
4.0 ENVIRONMENTAL CONSEQUENCES

In accordance with 40 CFR 1502.16, this chapter of this EA includes a discussion of the potential environmental consequences of the Proposed Action, Project Alternatives and the No Action Alternative for each of the affected resources. An environmental impact is defined as a change in the quality or quantity of a given resource due to a modification in the existing environment resulting from project-related activities. Impacts may be beneficial or adverse, may be a primary (direct) or secondary (indirect) result of an action, and may be permanent and long-term or temporary and of short duration. Impacts may vary in degree from a slight discernible change to a total change in the environment. This impact assessment assumes that all construction and reclamation measures described in the Proposed Action would be successfully implemented. If such measures are not implemented, additional adverse impacts may occur.

Generally speaking, the residual and cumulative impacts associated with both the Proposed Action and Alternative A are virtually identical, with Alternative A increasing the initial (overall) disturbance by 30 acres and extending the LOP for an additional 15 years. LOP disturbance would increase from 18 acres for the Proposed Action to 48 acres for Alternative A. As a consequence, discussions of both residual and cumulative impacts for the Proposed Action and Alternative A will be combined for each resource, rather than broken down into a separate discussion by alternative. In those cases where additional impacts may result from Alternative A, these impacts will be disclosed and discussed accordingly for each affected resource.

4.1 GENERAL DISCUSSION OF CUMULATIVE IMPACTS

Cumulative impacts result from the incremental impacts of an action added to other past, present and reasonably foreseeable future actions, irregardless of the party or parties responsible for such actions. Cumulative impacts may result from individually minor, but collectively significant, actions occurring over a period of time (40 CFR 1509.7).

The general project area has been utilized continuously for agricultural purposes (livestock grazing) since the early twentieth century and the natural environment of the general project area remains largely unaffected by human-related activities (BLM 2001). Prior surface disturbing activities within the general HQPA have been primarily limited to agricultural and rural modifications to the existing landscape including the conversion of native vegetation to crops and cropland for the production of domestic livestock forage such as alfalfa, construction of rural highways to serve outlying ranches and residences, and minor surface disturbing activities associated with the installation of an infrastructure (e.g., fences, power lines, telephone lines, etc.) commensurate with the current rural/agricultural land uses in the area. Commercial development in the area to date has been somewhat limited and includes the two facilities discussed below.

∅ Medicine Bow Lateral natural gas pipeline owned and operated by Wyoming Interstate Gas Company. The pipeline ROW is approximately 1.5 miles to the east of the HQPA. The pipeline was installed ca 2000 and the pipeline ROW has since been reclaimed and revegetated.

€ Wills Quarry owned and operated by 71 Construction. The Wills quarry was approved in 2001 to develop an industrial non-metallic mineral and decorative rock deposit on private surface estate in Sections 10, 11, 13, 14, 15 and 23 in Township 31 North, Range 72 West. The Wills quarry is located approximately 13,000 feet (2.46 miles) southeast of the proposed HQPA (at its closest point) and is projected to disturb approximately 10 acres per year. Total surface disturbance associated with the Wills quarry is estimated to be 500 acres over the LOP, which is estimated to be 75 years (BLM 2001).

Other than the Wills quarry referenced above, there are currently no other large-scale industrial or commercial developments such as oil and gas exploration and development, quarrying operations, logging activities, or other industrial developments within the general project area. Moreover, BLM is unaware of any reasonably foreseeable future actions proposed within the general project area that would contribute to any cumulative impacts.

The Proposed Action would result in 22 acres of total (initial) surface disturbance and 18 acres of long-term (LOP) surface disturbance due to mining activities. This surface disturbance would be in addition to the 500 acres of surface disturbance previously authorized for the Wills Quarry Project (BLM 2001).

Cumulative impacts associated with Alternative A would be virtually identical to those discussed for the Proposed Action (above) with the exception that quarry site would be increased from 10 acres to 40 acres with a concomitant increase in surface disturbance. The estimated LOP for Alternative A would also be increased from 15 years to 30 years.

All environmental resources have been evaluated for cumulative impacts in accordance with BLM directives (BLM 2004) and a determination has been made that cumulative impacts would be negligible because there are no past, present, or reasonable foreseeable future actions that, when combined with the Proposed Action or Alternative A, would result in impacts beyond those that already exist.

4.2 AIR QUALITY

4.2.1 Introduction

Air quality impacts are limited by regulations, standards, and implementation plans established under the *Clean Air Act* and State of Wyoming law, as administered by WDEQ/AQD. Under the Federal Land Policy Management Act (FLPMA) and the *Clean Air Act*, the BLM can not conduct or authorize any activity which does not conform to all applicable local, state, tribal or Federal air quality laws, statutes, regulations, standards or implementation plans.

4.2.2 Significance Criteria

The significance criteria for air quality include both state and federally enforced legal requirements to ensure that ambient air pollutant concentrations remain below specified levels.

These include both National Ambient Air Quality Standards (NAAQS) and Wyoming Ambient Air Quality Standards (WAAQS), and the Prevention of Significant Deterioration (PSD) Class I and Class II increments (which limit specific air pollutant concentration increases above a baseline value in specific areas), as listed in Table 4.1.

Table 4.1 Background Air Quality Concentrations, Ambient Standards and PSD Increments in Micrograms per Cubic Meter ($\sigma\text{g}/\text{m}^3$)

Airborne Pollutant	Averaging Time ¹	Background Concentration	Air Quality Standards		PSD Increments	
			WAAQS	NAAQS	Class I	Class II
Carbon Monoxide (CO)	1-hour	3,336	40,000	40,000	None	None
	8-hour	1,381	10,000	10,000	None	None
Nitrogen Dioxide (NO ₂)	Annual	5.0	100	100	2.5	25
Ozone (O ₃)	1-hour	162	235	235	None	None
	8-hour	150	157	157	None	None
Sulfur Dioxide (SO ₂)	3-hour	93	1,300	1,300	25.0	512
	24-hour	32	260	365	5.0	91
	Annual	4	60	80	2.0	20
PM ₁₀	24-hour	47	150	150	8.0	30
	Annual	16	50	50	4.0	17
PM _{2.5}	24-hour	15	65	65	None	None
	Annual	5	15	15	None	None

4.2.3 Direct and Indirect Impacts

4.2.3.1 Proposed Action

Pollutants of concern associated with the Proposed Action are regulated by the WDEQ/AQD and primarily include total suspended particulates (TSP) and particulates less than 10 microns in diameter (PM₁₀). The Proposed Action would not have any permanent facilities that would emit nitrogen oxide (NO_x), sulfur oxide (SO_x), carbon monoxide (CO), volatile organic compounds (VOC), or any hazardous air pollutant. Blasting may generate minor emissions of NO_x. Fugitive dust emissions would primarily occur while the quarry is operating and would be limited to the active quarry work area and access (haul) road. Depending on climatic conditions, some fugitive dust emissions would occur until reclamation operations have been completed. As described in

the Proposed Action, the project proponent would be responsible for treating and maintaining the private access (haul) road in a manner that would control fugitive dust and protect the structural integrity of the road.

Prior to the initiation of quarrying operations, the Proposed Action would be evaluated by WDEQ/AQD for compliance with state air quality standards and permitting requirements. If WDEQ/AQD determines a permit is required for the Proposed Action, the project proponent would prepare any required permit application information and comply with all applicable air quality standards and permit stipulations. Typically, an operation of the scale envisioned under the Proposed Action would not meet the emission threshold specified under Chapter 6, Section 2(k)(viii) of the Wyoming Air Quality Standards and Regulations (WDEQ/AQD 2000b), and a formal permit for the quarry site would be waived by WDEQ/AQD.

On the other hand, portable quarrying or processing equipment such as the crusher, screens, and/or conveyor belts utilized at the proposed project area are permitted separately by WDEQ/AQD as a portable air emission source under Wyoming Air Quality Standards and Regulations (WDEQ/AQD 2000b). All portable quarrying or processing equipment utilized under the Proposed Action would be properly permitted by the WDEQ/AQD.

A site-specific air quality permit will be required or issued by the WDEQ/AQD for the quarry site and the project proponent would comply with Chapter 3, Section 2(f) of the Wyoming Air Quality Standards and Regulations. This regulation requires all fugitive dust emissions to be limited to prevent unnecessary amounts of particulate matter from becoming airborne and requires the use of water and/or chemical dust suppressant on all unpaved haul roads, access roads and work areas utilized during the operation of the Proposed Action.

4.2.3.2 Alternative A

Annual air quality emissions under Alternative A would be essentially identical to those described under the Proposed Action, except a 40 acre project area would be disturbed and fugitive dust emissions would occur for twice the amount of time projected under the Proposed Action. All other permitting and regulatory requirements discussed under the Proposed Action would apply to Alternative A.

4.2.4 No Action Alternative

Under the No Action Alternative, no mineral sale would occur, no quarrying would be conducted, there would be no additional development in the proposed project area, and impacts to air quality resources would remain at existing levels.

4.2.5 Mitigation and Monitoring

The following mitigation measure is recommended to minimize impacts to air quality resulting from the proposed Huxtable Mineral Materials Project.

∄ Dust abatement measures will be implemented to reduce fugitive dust emitted from activities associated with the proposed mining operations. The access road will be sprayed with water 2 to 5 times daily, as needed, during hauling activities. Water will also be used on the portable crusher and on any conveyance belts to minimize dust emissions.

4.2.6 Residual Impacts

There would be some temporary deterioration to air quality in the vicinity of the Proposed Action or Alternative A. However, these impacts would be within state-permitted air quality levels, and they would be localized and temporary.

4.2.7 Cumulative Impacts

Negligible cumulative impacts to air quality would be anticipated from the implementation of either the Proposed Action or Alternative A as discussed in Section 4.1.

4.3 NOISE

4.3.1 Introduction

Noise impacts are limited by regulations, standards, and implementation plans under the administration of by the Mine Safety and Health Administration (MSHA) and the Occupational Safety and Health Administration (OSHA). The BLM can not conduct or authorize any activity which does not conform to all applicable local, state, tribal or Federal laws, statutes, regulations, standards or implementation plans.

4.3.2 Significance Criteria

Impacts from noise may be considered as significant if long-term project activities exceed the 55-dBA standard for noise at residences and/or other noise-sensitive locations such as greater sage grouse leks during breeding season, raptor nests during breeding and nesting seasons, and big game crucial winter ranges during critical winter periods. The significance criteria for noise pollution include both state and federally enforced legal requirements to ensure that noise levels remain below specified levels.

4.3.3 Direct and Indirect Impacts

4.3.3.1 Proposed Action

Noise levels under the Proposed Action would increase during quarrying activities such as topsoil removal, drilling and blasting, material hauling and processing, and product loading and

transporting. Depending upon atmospheric conditions, the highest levels would probably be associated with the limited blasting activity that would occur approximately once or twice per year. The nearest residence is a ranch house located approximately 3,960 feet (0.75 miles) east of the proposed access (haul) road. Typical ambient noise levels at an operating large surface mine are in the 40 to 60 dBA range for a 24-hour period and within 50 feet of the operation the maximum noise level could reach or exceed 85 to 95 dBA (BLM 1992).

