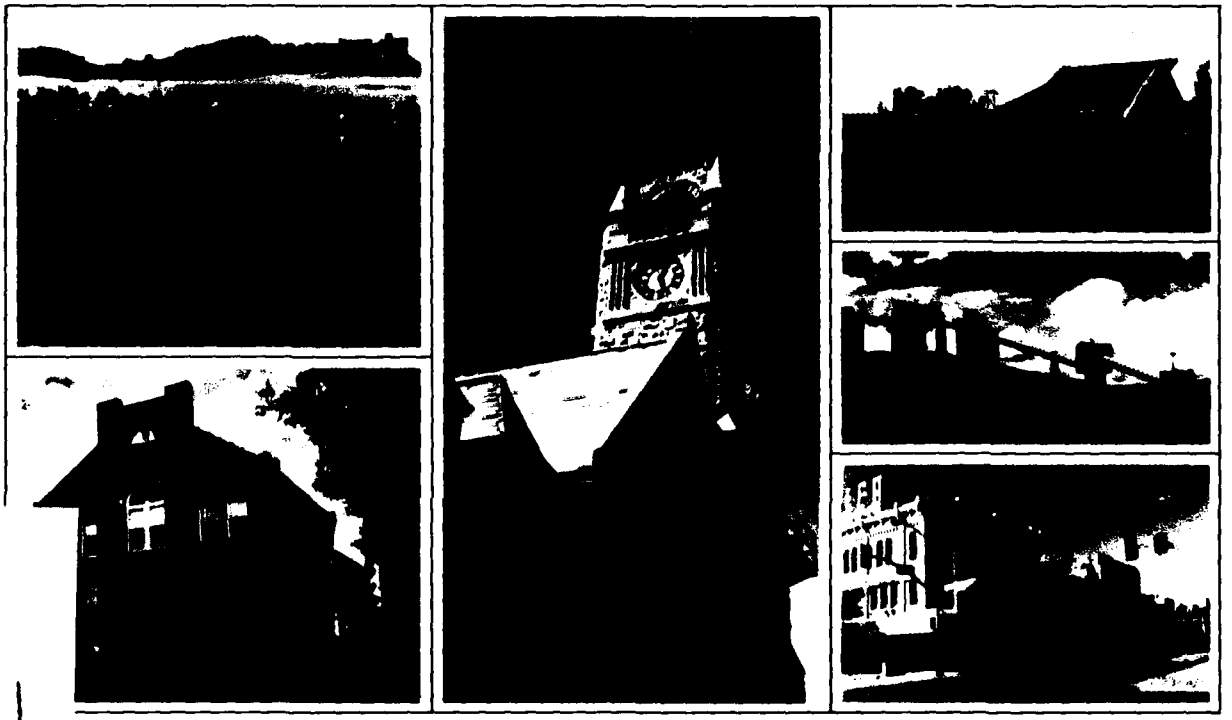
Department of the Air Force

EXECUTIVE SUMMARY

DRAFT ENVIRONMENTAL IMPACT STATEMENT



PEACEKEEPER IN MINUTEMAN SILOS
90th Strategic Missile Wing
F.E. Warren Air Force Base

October 1983

Air Force
Environmental Planning Division
(HQ USAF/CEVP)

Room 5B269
1260 Air Force Pentagon
Washington, DC 20330-1260

16 JUL 93

MEMORANDUM FOR DTIC (Acquisitions)
(ATTN: Patt Mauby)

SUBJ: Distribution of USAF Planning Documents Forwarded on 1 July 93

ALL the documents forwarded to your organization on the subject date should be considered Approved for Public Release, Distribution is unlimited (Distribution statement A).

Mr. Jack Bush, GM-14
Special Projects and Plans
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EXECUTIVE SUMMARY

PURPOSE AND ALTERNATIVES

Purpose

The Air Force plans to deploy the Peacekeeper Missile System within the 90th Strategic Missile Wing at F.E. Warren Air Force Base (AFB) near Cheyenne, Wyoming. The Peacekeeper system is an advanced, land-based intercontinental ballistic missile system designed to improve the nation's strategic deterrent force. Land-based strategic missiles are an integral part of the United States' nuclear deterrence strategy. Air, sea, and land-based weapons form a TRIAD of strategic forces, each with different capabilities and advantages to complicate Soviet offensive and defensive planning. The TRIAD also provides a hedge against technical problems that could temporarily disable a system and against technological breakthroughs or a rapid evolution of threats that might erode the survivability of one or more parts of our strategic forces.

The Scowcroft Commission was established by the President in January 1983 to study the nation's strategic modernization needs. The Commission concluded that the advantages of the land-based portion of the TRIAD (i.e., low maintenance costs, high reliability, rapid response, and great accuracy) in addition to its contribution to the effectiveness of the TRIAD, make it imperative that the land-based missile system be upgraded to address the challenges posed by the Soviet Union. As part of their recommendation on upgrading, the Commission urged deployment of 100 Peacekeeper missiles as an immediate measure to modernize the land-based missile system. The President, following review of the Scowcroft Commission report, decided on deployment of 100 Peacekeeper missiles in specific existing silos supported by F.E. Warren AFB and provided this decision in his report to Congress.

The 1983 Defense Appropriations Act exempted the President's report and proposals from the requirements of the National Environmental Policy Act. The purpose of this environmental impact statement is not to review those prior decisions, but to analyze the impacts of implementing actions and their alternatives, including development of mitigation measures.

Alternatives

Within this framework, alternatives are addressed for several system elements. These are: 1) three alternative road configurations for linking the new Stage Storage Area onbase with the existing base Weapons Storage Area, as well as achieving access offbase to the Deployment Area; 2) ten alternative communications cable paths from which five would be selected, linking the 319th and 400th Strategic Missile Squadrons; and 3) three alternative staging area combinations for providing temporary field storage and administrative centers during the project. This environmental impact statement provides environmental information for the decisionmaker in selecting from these alternatives.

