

CHAPTER 5
UNAVOIDABLE ADVERSE
EFFECTS



5. Unavoidable Adverse Effects

This chapter discusses the adverse effects which would occur as a result of the proposed action that cannot be avoided or sufficiently mitigated. These effects can occur both in the vicinity of the plantsites and mine, and in the gas service area where the product gas would be consumed.

5.1 Adverse Impacts to the Physical Environment

5.1.1 Air

Consumption of oxygen by the ANGCGC gasification facility would be about 6,000 tpd. The operation of the plant would simultaneously produce 1.3 tons of CO₂ per ton of oxygen. There are indications CO₂ concentrations in the atmosphere are increasing slightly and the scientific community has suggested that such an increase may ultimately affect the climate.

Visibility would be reduced by emissions from the ANGCGC gasification plant and Basin Electric powerplant stacks. This may result in decreased visibility at Lake Sakakawea.

Air quality would be degraded. Construction and mining activity would degrade air quality by emissions from engines, boilers, heaters, etc., and dust arising from roads and mining sites, as well as movement of surface vehicles. Emissions from gasoline- and diesel-powered equipment would include particulates, SO_x, CO, hydrocarbons, and NO_x. Accidental coal fires could add vapors and particles to the atmosphere.

The largest source of air quality degradation would be emissions from operation of the gasification plant and powerplant. Emissions from the two plants would equal 144,816 lbs. NO_x, 351,768 lbs. SO₂, and 16,536 lbs. TSP per day.

The trace elements and radioactive materials in the coal not trapped in the ash or removal systems would be emitted into the atmosphere.

Additional population in the area would increase the number of vehicles, residences, businesses, etc., in the region which would in turn locally increase the pollutants in the air.

Odors and noise would increase in the immediate vicinity of the plant; noise from blasting would disturb nearby residences during evening hours.

Gas produced in the ANGCGC plant would enter present pipeline systems and could encourage increased consumption due to expectations

that the project increases the total available supply rather than just keeping even with existing residential commitments. In this case, the major unavoidable impact would be an increase in the consumption of free oxygen and the related generation of CO₂.

5.1.2 Water

Water removed from the Missouri River system for this project could not be used for any other purpose for the life of the plant. ANGGC has a permit to withdraw 17,000 acre-feet of water per year, thus the annual loss of electrical generating capacity would be about 8 million kilowatt-hours (1 MW).

In the mining areas, surface disturbances present potential runoff problems which could increase sedimentation and mineralization in surface waters. Construction and mining activities would alter topography and land surface characteristics. This activity would lower runoff into area streams and thus their flow, and may alter some of the drainage patterns of the area. Emissions returning to the surface could contaminate surface waters.

The placement and operation of the water intake in Renner Bay may cause local increases in turbidity. Entrapment of fish and other aquatic organisms would occur in low-water years. Such impacts are unavoidable with the best existing technology.

The quantity of ground water in the vicinity of the plants and mines would be decreased by dewatering, interruption of flow, and destruction of the lignite aquifer and perched waters. Wells in the vicinity may be lowered.

Ground-water quality could also be affected. Contamination of shallow aquifers adjacent to the mine could result over the long term from leaching of the ash and sludge buried under reclaimed soil. Chemicals not readily available before mining could become available after reclamation because of the increased soil permeability after the overburden is replaced in a heterogeneous, unstratified condition. Leached water from the mine pit areas may infiltrate shallow aquifers increasing TDS.

5.1.3 Land

Coal mining activities would disturb about 500 acres of land surface each year. Land would be reclaimed at about the same rate; however, about 1,500 to 2,500 acres would be ungraded and disturbed at any one time. In addition, the gasification plant and related facilities would disturb about 535 acres for the life of the plant. Thus, about 14,000 acres would be disturbed over

the life of the plant with attendant increased dust levels, decreased water quality, and reductions in the flora, fauna, and aesthetics of the area. The success of reclamation would determine the permanence of these impacts.

The soil stratification would be disrupted and the productivity of the reclaimed land may be reduced as less fertile soils are brought to the surface. Topsoil that is stockpiled for any length of time could become biologically sterile further reducing productivity until microorganisms became reestablished. Soil erosion would be increased until such time as sufficient vegetative cover is reestablished.