The primary noise-related impact from the Proposed Action would be the extended period of time noise would occur during quarrying and reclamation operations. However, since quarrying operations would be limited to typical business hours (Monday-Saturday, sunrise to sunset) there would be no noise-related impacts during non-operating hours or on Sundays and holidays. The increased noise level would have little additional off-site effect because of the remoteness of the proposed project area. Any increased noise would be reduced to pre-disturbance levels during non-operating periods and after quarrying and reclamation operations have been completed.

Wildlife in the immediate vicinity of the quarry may be adversely affected during periods of active quarrying operations; however, observations at other surface mining operations in Wyoming indicate that most wildlife species adapt to increased noise associated with quarrying operations (BLM 1999b). Nonetheless, quarrying operations would not be allowed during the period from November 15 through April 30 in any given year in order to minimize impacts to mule deer wintering in the area (see Section 4.11). Likewise, there are no known greater sage grouse leks within a five mile radius of the proposed HQPA, so noise generated in association with quarrying activities would not have an adverse effect on grouse breeding activities. Impacts to potential raptor breeding and nesting activity in the area are unlikely as there are no known historic raptor nests within the project area (AEC 2005).

4.3.3.2 Alternative A

Noise levels under Alternative A would be essentially identical to those described under the Proposed Action, except noise from quarrying operations would occur for twice the amount of time projected under the Proposed Action.

4.3.4 No Action Alternative

Under the No Action Alternative, no mineral sale would occur, no quarrying would be conducted, no additional noise would be generated from the proposed project area, and noise levels would remain at existing levels.

4.3.5 Mitigation and Monitoring

The following mitigation and monitoring measure is recommended in order to minimize the impacts of noise emanating from the proposed Huxtable Quarry Mineral Materials Project.

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- ∄ Noise due to quarrying operations will be monitored during operation hours, and will be within the regulated limits provided by MSHA and OSHA. In addition to the above controls, stockpiles will be constructed at the opening of the canyon to muffle the noise generated by quarrying operations.

4.3.6 Residual Impacts

There would be an increase in noise levels under both the Proposed Action and/or Alternative A within the proposed project area. The highest noise levels would generally be limited to the active quarrying area and roads and would be limited to operating hours (Monday-Saturday, sunrise to sunset) and would be quickly dispersed by the wind.

4.3.7 Cumulative Impacts

Considering the pastoral nature of the overall project area and the general lack of substantial pre-existing noise emitters within the general HQPA, negligible cumulative impacts to noise would be anticipated from the implementation of either the Proposed Action or Alternative A.

4.4 CULTURAL RESOURCES

4.4.1 Introduction

Cultural resources, including archaeological and historic sites, on lands subject to federal authority are protected by various laws and regulations commencing with the *American Antiquities Act of 1906*. Specific directives concerning Cultural Resource Management can be found in *Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* (Federal Register 1983) and BLM Manual Section 8100. Prior to the initiation of any federal action, cultural resources must be inventoried and evaluated to determine their eligibility for inclusion in the NRHP. This evaluation is comprehensive screening process to determine significance and is designed to protect only the most significant sites. NRHP criteria (36 CFR 60.4) for determining eligibility define four (4) criteria of significance based upon "...the quality of significance in American history, architecture, archaeology, and culture present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association; and that:

- ∄ are associated with events that have made a significant contribution to the broad patterns of our society; or
 - ∄ are associated with the lives of persons significant in our past; or
 - ∄ embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
-

∄ have yielded, or may be likely to yield, information important in prehistory or history”.

Cultural properties are generally not eligible for inclusion in the NRHP if they lack diagnostic artifacts, subsurface remains, or structural features. Furthermore, sites that cannot be placed in a temporal context or shown to be related to other sites are usually not eligible and therefore are not officially protected.

4.4.2 Significance Criteria

Guidelines for determining adverse impacts to any site currently on, or eligible for, the NRHP have been developed by the Advisory Council on Historic Preservation [36 CFR 800.9 (b)(1),(2),(3)]. These guidelines indicate that significant impacts to cultural resources would include the following:

- ∄ destruction or alteration of all or part of an eligible property;
- ∄ isolation of a cultural resource from, or alteration of, its surrounding environment;
- ∄ introduction of visual, audible, or atmospheric elements that are either out of character with the property or alter its setting; and/or
- ∄ neglect and subsequent deterioration thereof.

These adverse impacts could be in the form of either direct, indirect, or cumulative impacts to cultural resources, which are defined below.

1. Direct impacts would result from physical disturbance of the cultural resource, resulting in an adverse effect to the site and its setting. Construction activities would be the primary direct impact affecting identified sites or structures.
2. Indirect effects resulting from implementation of the Proposed Action would not immediately result in the physical alteration of the site or its setting. Construction of an access road into an area containing significant sites or structures would allow public access and the potential for subsequent artifact collection.
3. Indirect activities, such as collection, could ultimately alter the overall composition and contextual integrity of the site, resulting in a cumulative impact over time.

Determining the potential effect(s) of any impact depends upon the level of information available. Should the occasion arise where an unavoidable impact to cultural resources either on, or eligible for nomination to the NRHP was identified, the proponent would be required to develop a mitigation plan designed to minimize disturbance to the site. This mitigation plan would be developed in consultation with both the State Historic Preservation Officer (SHPO) and the appropriate Surface Management Agency (SMA). Commencement of construction

activities would not proceed until the mitigation plan had been approved by both the SHPO and SMA and subsequently implemented.

4.4.3 Direct and Indirect Impacts

4.4.3.1 Proposed Action

As described in Chapter 3, cultural resource surveys of the proposed project area were conducted in 2003 and again in 2004. Results of these surveys indicate that none of the sites within the survey area are eligible for listing on the NRHP. These sites include a previously recorded historic site that lies approximately 200 feet east of the proposed access (haul) road, which would not be directly affected (i.e., disturbed) by the proposed project. The examined homestead is not eligible for listing on the NRHP.

As indicated in Section 3.6, several comments received in conjunction with public scoping expressed concern regarding the potential impacts of the Proposed Action (and alternatives) on the Emigrant Trail. The trail itself would not be directly affected (i.e., there will be no direct surface impact or disturbance) by project-related activities. Moreover, the setting and visual integrity of the trail in this area has already been compromised by previous activities thereby rendering those segments of the trail that would be indirectly affected by the Proposed Action (and alternatives) as a non-contributing segment not requiring protection and/or mitigation.

4.4.3.2 Alternative A

Potential impacts to cultural resources under Alternative A would be essentially identical to those described under the Proposed Action, except impacts would occur on four times the area that would be disturbed under the Proposed Action. A Class III Cultural Resource Inventory was conducted on the alternate 40-acre quarry site and cultural clearance was subsequently recommended for said quarry site. Consequently, Alternative A would have a negligible impact on cultural resources in the affected area.

4.4.4 No Action Alternative

Under the No Action Alternative, no mineral sale would occur, no quarrying would be conducted, and no impacts to cultural resources would occur.

4.4.5 Mitigation and Monitoring

The following mitigation measure is recommended to minimize impacts to cultural resources resulting from the proposed Huxtable Quarry Mineral Materials Project.

∉ The operator would be responsible for informing all persons associated with this project that they shall be subject to prosecution for damaging, altering, excavating or removing any archaeological, historical, or vertebrate fossil objects on-site. If archaeological, historical, or vertebrate fossil materials are discovered, the operator would suspend all operations that further disturb such materials and immediately contact the Authorized Officer. Operations would not resume until written authorization to proceed is issued by the Authorized Officer.

Within five (5) working days, the Authorized Officer would evaluate the discovery and inform the operator of actions that would be necessary to prevent loss of significant cultural or scientific values.

The operator would be responsible for the cost of any mitigation required by the Authorized Officer. The Authorized Officer would provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the Authorized Officer that the required mitigation has been completed, the operator would be allowed to resume operations.

4.4.6 Residual Impacts

The Proposed Action and/or Alternative A would not result in any unavoidable adverse (residual) impacts to identified cultural resources; however, some loss of unidentified cultural resources may occur. If unidentified cultural resources are located during quarrying operations, activity in the area would be halted, the proper regulatory authority would be contacted, and appropriate action undertaken to avoid impacts as recommended in Section 4.4.5, above.

4.4.7 Cumulative Impacts

All identified cultural/historical resources within the HQPA would either be avoided or potential impacts thereto mitigated in accordance with BLM/SHPO recommendations; consequently, no adverse cumulative impacts would occur to the cultural resources of the area.

4.5 MINERAL RESOURCES

4.5.1 Introduction

Existing mineral materials would be removed from the quarry area in conjunction with the proposed mining operation. The quantities of mineral material removed would be dependent upon the selected project alternative as discussed below.

4.5.2 Significance Criteria

The following criteria were used to determine the significance of impacts to the mineral resource:

- ∄ conflicts which could interfere with the recovery of other minerals;
- ∄ an unmanageable change to the existing geology; and
- ∄ geological changes that would impact the health and safety of the environment.

4.5.3 Direct and Indirect Impacts

4.5.3.1 Proposed Action

Under the Proposed Action, approximately 1.2 million tons of limestone, quartzite and moss rock would be excavated from the proposed project area over the LOP. At least 75% of these materials would be utilized in construction-related activities, with the remaining unmarketable materials returned to the quarry. The moss rock collected from the surface would be used for decorative landscaping purposes.

At this time there are no other known deposits of commercial mineral materials (resources) within the proposed HQPA.

4.5.3.2 Alternative A

Potential impacts to mineral resources under Alternative A would be essentially identical to those described under the Proposed Action except that an additional 5.7 million tons (+/-) of mineral material would be excavated from the 40-acre quarry.

4.5.4 No Action Alternative

Under the No Action Alternative, no mineral sale would occur, no quarrying would be conducted, and no impacts to mineral resources would occur.

4.5.5 Mitigation and Monitoring

No mitigation or monitoring is recommended.

4.5.6 Residual Impacts

The removal of sand and gravel, limestone, quartzite, and moss rock resources from the HQPA, as described for the Proposed Action and Alternative A would constitute an unavoidable adverse (residual) impact upon the mineral resource.

4.5.7 Cumulative Impacts

The 1.2 million tons of mineral material removed from the proposed quarry under the Proposed Action (5.7 million tons estimated under Alternative A) would be in addition to the 28 million tons of mineral material (limestone, quartzite and moss rock) expected to be mined from the Wills quarry over the estimated LOP. The Proposed Action would increase mineral material production from this general area of southern Converse County by approximately four percent with a twenty percent increase in mineral material production for Alternative A. As a consequence, negligible cumulative impacts to the mineral resources of the overall area would be anticipated from the implementation of either the Proposed Action or Alternative A.

4.6 RECREATION

4.6.1 Introduction

The proposed HQPA exists entirely on privately-owned surface estate and access to the area is strictly controlled by the project proponent. The area sees limited use for recreational activities in the early fall (primarily the months of September and October) in conjunction with hunting season by permission only. The area is also used for horseback riding and hiking. There are very limited public lands in the area that are accessible and thereby available for public recreational purposes. As a consequence, the value of the area for general recreational purposes is limited at best.