SYSTEM DESCRIPTION

The Peacekeeper deployment plan calls for the replacement of 100 of the existing Minuteman III missiles with 100 Peacekeeper missiles. Existing missile Launch Facilities will be used with modifications (Figure S-1). Missile replacement will occur within the two squadrons located nearest F.E. Warren Air Force Base, the 319th and the 400th Strategic Missile Squadrons (Figure S-2). Additional buried hardened intersite cable systems will be laid to link Squadrons 319 and 400. In addition, a number of support buildings will be constructed or altered at F.E. Warren AFB which currently serves as the Strategic Missile Support Base (referred to in this document as the Operating Base) for the 90th Strategic Missile Wing. The Peacekeeper missile system is scheduled to achieve initial operational capability in December 1986 and to be fully operational by late 1989.

Operations of the Peacekeeper system will be similar to the Minuteman system. The major differences are in the transport of the missile. Peacekeeper stages will be transported separately to the Launch Facilities in a stage transporter that is about 100,000 pounds heavier, 12 feet longer, and 1 foot higher than the Minuteman transporter erector. Since the stage transporter will have twice as many wheels per axle, the single wheel load will be about 1,000 pounds less. The existing road network will be upgraded as required to accommodate the stage transporter.

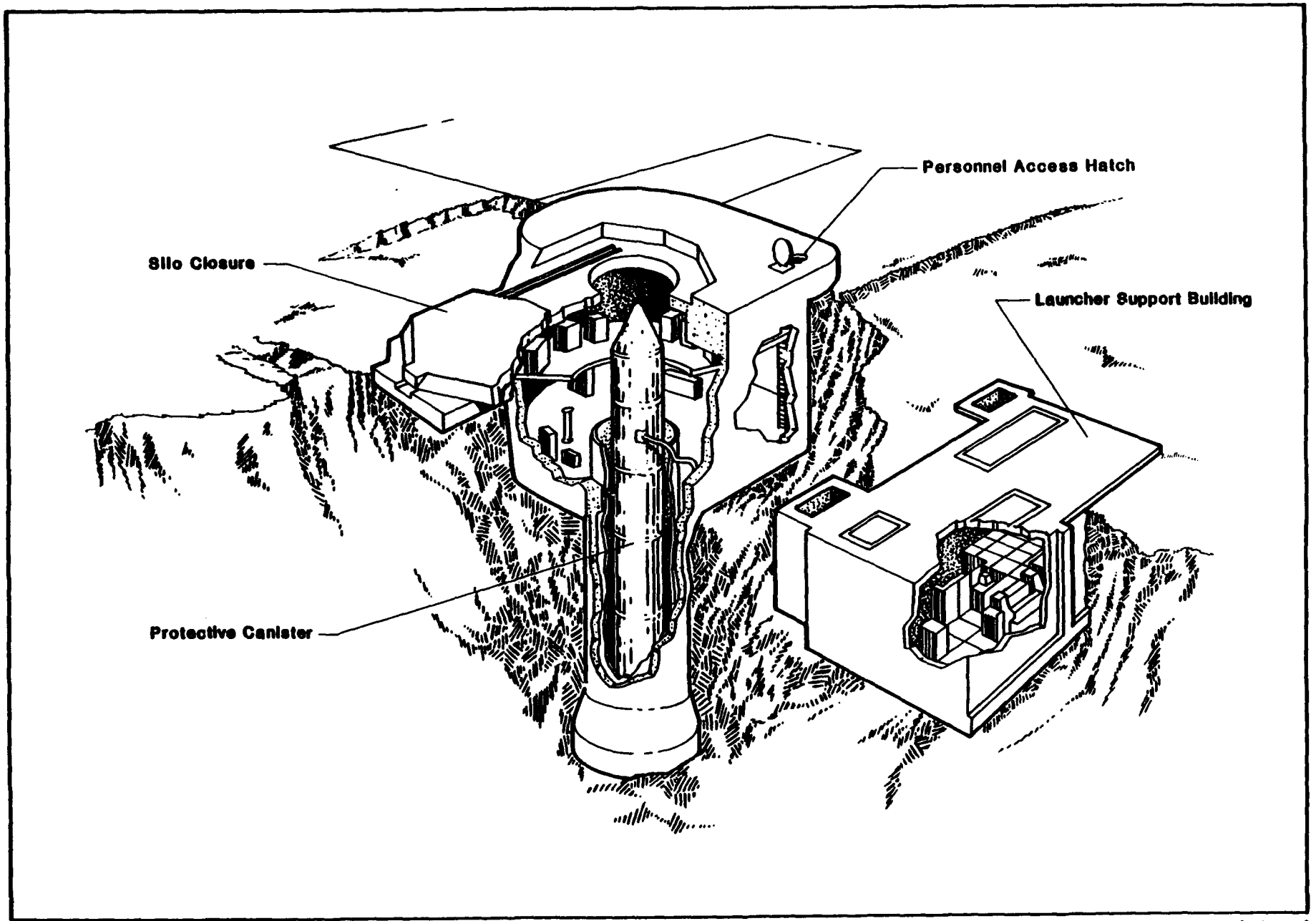
Security and maintenance operations in the Deployment Area will be similar to those now in effect for the Minuteman system.

SYSTEM DEPLOYMENT

Construction at F.E. Warren Air Force Base will occur between 1984 and 1986. Fifteen new buildings will be constructed and modifications or additions made to other various existing facilities. The area of new or renovated facilities exceeds 400,000 sq ft. A new road configuration, from among three alternatives, is proposed to link Peacekeeper facilities on the base and to provide improved access offbase and onbase.

