for potential groundwater pollution. This will include monitoring of the Laramie River.

109g. - Not applicable.

109h. - Not applicable.

109i. - Evaporation losses will account for most of the water consumption associated with this project. Most of the evaporation will occur in the cooling towers and the Limestone SO_2 Absorber with the balance occurring in ponds.

The net annual average evaporation for the Wheatland area is 2.7 ft/yr. This evaporation will be utilized by constructing ponds of sufficient size to evaporate the waste streams. Wastes that will be disposed of in this manner are Coal Pile Runoff and Sewage, during construction.

109j. - Not applicable.

109k. - Drift from the cooling towers will account for approximately 140,000 gpd. Retention in Bottom Ash and SO_2 Absorber Sludge will account for 230,000 gpd.

1091. - There will be six total points of discharge or loss. They are as follows:

Point	Category of Loss
On-Site Water Storage	Evaporation, Seepage
Cooling Towers	Evaporation, Drift
Limestone SO_2 Absorber	Evaporation, Sludge Retention
Ash Pond	Evaporation, Ash Retention, Seepage
Boilers	Evaporation (Steam)
Coal Pile Runoff Retention Pond	Evaporation
Stormwater Discharge 001	Surface Water

ADDITIONAL INFORMATION:

The Schematic of Water Flow shows the plan of operation when all systems are functioning normally. In the event of equipment malfunctions, the normal water flow plan will have to be altered to preclude discharge of process wastes. These modes of operation are shown by the dashed lines on the Schematic of Water Flow.

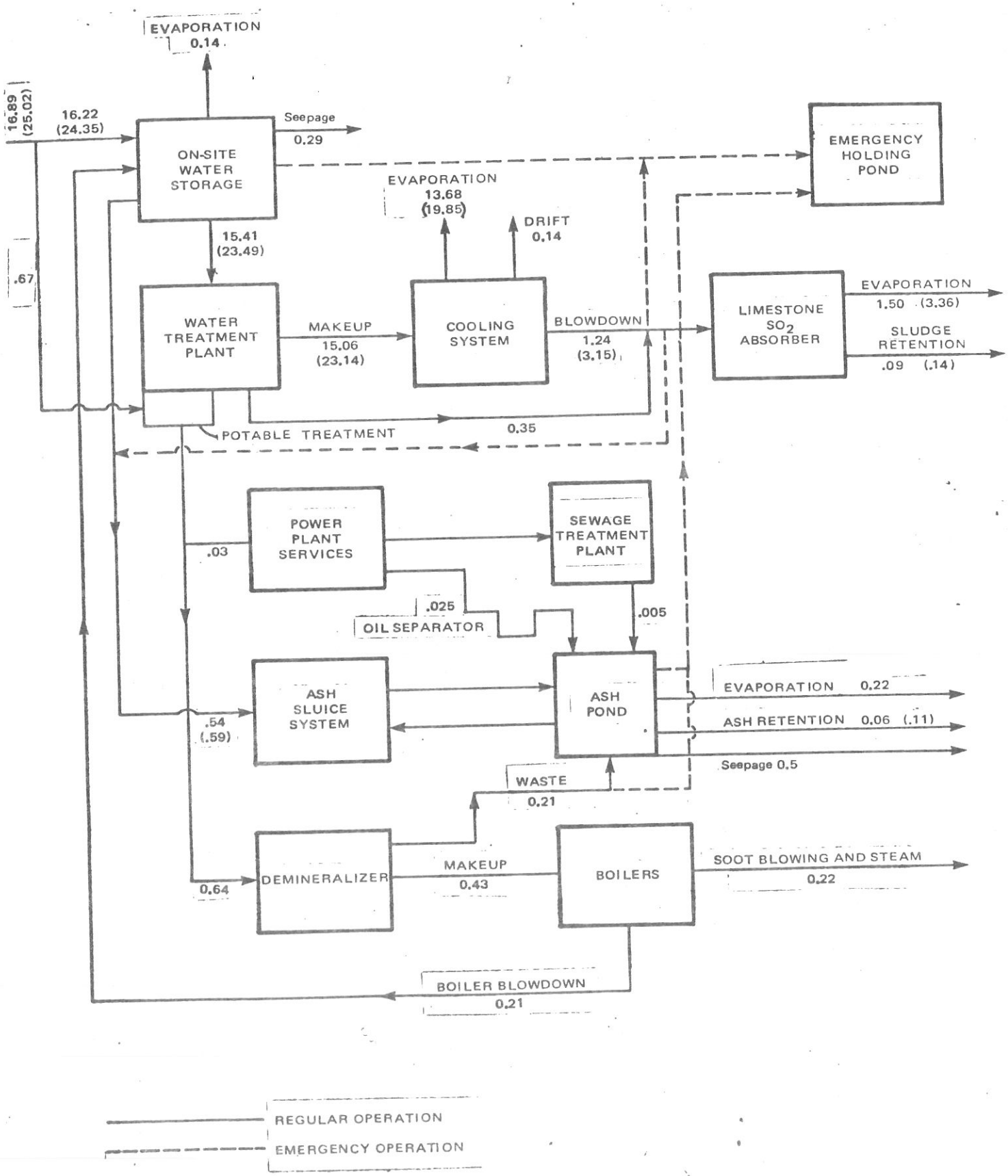
In the event that Limestone SO_2 Absorber was shut down, the cooling system blowdown could be handled in two ways. A portion of it would be recycled back to the on-site water storage with the remainder going to an emergency holding pond. It is anticipated that with all absorber units off line, this mode of operation would be workable for sixty (60) days. There would also be storage available in the ash pond for excess blowdown in the event of scrubber failure.