4.6.2 Significance Criteria

Impacts to recreation would be considered significant if project development changes the recreational use of the area or would result in a violation of the PRRA RMP or other land use planning recreational objectives.

4.6.3 Direct and Indirect Impacts

4.6.3.1 Proposed Action

Under the Proposed Action, a maximum of 22 acres would be disturbed over the LOP. Recreational opportunities would be temporarily limited within the overall project area, which is comprised entirely of all private surface estate. Once mining operations have been completed and the disturbed areas successfully reclaimed, big game species would likely re-occupy the HQPA and hunting opportunities would be restored to pre-disturbance levels. Likewise, the other recreational activities mentioned above would be available within the project area.

Considering the limited recreational opportunities currently available on the private surface estate encompassed within the HQPA, the Proposed Action would have a negligible impact on public recreational opportunities within the overall area.

4.6.3.2 Alternative A

Direct impacts to public recreational opportunities within the HQPA would be similar to those described under the Proposed Action; however, the impacts would occur over a larger area for an additional 15 years. Nonetheless, Alternative A would have a negligible impact on public recreational opportunities within the overall area due to existing land ownership patterns therein which restrict public access and concomitant recreation opportunity.

4.6.4 No Action Alternative

Under the No Action Alternative, no mineral sale would occur, no quarrying would occur, and recreational opportunities within the proposed project area would continue at current rates.

4.6.5 Mitigation and Monitoring

No mitigation or monitoring is recommended.

4.6.6 Residual Impacts

There would be a temporary, but avoidable, decrease in recreational opportunities within the disturbed portion of the proposed project area due to implementation of either the Proposed Action or Alternative A. However, the surface rights of the proposed project area are privately owned, and the public does not currently have free access to the proposed project area. Access to the proposed project area is only allowed by permission from the project proponent. As a consequence, recreational opportunities for the general public would not be affected by selection of either the Proposed Action or Alternative A.

4.6.7 Cumulative Impacts

The general area is predominately private surface estate with limited access; consequently, recreational opportunities for the general public within the area are extremely limited. Implementation of the Proposed Action or Alternative A would not change these surface ownership patterns or result in a cumulative reduction in (loss of) public recreational opportunities in the affected area(s).

4.7 SOCIOECONOMICS

4.7.1 Introduction

As previously mentioned, the HQPA is currently being used for agricultural and very limited recreational purposes and therefore is not contributing significantly to the economic development

of the local community. Access to the proposed quarry area would cross lands currently being used for ranching operations by the project proponent. Economic development in the surrounding community has been primarily limited to rural expansion and agricultural operations similar to current surface use patterns employed by the project proponent and his neighbors in the general area.

4.7.2 Significance Criteria

The Records of Decision (RODs) for both the Green River and Pinedale Resource Area RMPs (BLM 1988b, BLM 1997b), as well as land use plans prepared for the State of Wyoming by the Wyoming State Land Use Commission (1979) identify the following management goals/objectives associated with socioeconomics:

- ∅ to coordinate land use decisions with economic factors and needs;
- ∅ to mitigate economic, social, and environmental impacts on communities caused by rapid or large-scale growth and development;
- ∅ to plan for the provision of public facilities and services, including safe and efficient transportation and utility systems, in coordination with local land use policies, goals, and objectives; and
- ∅ to provide adequate, suitable land(s) to meet the housing needs of all residents.

BLM (2004b) criteria stipulate that impacts to socioeconomic resources would be considered potentially significant if any of the following were to occur:

- ∅ changes in total employment exceed an increase of 1% of the trend, or
- ∅ changes in local tax revenues exceed an increase or decrease of 15% of the trend.

4.7.3 Direct and Indirect Impacts

4.7.3.1 Proposed Action

Assuming a typical annual production rate of 280,000 tons of mineral material per year, approval and implementation of the Proposed Action would probably not require any new employees. Employees currently working at other mining/construction/quarrying operations within the general area would conduct operations in the proposed Huxtable quarry. The Proposed Action would generate approximately \$80,000 per year in direct employee wages (\$6,000,000 over the LOP). These figures do not include wages generated from secondary employment opportunities associated with the Proposed Action or Alternative A.

The Proposed Action would result in income from mineral sales to the federal government of approximately \$140,000 per year (\$600,000 over the LOP). State and county governments would receive about \$45,400 per year in sales tax revenue (\$194,312 over the LOP), and total federal and state payroll taxes (employee and employer contributions) would also generate approximately \$44,000 per year (\$188,320 over the LOP). The Proposed Action would generate a total tax revenue income for federal and state governments of approximately \$229,400 per year (\$981,832 over the LOP) based upon a mineral materials production rate of 280,000 tons per year. These figures do not include indirect revenue generated for federal and state governments from secondary employment taxes and other applicable taxes such as sales and fuel taxes.

The Proposed Action would generate a total of approximately \$389,400 per year (\$1,666,632 over the LOP) in employee wages and total federal and state tax revenue. The wages and tax revenue projections presented above are only estimates based on the typical annual mineral material production rates described above. Actual wages and tax revenues generated from the Proposed Action would be based on the actual tonnage of mineral materials sold in any given year and cannot be accurately estimated.

Since there would be no change in estimated employment associated with the Proposed Action, there would be no adverse (negative) impacts to area socioeconomics. Likewise, there would be no impacts to the existing infrastructure (e.g., housing, utilities, schools, hospitals, etc.) in either the city of Douglas or Converse County.

4.7.3.2 Alternative A

Approval and implementation of Alternative A would result in approximately the same annual wages and tax revenues generated as described for the Proposed Action, with these wages and tax revenues extended for approximately 15 additional years. Royalty estimates for the LOP would be increased by an approximate factor of 3.75 as the quarry would remove an additional 4.5 million tons of mineral materials from the quarry in addition to the 1.2 million tons of material expected to be removed in conjunction with the Proposed Action. Otherwise, the potential socioeconomic impacts anticipated in conjunction with Alternative A would be similar to those described for the Proposed Action.

4.7.4 No Action Alternative

Under the No Action Alternative, no mineral materials sale would occur and quarrying would not be conducted in the HQPA. As a consequence, the socioeconomics of Converse County would remain as before and would be unchanged by the prospect of mining activities in conjunction with either the Proposed Action or Alternative A.

4.7.5 Mitigation and Monitoring

No mitigation is recommended.

The quantities of mineral materials removed from the quarry will be closely monitored to determine taxable quantities and federal revenues. A scale will be placed in the HQPA to weigh each load prior to leaving the project area.

4.7.6 Residual Impacts

The Proposed Action would provide continuing employment for residents of Converse County and would generate millions of dollars in wages for these employees as well as tax revenues for federal and state government over the LOP. These figures would increase proportionately for Alternative A. There would be no negative impacts to the local infrastructure in the city of Douglas or in the Converse County area. As a result, no unavoidable adverse (residual) impacts are expected to occur to the local economy resulting from implementation of either the Proposed Action or Alternative A.

4.7.7 Cumulative Impacts

No negative cumulative impacts would occur to the socioeconomics of the city of Douglas or to Converse County resulting from implementation of either the Proposed Action or Alternative A. Positive cumulative impacts would include the generation of additional local, state and federal revenues associated with the production of mineral materials from the proposed Huxtable quarry. The quarry would also provide a source of employment for local residents thereby augmenting the local tax base and providing an additional source of income to the local community.

4.8 SOIL RESOURCES

4.8.1 Introduction

Impacts that could result from quarry operations within the HQPA would include the removal of vegetation, subsequent exposure and disturbance of the soil, mixing of soil horizons, an increase in the susceptibility of the soil to wind/water erosion, loss of the soil resource, and an overall alteration in the topography of the affected areas(s). The initial disturbance of the soil, in association with the potential loss of soil through erosion, could ultimately reduce both the quantity and productivity of topsoil available for reclamation operations. However, all available topsoil would be salvaged during initial construction and stockpiled for later reclamation of mined areas in order to assure that the natural fertility and reclamation potential of the topsoil resource is not reduced.

Increased surface runoff and water erosion would primarily occur in the short-term and would decline over time due to natural stabilization and surface crusting. Soil and climatic factors in the overall area, combined with utilization of technological and/or mechanical applications designed to enhance revegetation would generally ensure stabilization of each disturbed area within one (1) to two (2) years after initial disturbance.

4.8.2 Significance Criteria

Impacts to soils resulting from quarrying operations associated with the Proposed Action would be considered as significant if:

- ∄ mining activity resulted in increased erosion that could not be reduced by 50% one year after initial soil disturbance and by 75% five years after initial soil disturbance; and/or
- ∄ reclamation of disturbed areas would not result in the establishment of vegetative cover adequate to stabilize the site within 5 years.

4.8.3 Direct and Indirect Impacts

4.8.3.1 Proposed Action

The Proposed Action would result in approximately 22 acres of disturbance over the LOP as shown in Table 4.2. Direct impacts to soils would include the removal of vegetation, exposure of the soil, mixing of soil horizons, loss of topsoil productivity, soil compaction, and increased susceptibility to wind and water erosion. These impacts may, in turn, result in increased runoff, erosion, and the potential introduction of sediments into the North Platte River system.

Table 4.2 Land Disturbance Summary for the Proposed Action and Alternative A in Acres

Project Disturbance	Initial Disturbance		LOP Disturbance	
	Proposed Action	Alternative A	Proposed Action	Alternative A
Quarry Area	10.0	40.0	10.0	40.0
Access Road	10.9	10.9	7.3	7.3
Material Stockpiles	1.0	1.0	1.0	1.0
Total Acres	21.9	51.9	18.3	48.3

4.8.3.2 Alternative A

Alternative A would result in approximately 52 acres of initial (short-term) and 48 acres of long-term (LOP) surface disturbance as shown in Table 4.2. With disturbance limited to a maximum of 10 acres per year, direct impacts to soils would be similar to those described under the Proposed Action. Although the surface disturbance associated with Alternative A would be limited to 10 acres at any one time, the overall disturbed area would increase by 30 acres and impacts associated with mining activities would be extended for an additional 15 years.

4.8.4 No Action Alternative

Under the No Action Alternative, no mineral sale would occur, no quarrying would be conducted, and existing impacts to soil resources in the HQPA would continue to occur at current rates.

4.8.5 Mitigation and Monitoring

No mitigation or monitoring is recommended.

4.8.6 Residual Impacts

Implementation of either the Proposed Action or Alternative A would result in some increased and unavoidable soil loss through wind and water erosion. Productivity of some disturbed soils would be reduced due to the removal of vegetation, exposure of the soil, mixing of soil horizons, and increased susceptibility to wind and water erosion. High walls created in conjunction with mechanical rock mining activities would likely remain unreclaimed forever. Salvaged topsoil removed from these high wall areas prior to mining would likely be utilized in other (more level) areas of the quarry to achieve some degree of long-term reclamation.

4.8.7 Cumulative Impacts

Mining activities associated with either the Proposed Action or Alternative A would result in an additional 22 and 52 acres of total (initial) surface disturbance respectively. LOP surface disturbance would equal 18 and 48 acres respectively. This disturbance would be in addition to the 500 acres of total (initial) surface disturbance proposed in conjunction with the proposed Wills quarry and would represent a four percent increase in total soil disturbance in the general area attributable to the Proposed Action and a ten percent increase in total soil disturbance attributable to Alternative A. LOP disturbance in the general area would increase by three and nine percent respectively and would be considered as a negligible cumulative impact to the soil resource.