Work in the Deployment Area will occur from 1985 to 1989. Many of the access roads to the Launch Facilities will be upgraded. Bridge clearance problems will be corrected, and some culverts and bridges may need to be upgraded. Above-ground modifications to the Launch Facilities will be minor. Most of the below-ground modifications will be related to removal of Minuteman support hardware, insertion of a protective canister to enclose the Peacekeeper, and installation of communications systems and support equipment.

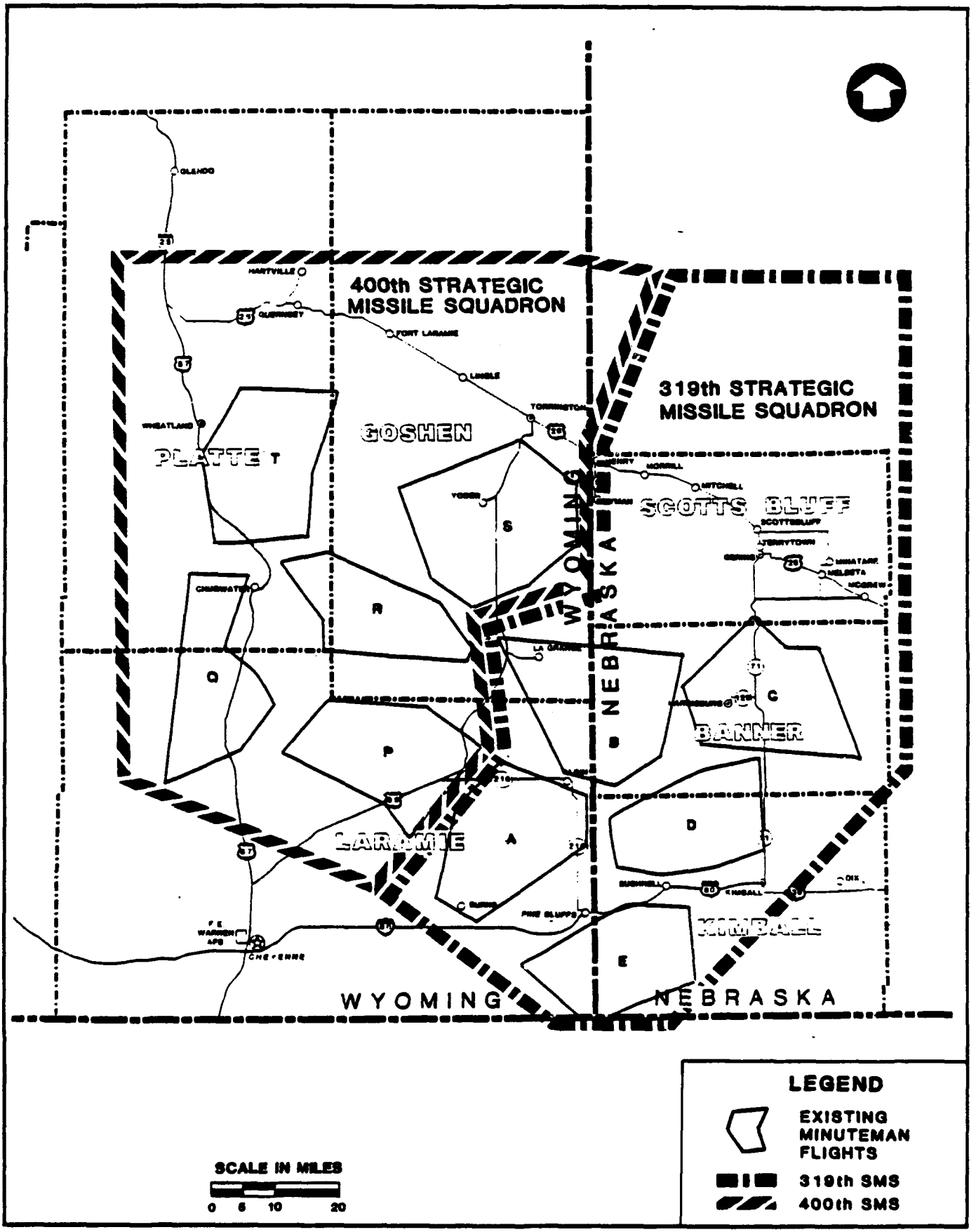
A total of ten alternative routes have been chosen as candidates for the laying of buried cables to link Squadrons 319 and 400. For each cable alternative a 1-mile wide corridor has been analyzed in which a specific 35-foot wide route would be chosen should that alternative be selected. A temporary easement width of 35 feet will be needed for trenching and cable placement. The permanent easement width will be 16.5 feet. The cable depth will be approximately 3 feet. Five routes will be selected for installation. Total buried length will range from approximately 60 to 130 miles, depending upon final route selections.



(16-11)

PEACEKEEPER SILO WITH ITS PROTECTIVE CANISTER

FIGURE NO. S-1



PEACEKEEPER DEPLOYMENT AREA

(15-2)

FIGURE NO. S-2

Contractors may be expected to establish up to three construction staging areas consisting of sites for temporary, open storage of equipment and material. One small portable building will also be present at each site for contractor use.

Three staging area location alternatives are available:

- o One each at F.E. Warren AFB; Cheyenne, Wyoming; and Kimball, Nebraska;
- o One each at F.E. Warren AFB; and Cheyenne, Wyoming; and
- o No staging areas.

Direct manpower for construction, assembly and checkout, and operation of the system will peak during 1986 when an average of nearly 1,800 persons will be required. In 1991, following deployment, the increase in operational work force at F.E. Warren AFB will consist of about 500 persons.