There is also the possibility that the bottom ash pond may have to be purged intermittently to prevent scaling in the process piping. This blowdown could be sent to the emergency holding pond or, possibly, the limestone SO_2 absorber.

CONDITION:

The data submitted herein covers the Laramie River Station Units 1, 2 and 3 fitted with limestone flue gas desulfurization (FGD) systems. A conditional

air emissions permit is being requested which would allow the project to use either a limestone FGD or a regenerable FGD system. If a regenerable FGD system is selected, the appropriate data will be submitted at a later date.

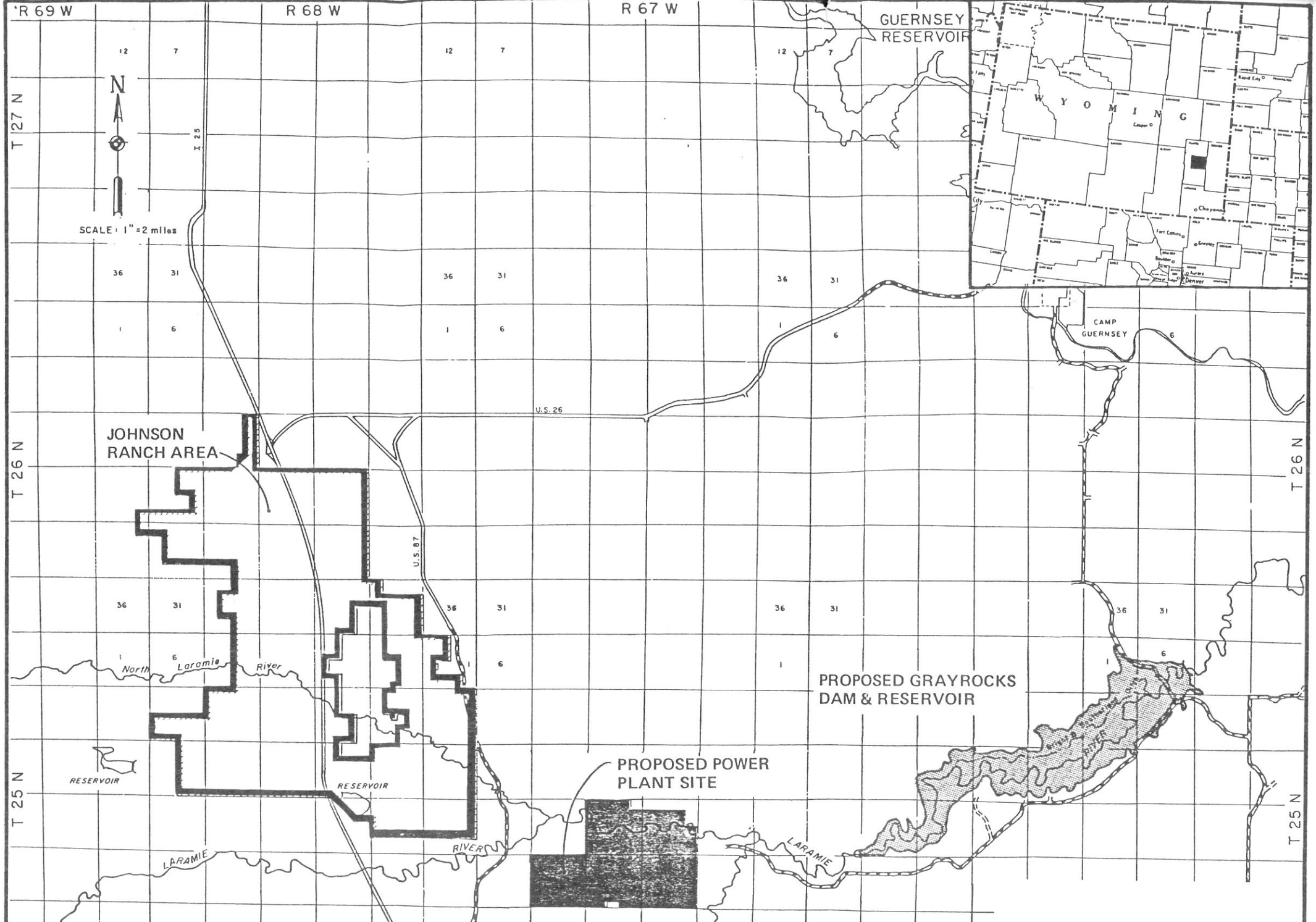


NOTES:

1. All flows in MGD
2. Average flows based on 85% load factor.
3. Maximum flows in parentheses

Exhibit 2

WATER FLOW SCHEMATIC
LIMESTONE SO_2 ABSORBER


R 69 W
R 68 W
R 67 W
T 27 N
T 26 N
T 25 N
N
SCALE: 1" = 2 miles
I 25
U.S. 26
U.S. 87
GUERNSEY RESERVOIR
WYOMING
CAMP GUERNSEY
JOHNSON RANCH AREA
PROPOSED GRAYROCKS DAM & RESERVOIR
PROPOSED POWER PLANT SITE
North Laramie River
LARAMIE RIVER
RESERVOIR
RESERVOIR
RESERVOIR