4.9 TRANSPORTATION

4.9.1 Introduction

The HQPA is located within a relatively rural environment approximately 6 miles southwest of the downtown area of Douglas, Wyoming. As indicated in Sections 2.1.1 and 3.11, access to the proposed HQPA would be via existing Wyoming State Highways 91 and 96. Considering that this is a rural area, occupied residences are somewhat limited in the area with approximately three residences within a one-mile (+/-) radius of the proposed quarry and access (haul) road

route. Maintaining existing levels for transportation safety is important to the community and a necessity for the proposed project.

4.9.2 Significance Criteria

The following criterion was used to determine the significance of impacts to area transportation:

∅ conflicts with local traffic.

4.9.3 Direct and Indirect Impacts

4.9.3.1 Proposed Action

Under the Proposed Action, vehicle traffic on Wyoming State Highway 91 and Wyoming State Highway 96 would increase. According to 1998 data from the WYDOT, average daily traffic (ADT) for Wyoming State Highway 91, on Mile Post 2.99 west of Douglas near the proposed project area, was recorded at 292 vehicles over a 24-hour period (WDOT 1999).

As described in the Proposed Action, product transportation would depend on product sales. However, assuming that maximum annual production is 280,000 tons (200,000 cubic yards) of marketable product produced and sold each year, assuming 169 working days per year (based on 6.5 working months a year and 26 work days per month), and assuming an average truck capacity of 35 tons per trip, there would be approximately 48 loaded trucks leaving the project area per work day to move approximately 1,657 tons per day (TPD) of mined mineral materials. These estimates assume that trucking activities would only be conducted in conjunction with actual mining and crushing activities based upon timing restrictions in the actual quarry area designed to protect wintering wildlife in crucial habitat. In point of fact, trucking activities could occur year-round by hauling from the stockpile area to be located adjacent to Wyoming Highway 91 (see Figure 2.1), which is outside of the big game winter range and would therefore not be subject to the operational restrictions to be imposed on the quarry itself (see Section 4.13). As a consequence, daily truck traffic would most likely be dictated by demand on a seasonal basis with actual trips determined by the amount of materials under contract at any particular time, the actual number of trucks available in the area with which to haul these materials, and the round-trip distance between the source and the destination. Please refer to Table 2.1 for a comparison of expected ADT associated with product sales for a variety of mineral material production scenarios and for hauling periods encompassing both 169 and 307 days per year.

By comparison, quarrying activities currently being conducted by McMurry Redi-Mix at 3 separate limestone quarries southwest of Casper, Wyoming in the Alcova area typically requires 5 to 18 trucks to move between 500 and 2,500 TPD with 4 to 5 round trips required per truck each day to move the limestone to Casper (Crane 2005). Assuming each truck was capable of hauling 35 tons of material per trip (as estimated for the proposed Huxtable quarry), 15 to 72 trips per day would be required to move this volume of material from the Alcova quarries via Wyoming Highway 220 to McMurry's batch plant in Casper.

Utilizing 1998 Average Daily Traffic (ADT) values provided by WDOT (WDOT 1999), the average number of vehicles traveling along Wyoming State Highway 91 under the Proposed Action would increase from 292 vehicles to approximately 388 vehicles over a 24-hour period for maximum mineral material production. Increases in traffic volume attributable to the Proposed Action would occur during regular business hours (Monday through Saturday, sunrise to sunset). There would be no increase in traffic volumes under the Proposed Action (or Alternative A) on Sundays or holidays. Along with the increased traffic volume, there would also be an increased, albeit slight, risk of traffic accidents on Wyoming State Highway 91 and Wyoming State Highway 96.

Traffic volumes are relatively low on Wyoming State Highway 96 compared with the traffic volumes on other state highways. For example, during 1999 WDOT recorded ADT on Wyoming Highway 59 near Mile Post 1 north of Douglas at 2,900 vehicles over a 24-hour period which included 370 trucks (WDOT 1999).

Under the Proposed Action (and Alternative A), there would be an increase in truck traffic on Wyoming State Highway 91 during the morning when public school buses are picking up children for school and again in the afternoon when the buses are returning children home. Based upon the assumption that the school buses would be enroute for approximately 45 minutes morning and afternoon, the bus drivers could expect to encounter a maximum of 3 haul trucks during each run on a daily basis.

4.9.3.2 Alternative A

Potential impacts to area transportation under Alternative A would be essentially identical to those described under the Proposed Action except that the increased volume of truck traffic and increased risk of traffic accidents would occur for twice the length of time anticipated under the Proposed Action.

4.9.4 No Action Alternative

Under the No Action Alternative, no mineral sale would occur, no quarrying would be conducted, and there would be no change in the existing health and safety (transportation) conditions within the overall area.

4.9.5 Mitigation and Monitoring

The following mitigation measures are recommended in order to minimize the impacts of increased traffic on local and area highways resulting from mining activities associated with the proposed Huxtable Rock Quarry.

- ≠ All equipment and equipment operators will be to be properly licensed by the WDOT. Equipment operators will be trained in the operation of the specific piece of equipment they would be operating and will be instructed in the existing regulations governing school bus
-

traffic and the proper techniques for complying with state law regarding bus stops in rural areas.

4.9.6 Residual Impacts

There would be an increased volume of traffic and an increased risk of traffic accidents on Wyoming State Highway 91 and Wyoming State Highway 96 due to increased traffic resulting from implementation of either the Proposed Action or Alternative A. Selection of Alternative A would increase these risks for an additional 15 years beyond the projected LOP for the Proposed Action. However, traffic volume on these roads is currently low and proper licensing and safety awareness training for equipment operators by the project proponent would mitigate and minimize the increased risk to the public.

4.9.7 Cumulative Impacts

Increases in local traffic would result from implementation of either the Proposed Action or Alternative A resulting from mining activities within the proposed Huxtable quarry. Average Daily Traffic (ADT) on Wyoming Highways 91 and 96 would increase from 292 vehicles/day to an estimated 388 vehicle per day - with this increase attributable primarily to truck traffic associated with said quarry, thereby adding to the overall ADT for the affected roadways. However, truck traffic emanating from the proposed Huxtable quarry would occur on area roadways that are not being used for hauling operations associated with the Wills quarry and would not represent a cumulative increase in the average daily truck traffic on Wyoming Highways 91 and 96 resulting from/in conjunction with mining operations in the general project area. A cumulative increase in truck traffic could occur at the junction of Wyoming Highway 96 with Wyoming Highway 94, and from said junction either into Douglas or to the I-25 on-ramp - assuming that the product mined from both quarries is transported into Douglas. Nonetheless, the additional truck traffic associated with the Proposed Action or Alternative A would not appreciably increase the ADT currently being experienced on area roadways - particularly when compared to the ADT on Wyoming Highway 59 at Mile Post 1 directly north of Douglas.

4.10 VEGETATION

4.10.1 Introduction

As indicated in Section 3.11, vegetation within the HQPA is included in two primary cover types including Basin Rock and Soil and Xeric Upland Shrub. Secondary cover types include Wyoming Big Sagebrush and Black Sage Steppe (WYNDD 2005).

Potential impacts to vegetation within the HQPA would primarily involve the clearing and subsequent disturbance of existing, native vegetation as a result of mining activities. The duration of the resultant impact is dependant upon the time required for natural succession to return reclaimed areas to a pre-disturbance condition of cover and stability.

4.10.2 Significance Criteria

Impacts to native vegetation within the project area would be considered as significant if any of the following were to occur:

- ∄ project activities resulted in range degradation through the introduction of invasive non-native species (noxious weeds) to the degree that such establishment resulted in listed weedy species occupying more than 20% of a specific vegetation type or hampering successful revegetation of desirable species in disturbed areas; or
- ∄ a “may effect” determination was reached by the cooperating agencies for any plant species currently listed as either “threatened or endangered” under the ESA.

4.10.3 Direct and Indirect Impacts

4.10.3.1 Proposed Action

The primary impact to existing vegetation resulting from exploration activities within the proposed HQPA would be the loss of vegetative production during and immediately following initial disturbance. As indicated in Section 4.11.3.1, mining activities would result in the short-term loss of native forage production on 22 acres, with the long term (LOP) loss estimated at 18 acres. While reclamation activities will result in the re-establishment of forage production on approximately 3.6 acres of disturbed surface within the HQPA (outslope areas of the access road route), the remaining 18 acres will see limited reclamation and subsequent forage production. We expect that the 10 acre quarry site will never be reclaimed to pre-disturbance levels of plant species diversity. As the HQPA does not contain unique plant communities, or populations of either T/E or BLM sensitive species (see Sections 3.15 and 4.12) the loss of plant species diversity within the 22-acre affected area is considered as a negligible impact to the vegetative resource. No riparian or wetland plant communities would be affected by surface disturbing activities associated with either the Proposed Action or Alternative A (AEC 2005).

The invasion of newly-disturbed areas by invasive non-native plant species would be a potential impact resulting from surface disturbing activities within the HQPA. Several species of invasive non-native plant species have become established on disturbed sites throughout Wyoming. As indicated in Section 3.11, some of the more common weed species which could be expected to invade disturbed surfaces within the HQPA include Canada thistle, musk thistle, cheatgrass, Russian knapweed and halogeton. If allowed to become established, infestations of these invasive non-native species could provide seed sources for invasion of neighboring lands and could impact forage production on these affected lands. However, considering the somewhat limited amount of surface disturbance which would be associated with mining activities within the HQPA and the mitigation measures recommended below, potential infestations of invasive non-native species would be controlled thereby preventing the establishment of these species within or adjacent to the HQPA as a result of project-related surface disturbance.

4.10.3.2 Alternative A

Impacts associated with Alternative A would be identical to those discussed above, only on a somewhat larger scale as the rock quarry would be expanded from 10 acres to 40 acres. The additional 30 acres of surface disturbance associated with the expanded quarry site would all occur within the mountain-foothills shrub habitat type (see Section 4.11.3.2). As indicated above, plant species diversity would be lost within the 40 acre quarry site. The increased surface disturbance associated with the expanded quarry site would increase the potential for infestations of invasive non-native plant species. Implementation of the mitigation recommended below would control these potential infestations.

4.10.4 No Action Alternative

Under the No Action Alternative, the BLM would deny the Proposed Action and no surface disturbing activities would occur in conjunction with the proposed rock quarry. Plant communities within the HQPA would continue undisturbed at present levels, with fluctuations in species diversity due primarily to weather, wildlife and domestic livestock grazing patterns and other natural causes.

4.10.5 Mitigation and Monitoring

The following mitigation measure is recommended to minimize impacts to vegetation resulting from the proposed Huxtable Quarry Mineral Materials Project.

- ≠ The project proponent would be required to control invasive non-native species on all disturbed areas associated with the proposed mining operation. Monitoring would occur on an annual basis for those invasive non-native species identified by the State of Wyoming, including any additional species as specified by the appropriate Converse County Weed Control District. Should invasive non-native species be identified within the HQPA in conjunction with this annual monitoring, control and eradication measures would be implemented in accordance with existing federal, state and local laws, rules and regulations applicable thereto.