ENVIRONMENTAL CONSEQUENCES OF THE PROJECT

General Approach to Impact Assessment

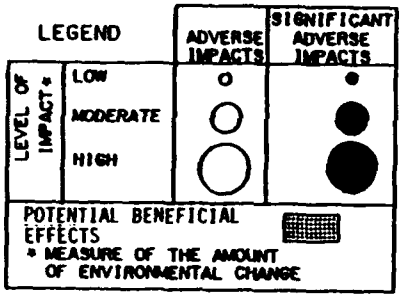
The impacts analyzed in this document have two characteristics: level of impact and significance at the site, local, and regional geographic areas. Level of impact is a measure of environmental change resulting from the project. Four impact levels are used throughout the impact analysis: negligible, low, moderate, and high. Specific definitions of these levels of impact vary by resource (environmental discipline) and can be found at the beginning of each resource evaluation in Section 3.0. A summary of impacts by resource is provided in Figure S-3 for alternatives evaluated and a summary of project impacts is provided as Figure S-4. The adverse impacts are identified with various sized circles and are shaded if significant. If there are also beneficial effects, a dot pattern is included. In some cases, there are both adverse impacts and beneficial effects for the same resource.

The term significant is used as a measure of the importance of the impact, and does not necessarily imply a separate judgment on the overall severity of the impact. Rather, it may indicate a judgment regarding which impacts warrant heightened attention, by the Air Force or others, during project planning; or it may reflect a judgment as to the extent of the action necessary to avoid that impact. The criteria used to evaluate significance are found at the beginning of each resource evaluation in Section 3.0.

To the extent practicable, standard construction practices that reduce or eliminate environmental impacts were assumed in assessing impacts. Additionally, other potential mitigation measures could reduce impacts. The Department of Defense (DoD) and the Wyoming-Nebraska Intergovernmental Executive Impact Council (IEIC) have agreed to enter into a cooperative mitigation agreement which will set forth specific measures to be undertaken by DoD which will mitigate adverse impacts resulting from the project.

Figure S-3

ALTERNATIVES COMPARISON MATRIX

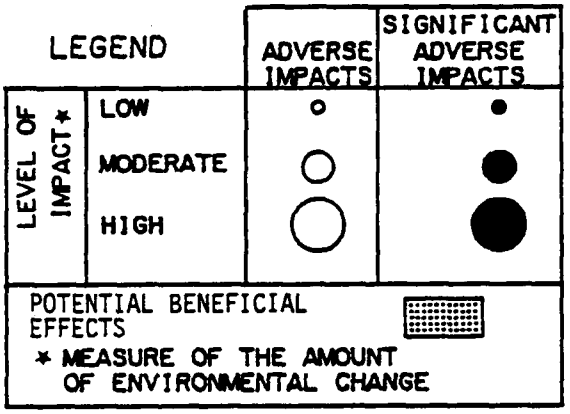


	CABLE PATHS[1]										ROADS[2]			STAGING[3]		
	PROPOSED ACTION					ALTERNATIVES										
	PA1	SB1	RB1	PA4	PD1	SB2	PB1	SC2	PA2	PA3	R1	R2[4]	R3	PROPOSED	ALT.	NONE
BIOLOGY			●	•	●	•	●	•		●	●	●	●			
LAND USE	o	o	o	o	o	o	o	o		o			o			
CULTURAL	o	◯	o	o	◯	◯	◯	◯	o	◯	o	o	o	o	o	
TRANSPORTATION													o	o		

Notes: 1 Denotes specific cable paths. For location of cable paths see Section 1.6.3.3 and Figure 1.6.3-1.
2 For location of alternative routes see Section 1.6.2.
3 For location of staging areas see Section 1.6.6.
4 Proposed Action for Roads.

FIGURE S-4

SHORT AND LONG TERM IMPACTS



	PROJECT IMPACTS					
	SHORT TERM			LONG TERM		
	SITE	LOCAL	REGIONAL	SITE	LOCAL	REGIONAL
Employment Demand						
Housing		●			○	
Public Finance		○			○	
Construction Resources			○			
Social Well-Being		●				
Public Services and Facilities		●			○	
Utilities	○	•				
Energy Resources		○	○		○	○
Transportation	•	●	○			
Land Use	○	○		○	○	
Recreation		●	●		○	○
Cultural Resources	○			○		
Visual Resources	○					
Water Resources	○	●	○	○	○	
Biological Resources	●		●	●		•
Threatened and Endangered Species	●		•	●		•
Geologic Resources	○	○			○	
Noise						
Air Quality		○				

Note: See General Approach to Impact Assessment.

This environmental impact statement is based upon data and detailed analysis contained in 12 companion environmental planning technical reports. The volumes are available for review at local libraries identified in Section 4.0.

IMPACT OF PROJECT ALTERNATIVES

Feasible alternatives for road configurations, cable routes, and staging areas have been identified. The impacts associated with these alternatives have been analyzed. The analysis has demonstrated that for most of the resource areas the level of impact is either negligible or low and not significant, and does not vary within each of the three sets of project element alternatives. For four resource areas (Transportation, Land Use, Cultural, and Biological Resources) there are variations in the level of impact among alternatives and these are summarized below and in Figure S-3.

For Transportation, all ten cable route alternatives will have a negligible impact. Two of the three road alternatives at F.E. Warren AFB will have negligible impacts. The third alternative involves a longer length of road upgrade, particularly roads offbase, plus new on/offramps at Interstate 80. It was found to have a low level of impact. Of the three staging area alternatives, the one involving a staging area at Kimball was found to have a low transportation impact due to the smaller size of the town of Kimball and its associated road network. The impact of the remaining two alternatives will be negligible. No impacts arising from the alternatives were found to be significant.