The influx of persons with their families to construct and operate the mines and plants would significantly increase the size of urban areas and the resultant impacts on land areas. Land would be needed for schools, roads, commercial buildings, homes, utilities, parks, governmental services, transportation, and communication facilities, etc. Since the lands to be converted have yet to be defined, there is no way to measure the impact, but whatever the present use of the land, open space and agricultural potential would be lost.

Upon termination and abandonment of the proposed facilities, they may be disassembled. Facility dismantling would have impacts similar to the original site preparation and construction activities.

5.2 Adverse Impacts on the Biological Environment

5.2.1 Flora

The major impact on the flora would occur on the land areas disturbed by the mining, the plant, and related facilities. Mined lands would be reclaimed primarily for agricultural uses resulting in a net loss of native prairie; any land reclaimed to native vegetation would take decades to establish itself to predisturbance densities. Native wetland and woodland areas would be permanently lost.

Although few studies have been done on the long-term effects of low-level emissions from coal-burning industrial facilities, certain pollutants such as SO₂, NO₂, and heavy metals have caused visible and measurable effects to the surrounding flora. Resistance among plant species varies considerably and the magnitude of the impact is unpredictable.

5.2.2 Fauna

Wildlife would be greatly affected in the areas of the plant and mine by the destruction of vegetation and subsequent disruption of

food chains, and from the presence of a large industrial complex. Indigenous wildlife would be displaced from activity areas during operations; this will result in a reduction in populations until reclamation is completed. Reclamation would probably be directed toward agricultural uses and populations of wildlife species dependent on native ecosystems would be permanently reduced.

There is a possibility of faunal impacts outside of the immediate vicinity of the plant and mine from airborne emissions. Various trace elements (e.g., fluoride and mercury) can affect the health of mammals when consumed via vegetation or other animals. The impacts of such elements on animals is poorly understood.

Increased demand for outdoor recreation would affect deer, waterfowl, upland game, and fishery resources. The impact of increased hunting and fishing on these animals would be unavoidable, but whether or not it would be adverse would depend on whether or not harvest of any species exceeded the biological surplus of that species.

5.2.3 Aquatic Ecosystems

The major impacts on aquatic ecosystems would be from product pipeline construction across streams, potholes, and impoundments. Silt-loading during stream crossings would temporarily affect the aquatic biota by reducing both the kinds and numbers of organisms present, limiting macroinvertebrate habitat, and reducing the primary productivity of the ecosystem. Similar impacts could result from surface water runoff from the plant nonprocess areas and the mine. Operation of the water intake could entrap fish and other biota, particularly during low-water years.

The main impact of the project on the Missouri River system would be the removal of water and an immeasurable increase in salinity downstream. No return of hazardous effluents would accrue to the stream except in case of accidental discharge. Domestic water and sewage requirements and urban runoff would increase. No impacts to the downstream biota are expected.

5.3 Adverse Impacts on the Socioeconomic and Sociocultural Environments

5.3.1 Socioeconomic Conditions

The population within a 30-mile radius of the gasification and power plantsites would be unavoidably affected by the influx of the construction and operations related population. The total impact area population is expected to increase by 6,194 people by 1980, 6,131 by 1984, and to reach 4,743 persons by 1988, due only

to the ANGGC and Basin Electric projects. The magnitude of this increase and decline in population would result in adverse impacts on the existing social conditions.

The cost of local government could require increased long-term debt to finance expansion of facilities. Once construction is completed and the plant and mine begin operation, the various coal severance and conversion taxes should provide enough monies to help repay the debts. Those persons who have limited ability to profit from construction or operations, and those on fixed incomes, would suffer from inflationary cost increases.

Educational and medical facilities, housing, and recreational and other social facilities could be overcrowded and stressed by the increased population. Physical infrastructures such as utilities, transportation, and communication systems would also be taxed by the rapid influx of persons. Due to the magnitude of the population influx, essential government services are apt to be inadequate because of the time lag between the creation of demand and the availability of tax revenues to construct facilities and provide the services.

5.3.2 Sociocultural Conditions

Unknown archaeological and paleontological resources located at the plant-mine site or product pipeline route may be destroyed and lost to mankind. Even if they were located and salvaged, they would be altered and some aspects of the site lost to future study. Construction and operation of the proposed facilities in an area completely devoid of any industrial facilities would change the natural character of the landscape.

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