4.10.6 Residual Impacts

The Proposed Action would result in the initial disturbance of approximately 22 acres of surface and the subsequent removal of vegetative from these lands. LOP surface disturbance would equal 18 acres and it could take 20-30 years after reclamation has been initiated for those reclaimed areas to achieve vegetation production and species diversity comparable to pre-disturbance conditions. Vegetation would likely be lost from the actual 10 acre quarry site forever.

As indicated in Section 4.1, residual impacts attributable to Alternative A would be identical to those for the Proposed Action, but on a larger scale - being increased by 30 acres. As above, mining activities would result in 52 acres of initial surface disturbance and 48 acres of LOP disturbance. Vegetation would likely be lost from the 40 acre quarry site forever.

4.10.7 Cumulative Impacts

Vegetation in the overall area would continue to be impacted primarily by on-going livestock grazing practices. There are no other appreciable surface disturbing activities occurring or expected to occur within the overall project area (see Section 4.11.6). The Proposed Action would result in 22 acres of initial and 18 acres of long-term (LOP) removal of vegetation. On-going mining activities associated with the Wills Quarry Project Area (WQPA) would result in the removal of vegetation from an additional 500 acres within the general area.

As indicated in Section 4.12.6, initial (short-term) disturbance (generally associated with access road construction/reconstruction activities) would be reclaimed shortly after disturbance, but could take up to 20 years to reach pre-disturbance levels of plant species diversity (shrub composition). The actual quarry areas (for both the HQPA and the WQPA) would likely never return to pre-disturbance levels of vegetative diversity and composition.

Cumulative impacts associated with Alternative A would be virtually identical to those discussed for the Proposed Action (above) with the exception that quarry site would be increased from 10 acres to 40 acres with a concomitant increase in surface disturbance and vegetative loss. There is no current evidence that there are or have been any significant cumulative impacts to vegetation resources within the general project area. No special habitats would be disturbed, no T/E or special status plants are known to exist within the overall project area and invasive non-native species would be controlled as necessary by the project proponent.

4.11 VISUAL RESOURCES

4.11.1 Introduction

Impacts to visual resources are evaluated by comparing the basic design elements of the Proposed Action and Alternative A with similar elements characteristic of the existing landscape. The degree to which the Proposed Action and Alternative A contrast with these elements is a measure of impact. Other factors used to determine overall impacts to visual resources include the project's relative location from key observation points and the duration and relative scale of the Proposed Action or Alternative A. Residual impacts are directly related to topography and quality of reclamation efforts.

4.11.2 Significance Criteria

The acceptable degree of contrast for given landscapes within the Casper Field Office is dictated by the VRM Classes set forth in the Platte River Resource Area Management Plan of 1985. The

project location lies within a VRM Class III area. Management objectives for this location are to partially retain the existing character of the landscape. Moderate levels of contrast are acceptable and new visual intrusions may draw the viewers' attention. However, new projects should not dominate the landscape. Best management practices (BMPs) for visual resources dictate that the basic elements which make up the existing landscape (i.e., line, form, color and texture) should be repeated whenever possible.

4.11.3 Direct and Indirect Impacts

4.11.3.1 Proposed Action

A visual simulation of the Proposed Action was derived from the same photo used to depict the characteristic landscape from the KOP (see Figure #4 in Appendix B). Other materials used to create the simulation include digital elevation models provided by the project proponent and available information on the color and texture of the rock material to be exposed. The visual simulation illustrates the Proposed Action midway through development. Throughout the life of the project it is reasonable to assume the entire ten acres would be subjected to some measure of disturbance. While not all ancillary facilities are represented, the simulation portrays a reasonable estimate of the Proposed Action.

The degree to which the basic elements of the Proposed Action contrast with elements dominant in the existing environment were rated as being moderate to high. Sheep Mountain which makes up the backdrop contains forms that are somewhat triangular but softened by rounded edges and mirroring vegetation. The angular forms created by the Proposed Action would produce a moderate contrast with the rounded forms that dominate the foreground and midground of project area. Similar degrees of contrast are found when comparing the introduction of horizontal and vertical lines. The introduced lines would be emphasized by disruption of converging lines of the existing drainages and the sinuous lines of vegetation which tend to follow natural contours. The most striking contrast is created by removal of vegetation and top soil that would expose the gray-white and crimson colors of the bedrock which would stand out against the gray-greens and juniper colors of the slopes and the lighter greens of fields in the foreground.

New structures and equipment would include earth moving machinery and an upgraded access road. Activities associated with the mining operation that would be expected to occur include drilling, blasting, excavation and heavy truck traffic, all of which contrast with the pastoral setting and existing structures. The upgrades to the access road in conjunction with noise, movement and heavy truck traffic would draw and hold the viewer's attention.

Reclamation efforts described for the Proposed Action would reduce the overall contrast within the project area. The remaining high walls would be visible long term and continue to impact the visual resource. Improved mitigation efforts such as staining would reduce these impacts.

Viewshed analysis was used to determine locations from which the Proposed Action can be seen (see Figure #2 in Appendix B). The 10-acre quarry site would be seen from four of the five

residences and from locations with high elevation as far away as Douglas and along I-25. The greatest impacts to visual resources would occur for those residents within two miles of the proposed site and would continue long after final reclamation is complete. Impacts from visual intrusions, increased activity at the site and along the access (haul) road, and the relative scale of the project would result in a moderate to high degree of visual contrast. This is consistent with VRM Class III objectives allowing for moderate contrasts that do not dominate the view. Provided the reclamation guidelines described in the Proposed Action are followed, the action would meet VRM Class III objectives.

4.11.3.2 Alternative A

Contrasting elements created by the 40-acre alternative would be similar to those described under the Proposed Action, except in terms of scale. This proposal allows for ten acres to be actively mined at any given time. After the completion of the first phase of development additional areas would be opened. Reclamation efforts would begin prior to new excavation. As a result the mine site would be divided with areas being in different phases of excavation and reclamation. While this would limit the size of the active quarry and mitigate some of the visual contrast, the totality of the impacts would still be substantially greater and require a longer period of activity than seen under the Proposed Action. A visual simulation (see Figure #5 in Appendix B) has been provided showing the 40-acre proposal during the final stages of development. Reclamation efforts would be occurring during this stage of development and have been included in the simulation.

Viewshed analysis was used to determine locations from which the proposed 40-acre quarry could be seen (see Figure #2 in Appendix B). The overall distance and number of locations by which the 40-acre quarry site would be seen would be substantially greater than for the 10-acre proposal. The greatest impacts to visual resources would occur for those residents within two miles of the proposed site and would continue long after final reclamation is complete. Impacts from visual intrusions, increased activity at the site and along the access road, and the relative scale of the project would result in a high degree of visual contrast. The project would not be consistent with VRM Class III objectives as it would dominate the view from a foreground and midground viewer perspective and would result in significant impacts to the visual resource.

4.11.4 No Action Alternative

Under the No Action Alternative, no mineral sale would occur, no quarrying would be conducted, there would be no additional development in the proposed project area, and no unavoidable adverse impacts.

4.11.5 Mitigation and Monitoring

The following mitigation measures are recommended to minimize impacts to visual resources resulting from the proposed Huxtable Quarry Mineral Materials Project.

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- ∄ Retention of the northern-most slope to be used for screening purposes as depicted in the photo-simulation (see Figure #4 in Appendix B).
 - ∄ Native shrub species found within the existing landscape should be used in the seed mixture for reclamation purposes.
 - ∄ High walls should not be allowed to exceed WDEQ requirements.

Monitoring of quarry activities should occur at a minimum of twice a year for either the Proposed Action or Alternative A. Throughout the life of the project and after reclamation the foremost bench should remain in place and be used as visual screening. Reclamation efforts should strive for natural contouring including the reduction of remnant high walls whenever feasible. Seed mixtures should include woody species and native species which are currently located within the project area. Environmental stain used on the high walls would improve the overall reclamation and reduce residual impacts of the Proposed Action.

4.11.6 Residual Impacts

Implementation of either the Proposed Action or Alternative A would result in impacts to the existing landscape that are unavoidable and reclamation efforts would never fully restore the quarry site to its pre-existing condition. Quarry activities would introduce permanent changes in color and line due to the exposure of underlying rock and disruption of the natural contours that would likely be cost-prohibitive to fully remediate. The remnant high wall would produce straight and angular lines and shapes that would contrast with the naturally occurring forms and colors found in the existing landscape. The scale of these impacts would be greater for Alternative A due to the larger size of the quarried area, as the western edge would extend higher up the slope above the screening ridgeline in front of the quarried area.

4.11.7 Cumulative Impacts

The proposed project area has been utilized continuously for agricultural purposes (livestock grazing) since the early twentieth century. The natural environment of the general project area remains largely unaffected by human-related activities such as ranching, grazing, and recreational activities. There is one rock quarry approximately three miles southeast of the project area but can not be seen from the KOP, as it is located in a canyon and screened from view.

In the proposed project area existing developments (e.g., houses, fences, county roads, etc.) can be considered to be visual intrusions but are generally consistent with the rural/pastoral setting. The addition of the Proposed Action or Alternative A represents a change to an industrial use which contrasts with the current rural setting. With development increasing in the Douglas area there will be an increased demand for mineral materials. It is therefore reasonable to assume that the demand for these mineral materials will continue and additional quarries may be developed in the future which would add to the cumulative impact. Visual quality of the area would be further diminished as the area becomes increasingly developed.

4.12 WATER RESOURCES

4.12.1 Introduction

Hydrologic impacts resulting from surface disturbances associated with the proposed project would include the removal of vegetation, exposure of the underlying soil surface, and compaction of the soil. These impacts would result in an increased overland flow of surface runoff with subsequent erosion and off-site sedimentation. Consequently, these changes in the local environment could create the potential for increased stream flow, increased sediment loading, and the subsequent degradation of both surface and subsurface water quality below acceptable standards, if they are not properly controlled or occur in close proximity to a perennial stream or aquifer recharge point. Both the magnitude and duration of these impacts depend upon several factors, including:

- ∅ slope aspect and gradient,
- ∅ degree and extent of soil disturbance(s),
- ∅ susceptibility of the soil to erosion,
- ∅ proximity of the disturbance to existing stream channels, and
- ∅ mitigation measures implemented.

Additional factors would include the duration of construction (surface disturbing) activities coupled with the timely implementation and subsequent success (or failure) of applicable reclamation measures. These potential impacts would be greatest after commencement of construction activities, but would begin to decrease shortly after completion of surface disturbing activities due to a combination of passive stabilization and implementation of erosion and sediment control measures as necessary to control runoff.

The leakage or spillage of liquid hydrocarbons and/or other fluids/chemicals utilized in quarry operations could also degrade both surface and ground water resources. The impact of such an occurrence would depend primarily upon the quantity and chemical composition of the fluid(s) released, the relative proximity of the spill to the water body potentially impacted, and mitigation measures implemented to control the event.