For Land Use, one cable path follows an existing road over its full length. Its impact will be negligible. All or portions of the remaining nine cable routes will result in temporary land disturbance, with a resulting low level of impact. Two of the road alternatives at F.E. Warren AFB will have negligible impact. The third alternative will have a low impact. This is because the new interchange constructed at Interstate 80 and Round Top Road may tend to stimulate urban development west of F.E. Warren AFB. Such an effect would be contrary to the current land use policies of the City of Cheyenne and Laramie County, which show this area in agricultural preservation. Impacts from the staging area alternative were found to be negligible. None of the alternatives' impacts will be significant.

For Cultural Resources, six of the ten buried cable alternatives have the potential for high impact. This is due to the documented presence of archaeological sites in the area which the cable will traverse and the high probability that these routes would destroy additional, presently unrecorded sites. The remaining four routes have been assigned a low or moderate impact.

All road alternatives at F.E. Warren AFB will have a moderate impact upon cultural resources located at the base. Two of these staging area alternatives will result in low impact due to limited ground disturbance. The alternative with no staging areas will have negligible impact. The Air Force plans to develop and implement a cultural resource management plan to provide for mitigation of potentially adverse impacts to National Register-eligible cultural resources. Consequently all such impacts resulting from the alternatives will not be significant.

For Biological Resources, four buried cable routes were found to have moderate and significant impact while three additional routes were noted as having a low, significant impact. These impacts generally stem from the likelihood of disturbance of unique or unusual habitat in the project area, particularly riparian, raptor, or aquatic habitat. All three road alternatives at F.E Warren AFB will have a high and significant impact upon a Category One plant species found on the base, the Colorado butterfly plant. All of the construction staging area alternatives will have a negligible and not significant biological impact.

Further details regarding the impact of the proposed project and its alternatives can be found in Section 3.0. Summary impact matrices are located at the conclusion of each resource assessment.

PROJECT IMPACTS

This section summarizes, by resource category, the impacts of the overall project and the proposed cable paths, roads, and staging areas presented in Figure S-3.

Employment Demand

Employment Demand describes the available regional labor force which may be used by the project, and the demand for nonlocal labor which may result in the inmigration of workers and their families.

Employment Demand analysis indicates a short and long-term beneficial effect on the City of Cheyenne and the Region of Influence because of increases in employment and income.

The peak inmigration into Cheyenne has been estimated to occur in 1987 and will involve approximately 3,800 persons. In addition, it will cause approximately 1,600 persons to inmigrate in 1987 associated with indirect employment requirements. An additional 900 persons have been estimated for the remainder of the region. The project will employ an average of approximately 1,800 persons during the 1986 peak year.

Approximately 500 additional persons, above the existing level of employment at F.E. Warren AFB, will be required from 1991 onward to operate and maintain the Peacekeeper system.

Housing

Housing includes the existing housing stock (single-family, multifamily, mobile homes, and temporary housing accommodations) and the capability of the private housing industry to respond to changes in housing demand.

A beneficial effect is presumed because of potential increase in sales value and rental income due to increased demand, although there is an opposite effect on the consumer, particularly those on fixed income and the first-time home buyer.

The Housing analysis indicates moderate and significant short-term and low but not significant long-term impacts for the Cheyenne Urban Area, and low, but not significant short-term impacts for the City of Kimball. These ratings are primarily the result of increases and decreases in mobile home demand during the construction period.

The overall impact of the project on Housing will be moderate and locally significant in the short term and low and not significant in the long term.

A number of potential mitigation measures could be implemented. Two of the more important ones listed are: 1) to provide housing demand forecast data to officials to assist in local planning efforts; and 2) to consider the provision of temporary, full service worker living accommodations. For additional details regarding potential mitigation measures see Section 3.1.2.6.

Public Finance

Public Finance describes the budgets, fiscal resources and obligations of all major governmental entities, including school districts and urban service areas.

The Public Finance analysis indicates a local, short and long term beneficial effect because of additional revenue to governmental entities due to increased sales and property taxes, and other taxes and fees. The analysis further indicates expenditures will also increase, creating some revenue/expenditure imbalances.

For most of the governmental entities examined, increased programmatic operating expenditures caused by the proposed project would be offset by comparable increases in revenue sources. However, construction of several capital facilities, which will be required even under the baseline conditions, may be advanced due to the project and related population increases.

The Public Finance analysis indicates the City of Cheyenne will experience low and not significant short-term impacts and high and not significant long-term impacts requiring the city to increase revenues in order to meet projected revenue/expenditure imbalance. Laramie County will experience low and not significant short-term impacts as a result of an expenditure imbalance. Long-term impacts will be moderate and not significant because most expenditure changes will be offset by revenues attributable to the project. The City of Cheyenne Board of Public Utilities will experience short-term moderate and not significant impacts resulting from an expenditure imbalance and low, long-term not significant impacts due to expenditures which will be offset by project-attributable revenue changes. Laramie County School District No. 1 will experience low, short-term not significant impacts and moderate, long-term not significant impacts because surpluses (carryovers) are reduced. The City of Kimball will experience moderate but not significant short-term impacts resulting in decreases in surplus revenue and carryover funds. Long-term impacts are low and not significant because a change in operating expenditures is expected to be offset by project-attributable revenues. Kimball County, South Cheyenne Water and Sewer District, and Kimball County School District (K to 12) will experience low short and long-term but not significant impacts because of a change in operating expenditures which is expected to be offset by project-attributable revenues.

The overall impact of the project on Public Finance will be locally moderate and not significant in the short term, and low and not significant in the long term.

A number of potential mitigation measures could be implemented. Two of the more important ones listed are: 1) to request funding through the Federal Impact Aid to School Districts for Laramie County School District No. 1; and 2) require all contractors and subcontractors to obtain a Wyoming sales tax license. For additional details regarding potential mitigation measures see Section 3.1.3.6.