4.12.2 Significance Criteria

The following criteria were used to determine the significance of impacts to other surface and subsurface hydrologic (water) resources within the project area:

- ∅ degradation of existing surface water quality such that state and/or federal standards are not met;
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- ≠ modification of the quantity or quality of stream flows that affect established users such as humans, livestock, fish or wildlife;
 - ≠ impacts to water yield(s) from existing wells or springs resulting from project-related activities;
 - ≠ degradation of existing subsurface water quality in aquifers important for agricultural and/or domestic purposes; and
 - ≠ total disturbance in any watershed is greater than (exceeds) 10 percent.

4.12.3 Surface Water Resources

Surface water flow in the area only occurs in response to heavy precipitation events. The office of the Wyoming State Engineer (WSEO) has no historical stream flow data for Bed Tick Creek. Mr. Dave Andrews, a former employee of the WSEO who oversaw the watershed for 21 years, was also unaware of any historical flow measurements along Bed Tick Creek (Andrews 2004). Observations by Mr. Andrews would suggest that a 6-hour precipitation event is required to produce surface water flow in Bed Tick Creek, with these events occurring approximately at 25-year intervals.

4.12.3.1 Direct and Indirect Impacts

4.12.3.1.1 Proposed Action

The Proposed Action would result in the initial disturbance of 22 acres with approximately 18 acres of surface disturbance remaining for the LOP. Surface disturbing activities associated with the mining operation would temporarily slow surface water flow out of the active quarry area and the area located immediately up-gradient from the active quarry area until such time as quarrying operations have progressed to the point where permanent reclamation operations can re-establish the drainage channel and facilitate the unobstructed flow of runoff through the quarried area.

Under the Proposed Action, quarrying operations would not be conducted below the bottom of the stream channel that flows into the two existing stock ponds located in the second-order ephemeral tributary below the quarry site. The project proponent would implement BMPs and alternative sediment control measures to temporarily slow down, but not divert, the flow of runoff into the closest of the two dry stock ponds (approximately 400 feet downstream from the quarry site), which would be utilized as a sediment containment structure (stilling basin) for water flowing through the quarry site. The first dry stock pond should collect most of the sediments that are not contained upstream by sediment control structures installed within or directly downstream of the active quarry. Water that escapes the first stock pond would continue to flow downstream for approximately 300 feet where it would be captured in the second dry stock pond. The second dry stock pond would be utilized as a secondary sediment control

structure (stilling basin) to capture any remaining sediments that passed from the quarry site through the initial stock pond sediment control structure.

Implementation of BMPs and the alternative sediment control measures specified in the Proposed Action would be implemented to prevent storm water runoff from any disturbed portion of the active quarry area from degrading the quality of any receiving waters including Bed Tick Creek or the North Platte River. Alternative sediment control measures would be required by WDEQ/LQD and WDEQ/WQD permits and would minimize and mitigate impacts to surface water quality. The alternative sediment control measures would remain in place until reclamation standards have been met and their removal is approved by WDEQ/LQD.

With the implementation of BMPs and alternative sediment control measures (including the use of the two dry stock ponds as sediment containment structures), water quality would be expected to be similar to pre-mining conditions. Therefore, the Proposed Action would have negligible impacts on surface water quality in the HQPA.

4.12.3.1.2 Alternative A

Alternative A would result in approximately 48 acres of disturbance over the LOP. Disturbance would be limited to a maximum of 10 acres per year. Alternative A would also require the implementation of the same alternative sediment control measures and the same reclamation procedures and standards as described for the Proposed Action. Direct impacts to surface water resources would be essentially identical to those described under the Proposed Action; however, the impacts would occur on an incrementally larger area and for twice the length of time anticipated under the Proposed Action.

4.12.4 Ground Water Resources

4.12.4.1 Direct and Indirect Impacts

4.12.4.1.1 Proposed Action

Based on the description of existing ground water resources, it is probable that water-bearing aquifers exist beneath the area proposed for mining. Based upon the following considerations, it is unlikely that the Proposed Action would intercept any important, near-surface ground water aquifers or impact any existing water rights within the general project area:

- ∅ the elevation and geology at the proposed quarry site;
 - ∅ the absence of any existing springs or seeps within the immediate quarry area;
 - ∅ the depth to water-bearing zones in area water wells (see Table 3.4); and
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≠ the limited depth of the proposed mining operation.

It should be noted that the city of Douglas has expressed concern regarding potential impacts to their Sheep Mountain #1 water supply well located in the NE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 33 in Township 32 North, Range 72 West. The proposed well is located approximately 3,000 feet (+/-) east/northeast of the proposed quarry and is approximately on the same elevational plane as the proposed quarry floor. As indicated in Table 3.4, the Sheep Mountain #1 water supply well was drilled to 1,165 feet and produces approximately 910 gallons of water per minute (GWPM) for both miscellaneous and municipal uses (WSEO 2005).

Using the formula presented in Section 3.3.1.1, peak particle velocity at the Sheep Mountain #1 water well from blasting activities at the proposed Huxtable quarry would be approximately 0.06 inches per second (ips), which is well below the U.S. Bureau of Mines (USBM) threshold limits for safe blasting (see Table 3.2) and is slightly higher than the 0.02 ips level of perceptible motion to humans. Considering that the water well is slightly over one-half (0.5) mile from the proposed Huxtable quarry and the static water levels is approximately 365 feet below the floor of the quarry, it is unlikely that mining operations (including blasting) would have an impact thereon. Nonetheless concerns regarding the potential impacts to both the quality and quantity water produced from the Sheep Mountain #1 water supply well resulting from mining operations will be addressed through the application of those mitigation measures to be recommended in Section 4.12.6. These mitigation measures should ensure that any impacts to the subject well are identified through a monitoring program to be implemented by the project proponent.

In the unlikely event of an impact to any existing water rights, Wyoming State law (Wyoming Statute § 41-3-907) states that pre-existing water rights are protected from human interference or other affects such as changes in water quantity or quality. Therefore, should mining activities associated with the Proposed Action (or Alternative A) impacted existing water rights located immediately down gradient of the proposed Huxtable quarry, the project proponent would be responsible for mitigating the identified impacts. The WDEQ/LQD and the WSEO would also ensure that any necessary mitigation measures are fair and reasonable. Mitigation measures might include well replacement, redrilling the existing well, replacement or resetting of the pump, or providing an alternative source of water that meets the quantity and quality of the existing water well.

The project proponent is proposing to use a privately-owned water well (Huxtable #2) for dust abatement purposes. Approximately 4,200 GWPD would be used for dust abatement on the access (haul) road and to mitigate dust emissions from the crushers and belts. These dust abatement measures would consume approximately 709,800 gallons of water per year (2.2 acre-feet), with LOP water usage estimated at 10.65 million gallons of water (32.7 acre-feet). In this regard, a pump test was performed on the Huxtable #2 water supply well on February 18, 2005 by Hydro-Engineering. The well was pumped at 14.7 gpm for 71 minutes creating a total of 12.8 feet of draw down. The results of the pump test indicated that the transmissivity used for calculations of the estimated draw down is 1,690 gal/day/foot. The storage coefficient for the aquifer based upon the 60-foot thick aquifer can be estimated to be 6×10^{-05} . Based upon the projected water usage of 4,200 gal/day for 169 days/year, an average use of 3 GWPM can be used to estimate the draw down for the aquifer. The nearest well (producing from a similar depth and aquifer) is roughly 4,700 feet from the source well. Using the Theis equation, the estimated

drawdown would be 0.85 feet at the end of the 169 days of continuous pumping using the average pumping rate of 3 GWPM. This minimal amount of drawdown should not affect the amount of yield from any of the adjacent wells in the vicinity of the proposed project area.

The quality and level of the ground water is not anticipated to be effected by the proposed quarry, and will be monitored to identify any impacts to the aquifer during quarry operations (see Section 4.12.6). Based on the above discussion, and considering the mitigation measures proposed in Section 4.12.6, the Proposed Action would not be expected to have an adverse impact upon ground water resources within or directly adjacent to the HQPA.

4.12.4.1.2 Alternative A

Impacts to ground water resources under Alternative A would be essentially identical to those described under the Proposed Action; however, the impacts would occur on an incrementally larger area and for twice the length of time anticipated under the Proposed Action.

Expansion of the quarry area from 10 acres to 40 acres would double the projected LOP water usage from the Huxtable #2 water well for use in dust abatement activities. Water usage would increase from 32.7 acre-feet to 65.4 acre-feet of water for the LOP.

4.12.5 No Action Alternative

Under the No Action Alternative, no mineral sale would occur, no quarrying would be conducted, and impacts to surface and ground water resources would continue at current rates without the added impacts resulting from quarrying activities associated with either the Proposed Action or Alternative A.

4.12.6 Mitigation and Monitoring

The following mitigation and/or monitoring measures are recommended in order to minimize the impacts of the proposed Huxtable Quarry Mineral Materials Project upon surface and ground water resources within the overall area.

- ∅ The access (haul) road would cross ephemeral drainages at grade. Access across Bed Tick Creek would involve the installation of a new culvert designed to pass a 10-year 24 hour event and to convey heavy truck traffic and mining equipment over Bed Tick Creek. Silt fences and straw bale sediment traps would be utilized in accordance with an approved Storm Water Pollution Prevention Plan permit, to prevent introduction of sediment to runoff water. Since the quarry plan requires quarrying horizontally into the canyon walls rather than downward, no ground water is likely to be encountered.
 - ∅ The project proponent would notify the Douglas Public Works Director (or his designee) at least 48 hours in advance of blasting to enable the City to monitor turbidity levels in the Sheep Mountain #1 water supply well immediately before and after blasting operations.
-

Should the turbidity in the Sheep Mountain #1 well increase dramatically (≥ 0.5 National Turbidity Units) following the blasting operation, blasting operations would cease.

- ∅ Secondary lined containment ponds would be installed around all liquid chemical storage facilities.
- ∅ A minimum of two monitoring wells would be installed down gradient of the proposed quarry. These monitoring wells would be monitored annually for draw down and for the presence of contaminants from chemical storage in the area and other possible contaminants from the explosives used in conjunction with blasting operations in said quarry.

4.12.7 Residual Impacts

There would be an unavoidable increase in surface disturbance within the affected watersheds under the Proposed Action. There would also be temporary loss of surface water due to the presence of the open quarry and the implementation of the alternative sediment control measures required by WDEQ/WQD and WDEQ/LQD. Following the successful completion of permanent reclamation operations, surface water flow and quality would eventually mimic pre-disturbance conditions.

Unavoidable adverse (residual) impacts for surface water resources under Alternative A would be essentially identical to those described under the Proposed Action except that the effects would occur for twice the length of time anticipated under the Proposed Action.

4.12.8 Cumulative Impacts

4.12.8.1 Surface Water Resources

The proposed Huxtable Mineral Materials Project represents the only known commercial development within the drainage of Bed Tick Creek, a dry ephemeral tributary of the North Platte River in and directly downstream of the HQPA. While the Wills quarry is located approximately 2.5 miles to the south/southeast of the HQPA, surface disturbances and potential impacts to surface water quality resulting from activities within the WQPA would occur in a drainage basin separate and apart from the drainage basin of Bed Tick Creek. Surface drainage from the WQPA flows into the North Platte River via a series of second and third-order ephemeral drainages that either flow directly to the North Platte River (in the northern two-thirds of the WQPA) or into Wagon Hound (southern one-third of the WQPA) and thence into the river (BLM 2001). Should sediments from both quarries reach the North Platte River, this would represent a cumulative impact to the surface water quality. However, implementation of the appropriate sediment control measures and SWPPPs as discussed for both projects would virtually eliminate any potential of sediments from reaching the North Platte River. As a consequence, the proposed Huxtable Quarry Mineral Materials Project is not expected to result in an adverse and cumulative impact upon surface water quality in the Bed Tick or North Platte River drainage basins.

4.12.8.2 Ground Water Resources

As indicated in Table 3.5, there are nine existing water wells within a one-mile radius of the proposed Huxtable quarry with seven of the nine wells permitted for domestic and stock watering purposes only (WSEO 2005). The Sheep Mountain #1 well is permitted for municipal and miscellaneous purposes while the Ridge Water-WWDC #1 well was permitted as a monitoring well. While the project proponent has no plans to drill additional water wells within the HQPA, the Huxtable #2 will be utilized as a water source well for use in dust abatement measures within the HQPA. A pump test was conducted on the Huxtable #2 water well in February of 2005 which indicated the draw down on the aquifer would be minimal in conjunction with water usage from said well for dust abatement purposes. Based upon this draw down information, it is unlikely that use of water in conjunction with the proposed project would result in a cumulative draw down within the aquifer thereby affecting shallow area water wells. Similarly, as the Sheep Mountain #1 water well is considerably deeper than the Huxtable #2, it is also unlikely that water use in conjunction with the proposed quarry would result in a commensurate draw down in the Sheep Mountain well.

As there are no other commercial developments within the general project area, the potential for cumulative impacts (including both draw down and possible contamination) to ground water resources in the area is considered to be negligible.

4.13 WILDLIFE RESOURCES

4.13.1 Introduction

The HQPA provides habitat for many species of both game and non-game vertebrates, including mule deer, raptors, upland game and migratory birds, predators and furbearers. The principal impacts likely to be associated with the proposed mining activity would include potential displacement of wildlife species from preferred habitat and the potential loss of wildlife habitat as a result of project activities.

4.13.2 Significance Criteria

Impacts to wildlife species within the project area would be considered as significant if any of the following were to occur:

- ∅ Project-related activities impacted an officially-designated crucial habitat during an important use period; and
 - ∅ a permanent reduction in the rate of population recruitment for economically important or statutorily protected species occurred as a result of project activities.
-

4.13.3 Direct and Indirect Impacts

4.13.3.1 Proposed Action

The initial (short-term) loss of 22 acres of big game habitat due to vegetation removal would be mitigated with measures included in the Proposed Action in order minimize surface disturbance and to ensure timely reclamation and revegetation of all disturbed areas to the extent practicable.

Big Game. As indicated in Section 3.15.1, the HQPA includes crucial big game winter range for mule deer (*Odocoileus hemionus*). As defined above, any mining activities which occurred during the period from November 15 through April 30 in any given year would be considered as a potentially significant impact upon mule deer wintering HQPA. In this regard, mitigation has been recommended which would preclude any mining activity within the designated crucial big game winter range from November 15 through April 30, thereby eliminating the potential impact to wintering mule deer during the important use period.

Mining activities associated with the actual quarry site would result in the permanent loss of 10 acres of mountain-foothills shrub habitat in crucial winter range. Reclamation efforts undertaken once mining operations have ceased will probably not return the mined area to pre-disturbance levels of vegetative diversity, particularly for the mountain shrub component of the affected crucial habitat. As a consequence, the suitability of the mined area for crucial habitat will be permanently lost. However, this loss is considered as minor when compared to the overall abundance and distribution of the mountain foothills shrub community that comprises crucial mule deer winter range along the front of the Laramie Range. Rather than direct habitat loss, the greatest impact on wildlife populations would be from displacement of big game species from preferred habitats as a result of increased level(s) of human activity (including vehicular traffic) and associated noise. The extent of this displacement is difficult to predict when one considers that response to noise and human presence varies from species to species as well as among individuals of the same species. In some cases, wildlife species may habituate to noise and human presence after initial exposure, and begin to utilize areas that were formerly avoided. It is commonly assumed that these effects are detrimental to individual species and numerous studies have examined the effects of human presence on big game species (Klein 1974; Irwin and Peek 1979; Ward and Cupal 1979; MacArthur et al. 1982; Brekke 1985).

In addition to the avoidance response, an increased human presence intensifies the potential for wildlife-human interactions ranging from the harassment of wildlife to poaching and increased legal harvest. Likewise, increased traffic levels on existing access roads could increase the potential for wildlife-vehicle collisions. These collisions are most frequent where roads traverse areas commonly frequented by game species.

Generally speaking, mining activities would temporarily displace big game animals in the immediate vicinity (up to 0.5 miles) of such activities. However, once such activities are completed, most big game animals would become acclimated to the reduction in traffic and human activity and would continue to utilize suitable habitat in closer proximity to the quarry site, haul road, and stockpile area(s). However, such habitat may not be utilized to the same extent as it was prior to disturbance. It could take 20 + years for some reclaimed areas to attain

pre-disturbance shrub conditions and vegetation diversity and, as indicated above, the quarry itself is not expected to attain pre-disturbance shrub conditions and diversity. However, once mining operations have been completed, revegetation operations are completed and suitable vegetation habitat re-established, big game would likely re-occupy all previously disturbed areas within the HQPA with the exception of the quarry itself. Considering that mining activities will not be allowed during the critical use period, the potential for the displacement of wintering mule deer resulting from human activities associated with the Proposed Action is negligible.

Small Mammals. Impacts to small mammals resulting from implementation of the Proposed Action would include direct mortality during project-related activities, especially associated with construction activities and increased traffic. Generally, the dispersed and relatively small amount of habitat physically impacted by the haul road and rock stockpiles outside of the actual quarry area would limit impacts to small mammal species. Most small mammal populations are relatively tolerant of human activity and would likely experience population reductions in direct proportion to the amount of habitat removed. This would most likely be true for species with relatively small home ranges (e.g., rodents and lagomorphs) and less applicable to more wide-ranging species such as coyotes and badgers. Project-related impacts to small mammals would likely be masked by natural variations in weather, disease, and other natural factors. Impacts to rare habitats (e.g., wetlands areas) would not occur in conjunction with the Proposed Action. The loss of habitat for other mammals due to vegetation removal would be mitigated with measures included in the Proposed Action to minimize surface disturbance and to ensure timely reclamation and revegetation of all disturbed areas with the exception of the actual quarry area.

Impacts to small mammal populations in the quarry area of the HQPA would be greater due to the intensive nature of activities proposed therein in conjunction with the mining activity. As indicated above, these population reductions would be directly proportional to the amount of habitat initially removed in conjunction with mining activities. Reclamation and revegetation of those areas mined in conjunction with the HQPA will return selected portions of the HQPA area to some degree of vegetative diversity which may restore some habitat for smaller mammals, particularly rodents; however, we do not expect the actual mined area to return to pre-disturbance levels of habitat diversity and/or effectiveness. Again, considering the limited areal extent of the Proposed Action and the habitat loss associated therewith, the subsequent effect of this loss upon small mammal populations would be considered as negligible.

Raptors. Suitable nesting habitat for a variety of species does occur within the overall project area as indicated in Section 3.13.3; however, an inventory of historic raptor nesting activity within the HQPA on February 24, 2005 failed to locate any historic raptor nests within the inventory area (AEC 2005). It is possible that mining activities and associated traffic could displace raptor species attempting to nest within the project area should these activities occur during the breeding/nesting period. However considering the lack of historic nests within the overall HQPA, the potential for future displacement is considered to be minimal.

Migratory and Non-Migratory Birds. Surface disturbing activities associated with the Proposed Action would result in the short-term disturbance of 22 acres of shrub-steppe and mountain-foothills shrub habitat which provide a source of food, security cover and nesting habitat for many of the species listed in Table 3.5. Only 25% of this disturbance would be reclaimed within 5 years of initial disturbance, resulting in a long-term (LOP) loss of 18 acres

of habitat. Reclamation of the 3.6 acres associated with access road construction/reconstruction would introduce some degree of vegetative (e.g., habitat) diversity into the area which would benefit those species dependant upon the shrub-steppe habitat type, but the mountain-foothills shrub habitat that would be eliminated within the 10 acre quarry site would not be restored to pre-disturbance levels of species diversity and/or habitat effectiveness. Depending upon the quarrying methods utilized and the ultimate configuration of the sidewalls remaining upon conclusion of quarrying activities, some habitat may be created for those avian species preferring rock ledges, cracks and crevices.

Considering the relatively small percentage of total surface disturbance proposed within the overall project area, the actual magnitude of direct habitat loss and subsequent displacement would be minimal. The primary impacts would occur in direct proportion to the amount of habitat actually disturbed for any particular species in conjunction with the time of year the disturbance occurred. Some increased mortality would be likely from bird/vehicle collisions as a result of increased vehicle traffic. Depending upon the time of year, birds could move to adjacent habitats undisturbed by project-related activities. However, project-related activities during the nesting season could result in nest failure or destruction. Such impacts, however, would be of such scale that they would be unlikely to affect area populations or species viability. Three of the species identified in Table 3.5, including ferruginous hawk, greater sage-grouse, and mountain plover (BLM sensitive species) will be discussed in greater detail in Section 4.13.

Amphibians, Reptiles, and Fish. As indicated in Section 3.13.5, few if any amphibians or reptiles (herptiles), and no fish, are found within the HQPA. Potential adverse impacts to herptiles would include direct mortality during surface-disturbing activities, loss of suitable habitat, and displacement of individuals. Such impacts would occur in direct proportion to the amount of suitable habitat disturbed. Considering the extremely limited amount of suitable herptile habitat within the HQPA, the potential impact to herptile populations resulting from the short-term disturbance of 22 acres of habitat and the long-term disturbance of 18 acres of habitat would be minimal. As discussed above, the mining operation could ultimately create some suitable habitat for selected herptiles (particularly snakes and lizards) that prefer rock ledges, cracks and crevices for foraging, sunning and denning purposes.

4.13.3.2 Alternative A

Impacts associated with Alternative A would be identical to those discussed above, only on a somewhat larger scale as the rock quarry would be expanded from 10 acres to 40 acres. The additional 30 acres of surface disturbance associated with the expanded quarry site would all occur within the mountain-foothills shrub habitat type, which has been identified as crucial mule deer winter range. As above, mining activities within an officially designated crucial habitat during an important use period would be viewed as a potentially significant impact; however, implementation of the recommended mitigation would eliminate the direct impact to wintering big game animals. Indirect impacts would continue through the loss of important seasonal habitat; however, this loss is considered to be minor within the overall herd unit.

As above, impacts to other wildlife species would involve the permanent loss of an additional 30 acres of mountain-foothills shrub habitat. As stated above, it will be virtually impossible to return the quarried area to a level of vegetative diversity and productivity equal to pre-disturbance levels – resulting in the permanent loss of those habitat types for most species. Depending upon the quarrying methods employed, some habitat may be created for those smaller mammal, avian and herptile species that prefer rocky habitats including ledges, cracks and crevices.