Construction Resources

Construction Resources describes the construction materials market for cement, coarse and fine aggregate, ballast, asphalt, roofing, lumber, wood ties, structural steel, reinforcing steel, and steel rail.

Some regional beneficial effects may occur in the Region of Influence as a result of the project which causes a greater utilization of existing plant capacities and further employment needed to meet increased demand. Further employment could cause a regional rise in personal income.

The Construction Resources analysis indicates a low and not significant impact in the short term because of minor project demands (less than 1 percent of regional production capacity) for cement, coarse and fine aggregate, ballast, asphalt, roofing and wood ties, and negligible impacts in the long term.

The overall impact of the project on Construction Resources in the short term is low only at the regional level and not significant. All impacts are negligible in the long term.

Social Well-Being

Social Well-Being includes an assessment of the social well-being of area residents by identifying information on local issues, opinions and selected indicators of behavior.

A short-term beneficial effect is anticipated due to the improved local economy.

The Social Well-Being analysis indicates that Laramie and Kimball counties will experience significant moderate short-term and negligible long-term impacts at the local level. Moderate impacts are a result of inadequate local public and private resources available to deal with the inmigration of population and the associated social adjustment and social integration problems. In the long run these impacts will lessen and available public and private resources will adequately deal with the social changes.

The overall impacts of the project on Social Well-Being are locally significant and moderate in the short term and locally not significant and negligible in the long term.

A number of potential mitigation measures could be implemented. Two of the more important ones listed are: 1) development of a media program discouraging surplus job-seekers; and 2) establishment of various educational, job referral, and related social services programs. For additional details regarding potential mitigation measures see Section 3.1.5.6.

Public Services

Public Services are those services provided by governmental and other authorized agencies to meet the health and welfare needs of citizens. Included in this category are general government, education, law enforcement, criminal justice, fire protection, health care, human services, and libraries.

Public Services analysis indicates a high, short-term significant impact on education in Laramie County School District No. 1 due to increased enrollments for all primary and secondary grade levels from 1985 through 1992. Peak year increase in student enrollment is projected to be 7 percent over baseline forecasts. Mitigations to alleviate these impacts could consist of remodeling existing facilities, hiring additional teachers, and utilizing modular units, among others.

High, short-term not significant impacts are indicated for fire protection in the City of Cheyenne due to the need for additional firefighters, vehicles, and space. Mitigations, such as additional funding to the Fire Department to aid in the accelerated purchase of equipment and space, could be utilized to alleviate these high impacts.

Impacts for law enforcement are projected to be moderate due to the need for an increase in staffing and significant because of potential effects on public safety. Mitigations could include special training for local law enforcement personnel. General government, library, and criminal justice impacts are projected to be moderate because of additional staffing requirements, but not significant.

Health care impacts are low and not significant in that the inmigrant population can be absorbed with the existing local and regional health care and services system. Impacts on Human Services are projected to be low and significant due to the potential for controversy surrounding project-induced unmet needs in the city of Cheyenne.

The overall impacts on Public Services at the local level are rated for the short term as moderate and significant, and for the long term as moderate and not significant.

Utilities

Utilities describes water treatment and distribution systems, wastewater systems, solid waste systems, stormwater facilities, and telephone service. Water resources follows in a separate section.

Utilities analysis indicates that the water treatment and distribution system impacts for all communities will be negligible and not significant because current systems are adequate to serve all foreseeable baseline and project-induced water demands through 1990.

Wastewater systems in the Cheyenne Urban Area and in Torrington will receive low but significant local impacts from the project. In both these instances, increased wastewater flow induced by the proposed project will aggravate the problem of presently overloaded waste treatment facilities, some of which are not currently meeting their discharge requirements. In the Cheyenne Urban Area, planned improvements will mitigate the impacts. In Torrington, the project-induced population will slightly exacerbate the overloaded condition of the existing plant for several years, which can be mitigated by the acceleration of needed wastewater facility treatment improvements.

Solid waste facility impacts were identified in Cheyenne. Some additional equipment will be needed and the impact is rated as low and not significant. Negligible, not significant impacts will occur on solid waste facilities.

Stormwater facilities will have to be added in the Cheyenne Urban Area as a result of new land development in the area. The equivalent of two 60-inch storm sewers will be required over baseline needs. These additions result in low and not significant impacts. Stormwater facilities impacts in all other communities will be negligible and not significant.

The overall impact of the project on Utilities in the Cheyenne Urban Area will be low and significant in the short term. For all other communities, the Utilities impacts will be negligible and not significant.

Energy Resources

Energy Resources includes the supply and distribution systems for electrical power, natural gas, petroleum fuel, and coal.

The Energy Resources analysis indicates moderate, short-term, local impacts that are not significant. This is due to the need for added facilities to expand the capacity of the electrical substation serving F.E. Warren AFB by at least 40 percent. All other impacts to Energy Resources will be low or negligible and not significant because regional supplies of energy will be adequate; the local energy distribution systems can readily accommodate the needed expansion, and there will be no significant rise in energy costs to the consumer due to the project.

The overall impact of the project on Energy Resources is low except for the short-term, moderate, local impact. None of the impacts will be significant.

Transportation

Transportation describes the various modes of travel used for the safe and efficient movement of persons and goods, and includes transportation planning, design and operation of roads, railroads, aviation facilities, public transit, pedestrian and bicycle facilities, and the interrelationships between these travel modes.

There will be long-term beneficial effects because of improvements to roads and bridges resulting from the project.

Short-term reductions in level of service will occur at 13 of the 26 impacted intersections and interchanges in Cheyenne and the Randall entrance to F.E. Warren AFB. On the local level, these conditions represent a short-term, moderate, and significant traffic impact. Impacts are rated significant because level of service will be reduced below minimum desirable design standards. The physical condition of other Peacekeeper-related roads may be impacted by construction vehicles and other project usage. Needed repairs to deteriorated roadways will result in moderate and significant short-term adverse impacts upon traffic due to delays resulting from construction activities. Such delays may extend to the adjacent Randall Avenue at the Interstate 25 interchange and are, therefore, rated significant. The implementation of mitigation measures for roads, such as improved traffic signalization and interchange design modifications, will reduce impacts on level of service and roadway deterioration. Other mitigation measures, in addition to standard assumed mitigations, are identified in Section 3.1.9.6.

At the Cheyenne Airport, land-side facilities may require expansion due to existing capacity constraints and increased demand associated with the project's construction phase. This represents a short-term, low, and not significant impact. Impacts on other airports, railroads, public transit, and pedestrian and bicycle facilities will be negligible and not significant.

The overall transportation impact was judged to be moderate and locally significant and low and significant at the site level over the short term. Short-term regional impacts will be low and not significant.

Land Use

Land use comprises both urban land uses in developed communities where population inmigration is expected and rural land use in the Deployment Area where direct impacts from project development would occur.

Because of increased demand for housing, a potential beneficial effect may occur from the infill of vacant lots within city boundaries.

Population-induced impacts on urban land use are expected to be low because sufficient vacant land exists to absorb project-related growth projected for the Cheyenne Urban Area and the city of Kimball. However, some land developed primarily for mobile homes could become underutilized during the project's population decline cycle. Impacts are not significant in the short or long term.

Impacts on rural land use will include temporary interruption of agricultural land use during cable trenching and restrictions on residential land use within the explosives safety zones surrounding each Launch Facility. There are 9 inhabited structures within the 100 explosives safety zones which could be affected. Impacts would be low and not significant at the site level in both the short and long term since interruptions and restrictions of land use could occur without changing the character of the area. Impacts from modifications to Launch Facilities and their access roads would be negligible since upgrading would occur within existing rights-of-way and Air Force property lines.

Overall, the project may have both a beneficial effect and an adverse impact on urban land use. In the former instance, infill of vacant lots within urbanized areas may occur as a result of inmigration and housing demand; in the latter, underutilization of developed land, which usually places a financial burden on local government, may occur during the project decline cycle. The impacts on land use are low and not significant at the site and local level for both the short and long term. The project creates no significant impacts on urban or rural land use.

Recreation

Recreation includes regional (resource-based) recreation which is related to federal, state, and other lands offering rural outdoor recreation opportunities and local (user-based) recreation which is related to municipal and county-owned parks and facilities within urbanized areas.

Recreation analysis indicates moderate, short-term impacts on Glendo, Guernsey, and Curt Gowdy state parks due to overcrowding, and moderate short-term impacts on local facilities due to an increased demand for parkland, facilities, and staffing. A high, short-term impact on some neighborhoods is indicated due to inmigration and the absence of developed parkland in these neighborhoods.

The overall impacts on Recreation are moderate and significant in the short term due to the need to seek funding outside of the normal budgetary process in order to provide additional parkland and recreational facilities. Impacts are low but not significant in the long term.

Cultural Resources

Cultural Resources include three separate elements: prehistoric cultural, historic cultural, and American Indian resources.

Analysis of available documentary evidence, interviews with knowledgeable professionals and responsible tribal members, and limited-scale resource inventory of potential direct impact areas indicate moderate to high, short-term impacts to historic and prehistoric sites at F.E. Warren AFB and along proposed communication cable paths as a consequence of ground-disturbing activities associated with Peacekeeper deployment. Negligible to low, short and long-term impacts are anticipated as a result of landscape modifications generated by the selection of any staging alternative. Low to moderate, long-term impacts to these same resource elements are indicated as a result of altered regional land use and recreation patterns. Negligible to low, short and long-term impacts are indicated to American Indian resources due to the lack of reported resources in the project area and the low probability of their occurrence.

The Air Force plans to inventory and evaluate cultural resources potentially subject to direct project effects prior to any construction activities and implement a monitoring program during the construction period. Further, the Air Force plans to develop and implement a cultural resources management plan that will provide for mitigation of potential adverse effects to National Register-eligible sites in accordance with applicable federal statutes and regulatory guidelines.

Based on the adoption of the mitigation measures noted above, the overall impact of the action on Cultural Resources will be moderate and not significant in the short term and low and not significant in the long term at the site level only.

Visual Resources

Visual Resources include scenic resources and the visual environment, as well as evaluation of the visual quality of the region.

The Visual Resources analysis indicates moderate to negligible, short-term impacts due to clearing of vegetation and grading activities during construction. Long-term impacts are negligible and not significant once revegetation and regrading have been completed.

The overall impact of the project on Visual Resources is low and not significant at the site level in the short term and negligible in the long term.

Water Resources

Water Resources includes groundwater hydrology and quality, surface water hydrology and quality, water use and demand, and constraints on water use.

The Water Resources analysis indicates a significant, moderate, short-term impact on the Crow Creek watershed because of the ratings of three of its elements. Water use and demand will increase by about 4,000 acre-ft in the 1984 to 1989 construction period and about 210 acre-ft/yr from 1990 on as a result of the project. About 80 percent of the construction period demand and all of the operating demand will occur in the Cheyenne Urban Area. The impacts will result from induced water demand which could interfere with existing users. Potential mitigation measures to reduce this short-term water supply impact could be, among others, the implementation of water conservation measures and the lease or purchase of water rights in the Crow Creek watershed to provide additional water to the Cheyenne Urban Area.

Increased development in the Cheyenne Urban Area will increase stormwater runoff and flood flows, although mitigation measures such as stormwater detention facilities will reduce the impact. The impacts also result from increased erosion and sedimentation due to project construction and development resulting from the induced population.

Development of water for construction in the Deployment Area may cause moderate, but not significant impacts locally. All other water resource impacts for both the short and long term are rated negligible or low and not significant.

All other project impacts in the Crow Creek watershed and in the rest of the region are rated not significant.

The overall impact of the project on the Water Resources will be moderate and significant at the local level for the short term, and low and not significant for the long term.

Biological Resources

Biological Resources include vegetation, wildlife, fisheries, and unique and sensitive habitats.

The Biological Resources analysis indicates the presence of unique vegetation types which require long recovery periods and have limited range such as riparian and wetland areas. However, implementation of assumed mitigations, such as revegetation and wildlife habitat avoidance, in planning and construction of the project will reduce the impacts to a negligible to low level on vegetation. Riparian vegetation impacts remain moderate outside of F.E. Warren AFB due to the frequency of disruption resulting from communication cable pathways. Although the quantities of vegetation disturbed are low, the impacts are moderate because of the unique character of the vegetation on a regional basis and the value of riparian/wetland vegetation as wildlife habitat. The impacts are considered to be significant because of the potential to disturb unique vegetation types.

Random shooting and short-term construction disturbance will produce significant, short-term moderate impacts on wildlife at the site-specific and regional levels. These impacts are low and significant in the long term. Generally, whenever population increases, random shooting incidents increase. Construction-related disturbances due to noise and vehicle and human movements can be mitigated through scheduling of construction around raptor nesting periods. Additional mitigation cannot be applied to random shooting. These impacts are considered to be significant because of management agency concerns over the declining population of some raptors and the potential for change in reproductive success.

Fisheries resources will experience significant, short-term, low level impacts, due to increased fishing pressure, while the long-term impact will be negligible. Construction activites in the Deployment Areas with resultant habitat disturbances will yield significant, low short-term impacts, with negligible long-term impacts. These impacts are considered significant due to the management agency concerns and the potential for cumulative impacts on the fisheries due to increased fishing pressures.

The overall impact level of the proposed project on Biological Resources will be moderate over the short and long term, although the biological impacts on F.E. Warren AFB will be significant and high. The impact levels in the rest of the Area of Concentrated Study range from negligible to moderate with impacts on most wildlife species and vegetation types negligible to low following implementation of planned mitigation measures.

Threatened and Endangered Species

This category includes plants, wildlife, and aquatic species which are protected by federal law as threatened or endangered. Also included in this category are state-protected rare, threatened, or endangered species. Although state species are not afforded the same protection as federally listed species, they are included here because of special state concern.

Within the project area, there are three federally listed species on the threatened and endangered list: the black-footed ferret (in prairie dog towns), the greenback cutthroat trout, and the bald eagle. With implementation of appropriate assumed mitigations, impacts on the habitat of the black-footed ferret located in the project area, will be negligible. Increased fishing pressure will increase the accidental catching of the greenback cutthroat trout, which will result in a low level, significant, short-term impact on the region. The bald eagle will have some habitat loss due to general construction activities which will result in a low-level, short-term, and significant impact.

The Colorado butterfly plant, although not formally federally listed, is categorized by the U.S. Fish and Wildlife Service as a Category One species, which means that it meets the criteria for listing as a threatened or endangered species. Although not afforded federal protection as threatened or endangered species, the U.S. Fish and Wildlife Service has a Memorandum of Agreement with F.E. Warren AFB for protection and management of this species until it is listed. Disturbance to this plant's habitat during construction will result in a high, significant, long-term impact.

The woolly milkvetch is listed as rare by the Wyoming Natural Heritage Program and will have a high, significant, long-term impact to its habitat during construction.

The overall impact of the project on federally-listed threatened and endangered species will be low-level, significant, short and long-term impact on the region. However, the impact will be high and significant in the long and short-term at the site level due to the butterfly plant, which is undergoing a review process to be federally listed, and the state-listed woolly milkvetch.

Geologic Resources

Geologic Resources include geological hazards, energy and mineral resources (aggregate), and soil resources.

The Geologic Resources analysis indicates the project does not impact geologic hazards. Analysis also shows a low and not significant impact at the local level for aggregate resources, because there are adequate reserves within the region to satisfy project demands, making the impact negligible at the regional level. Project impacts on soil resources will be low and not significant as erosion which could occur during construction activities, will be minimal if assumed construction practices are observed.

The overall impact of the proposed project on Geologic Resources will be low and not significant at the site and local level in the short term, while the impact in the long term will be locally low and not significant.

Noise

Sources of noise, defined as any undesirable sound, include vehicular, air and railroad transportation, and construction activity.

Overall, the Noise analysis indicates short-term, negligible, local impacts from vehicular traffic noise. Increased air traffic due to project activities will result in a negligible impact. Impacts from railroad and construction activity will be negligible and not significant. In the long term, the overall impact of project noise will be negligible and not significant.

Air Quality

Air Quality addresses the condition of the atmosphere due to emission from natural and human sources, and is typically measured with respect to health and visibility implications. The analysis evaluates the effects of project construction, operation, and related transportation activities upon the future air quality environment.

The Air Quality analysis indicates low, short-term, not significant impacts from carbon monoxide at several intersections and road segments in Cheyenne. Fugitive dust from construction activities will result in low impacts locally and negligible impacts regionally. Regional visibility will experience negligible impacts. All long-term impacts for the three Air Quality elements were predicted to be negligible.

The overall impact of the proposed project on Air Quality will be locally low and not significant in the short term and negligible in the long term.

Conclusion

High and significant, short and long-term impacts are projected for only threatened and endangered species. While significant impacts are projected in several other resources (see Figure S-4), these impacts are generally moderate to low and, with the exceptions of recreation and biological, local.

A 45 day public comment period will be held to solicit input on the methods, assumptions and criteria used to generate these results. Response to public comments and appropriate modifications to this document will be included in the final environmental impact statement.