4.13.4 No Action Alternative

Under the No Action Alternative, the BLM would deny the Proposed Action and no surface disturbing activities would occur in conjunction with the proposed rock quarry. Wildlife populations would continue at present levels, with fluctuations due primarily to weather, disease, and other natural causes.

4.13.5 Mitigation and Monitoring

The following mitigation measures are recommended to minimize impacts to wildlife resulting from mining activities associated with the proposed Huxtable Quarry Mineral Materials Project.

- ∅ To protect mule deer wintering on crucial big game winter range, no surface disturbing and/or mining activities (including, but not limited to blasting, quarrying, crushing, screening, hauling, etc.) will not be allowed during the period from November 15 to April 30.
- ∅ Should the project proponent wish to conduct blasting operations within the proposed quarry between May 1 and July 31, a raptor nesting inventory would be required prior to blasting to ensure that raptor nesting activities within a one-half (0.5) mile radius of the quarry would not be disrupted. Should the inventory determine that raptor nesting activity is not occurring within the inventory area, blasting operations would be allowed to proceed.

Raptor nesting inventories would be conducted by a qualified wildlife biologist approved by the Caper Field Office, Bureau of Land Management and a written report would be submitted to the Authorized Officer, CFO documenting the results of all inventories.

4.13.6 Residual Impacts

The Proposed Action would result in the temporary loss of approximately 22 acres of wildlife habitat. Some species such as big game, large mammals, upland game birds, and raptors would be temporarily displaced and some wildlife species, especially small mammals, small birds, amphibians, and reptiles would be killed during construction activities. There would also be an indeterminate increase in wildlife mortality from vehicle/animal collisions.

4.13.7 Cumulative Impacts

As indicated in Section 4.1, there are currently no large-scale industrial or commercial developments within the general project area and BLM is unaware of any reasonably foreseeable future actions proposed within the general project area that would contribute to cumulative impacts to wildlife populations. The general area has been utilized continuously for agricultural purposes (primarily livestock grazing) since the early twentieth century and the natural environment remains largely unaffected by human-related activities (BLM 2001).

Cumulative impacts to wildlife resources would likely occur in direct proportion to the amount of habitat loss that occurs for each species. Wildlife resources in the affected area would continue to be impacted primarily by on-going agricultural (grazing) activities. The Proposed Action would result in 22 acres of total surface disturbance and 18 acres of long-term (LOP) habitat loss due to mining activities. This habitat loss would be in addition to the 500 acres of surface disturbance previously authorized for the Wills Quarry Project (BLM 2001). However, it should be noted that the Wills Quarry Project Area (WQPA) is located outside of designated mule deer crucial winter range and thus would not contribute to a cumulative loss of crucial mule deer habitat.

Short-term (initial) disturbance (generally associated with access roads) would be reclaimed shortly after disturbance, but could take up to 20 years to reach pre-disturbance levels of species diversity (shrub composition). The actual quarry areas (for both the HQPA and the WQPA) would likely never return to pre-disturbance levels of vegetative diversity and composition. Based upon the actual, authorized, and proposed disturbance associated with rock quarry operations within the general area, total surface disturbance would amount to less than 1% of the South Converse Mule Deer Herd Unit. There is no current evidence that there are or have been any significant cumulative impacts to any wildlife species within the general project area.

4.14 THREATENED, ENDANGERED AND BLM SENSITIVE SPECIES

4.14.1 Introduction

The USFWS identified four T/E species that could potentially occur within the HQPA including the threatened bald eagle, the endangered black-footed ferret, the threatened Preble's meadow jumping mouse and the threatened Ute ladies'-tresses. Based upon an inventory of the overall project area conducted by AEC on February 24, 2005, suitable habitat for these species was not identified within the project area. As indicated in Section 3.16.1 (Table 3.7), three of the four species including black-footed ferret, Preble's meadow jumping mouse and Ute ladies'-tresses are not expected to occur within the project area. Bald eagles may occur within the area on an occasional basis. Water depletions in the North Platte River in conjunction with mining operations will impact those downstream species listed in Section 3.16.1.

BLM sensitive species that may occur within the HQPA are discussed in Section 3.16.2.

4.14.2 Significance Criteria

Impacts to threatened, endangered and BLM sensitive species within the project area would be considered as potentially significant if any of the following were to occur:

- ∅ project activities impacted an officially-designated crucial habitat during an important use period;
- ∅ a permanent reduction in the rate of population recruitment for economically important or statutorily protected species occurred as a result of project activities; and
- ∅ a “may effect” determination was reached by the cooperating agencies for any wildlife species currently listed as either “threatened or endangered” under the ESA.

4.14.3 Direct and Indirect Impacts

4.14.3.1 Proposed Action

As discussed in Section 3.16.1, suitable habitat for black-footed ferret, Preble’s meadow jumping mouse and Ute ladies’-tresses does not occur within the HQPA based upon an evaluation of the area conducted by AEC in February 2005 (AEC 2005). Potential impacts to bald eagles, the North Platte River Species and BLM sensitive species are discussed below.

Bald Eagle. The HQPA does not contain suitable roosting/perching habitat, concentrated feeding areas (perennial streams), or other special (nesting) habitats which might result in increased eagle activity therein. Migrating or foraging bald eagles and those nesting or wintering along the North Platte River may occasionally forage or fly through the HQPA; however, such use is likely intermittent and for relatively short periods of time. Moreover, the level of human activity expected to occur within the project area during mining operations would likely discourage eagle use, assuming that eagles were present in the general area during the period between May 1 and November 14 - no mining activities would occur during the winter months when bald eagles are most likely to occur in the area.

Given the proposed period of mining activity coupled with the intermittent use and the lack of nesting and roosting habitat in the HQPA, it is anticipated that the Proposed Action would not affect bald eagles.

North Platte River Species. The proposed mining operation would consume approximately 4,200 gallons of water per day (GWPD) for use in dust abatement on the access road and in conjunction with crushing operations or 709,800 gallons of water per year (approximately 2.2 acre-feet of water per year). As indicated in Section 2.1.2.3, water used in conjunction with the proposed mining operations would be obtained from an existing water well (Huxtable #2) owned and operated by the project proponent. Total water usage for the LOP would be approximately 10.65 million gallons of water (32.7 acre-feet). Considering the depth of the well and the fact that no isotopic analyses have been conducted on this water, we must assume that the water-

bearing aquifer in the Huxtable #2 water well is connected to the North Platte River system. As a consequence, water diverted from the well for use in mining operations would result in a 2.2 acre-foot depletion to the central and lower reaches of the North Platte River on an annual basis for the life of the project and may affect the North Platte River species identified in Table 3.7.

BLM Sensitive Species. Impacts to most BLM sensitive species as a result of the Proposed Action likely would occur in direct proportion to the amount of their habitat that would be disturbed. The Proposed Action would result in approximately 22 acres of initial disturbance and 18 acres of long term or LOP disturbance). Most animal species are sufficiently mobile that, if present, they would not be affected by the Proposed Action. However, it is possible that some individuals would be killed by vehicles or equipment, or temporarily or permanently displaced from their preferred habitats. Such impacts would be limited to a relatively few individuals and would not have an adverse affect on populations as a whole.

Table 3.8 provides a listing of BLM sensitive species in Wyoming and their habitat preferences, along with the expected occurrence of these species within the HQPA. In this regard, an inventory conducted by AEC on February 24, 2005 failed to identify suitable mountain plover habitat within the HQPA. Suitable ferruginous hawk habitat does exist within the northern portions of the project area primarily along/in proximity to the proposed access road route; however, no nests were identified in conjunction with said inventory. Likewise, the majority of the area does not contain suitable greater sage grouse nesting and early brood-rearing habitat with the possible exception of the proposed material stockpile site directly south of Wyoming Highway 91. While suitable sage grouse nesting and early brood-rearing habit does exist in this particular area, the closest known lek is well over five miles away. Moreover, the proposed stockpile site is directly adjacent not only to an existing Wyoming state highway, but the primary access into the property as well - with an existing livestock handling facility (including corrals, sheds, equipment storage areas, etc.) directly to the east of the stockpile site. Consequently, it is unlikely that the proposed stockpile site is being utilized for greater sage grouse nesting/brood-rearing purposes due to the pre-existing levels of human activity in the area. The smaller species listed in Table 3.7 would likely be affected to a minor degree by the Proposed Action.

4.14.3.2 Alternative A

Impacts to threatened, endangered and BLM sensitive species associated with Alternative A would be identical to those discussed above, only on a somewhat larger scale as the rock quarry would be expanded from 10 acres to 40 acres. The additional 30 acres of surface disturbance associated with the expanded quarry site would all occur within the mountain-foothills shrub habitat type, which would have a greater effect on those BLM sensitive species that utilize this habitat type for breeding/nesting purposes. Expansion of the quarry area from 10 acres to 40 acres would double the projected LOP water usage from 32.7 acre-feet of water to 65.4 acre-feet and would result in continued depletions in the North Platte River for an additional 15 years.

4.14.4 No Action Alternative

Under the No Action Alternative, the BLM would not approve the Proposed Action and no disturbance/development would occur in conjunction with the mining of the federal mineral estate. Impacts to T/E species and BLM sensitive species would continue at current levels, with fluctuations due primarily to weather, disease, and other natural causes.

4.14.5 Mitigation and Monitoring

The following mitigation and/or monitoring measures are recommended in order to protect threatened, endangered and BLM sensitive species that may be either directly or indirectly impacted by mining activities associated with the proposed Huxtable Rock Quarry.

- ∉ Water depletions to the North Platte River System are likely to jeopardize the continued existence of one or more federally listed species or critical habitats. In accordance with a 1996 USFWS Biological Opinion (revised in 2002), minor water depletions to the Platte River System of 25 acre feet or less per year may be offset by implementing conservation measures identified therein. These conservation measures include authorizing the use of National Fish and Wildlife Foundation account funds to offset and restore the project related impacts to Platte River fish and wildlife resources.

4.14.6 Residual Impacts

Under either the Proposed Action or Alternative A, there could be some displacement of BLM sensitive species.

4.14.7 Cumulative Impacts

Cumulative impacts to T/E species would be limited to the effects of additional water depletions in the North Platte River on those downstream species listed in Table 3.7 and their habitat.

Cumulative impacts to BLM sensitive species would likely occur in direct proportion to the amount of disturbance to habitats of the specific species and would be limited to those areas where suitable habitat would be removed or the larger area from which individuals may be displaced by project-related activities.

There is no evidence that there are or have been any significant cumulative impacts to any T/E or BLM sensitive species within the area.

4.15 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The term “Irreversible Commitment of Resources” refers to the loss of future options which would result from mining operations associated with the proposed Huxtable Quarry Mineral Materials Project and primarily applies to the resultant impacts upon:

- € non-renewable resources such as minerals or cultural resources; or to
- € processes or factors that are renewable only over long periods of time (e.g., soil productivity).

Likewise, the term “Irretrievable Commitment of Resources” refers to the loss of production, harvest, or use of natural resources. For example, some or all of the forage production from an area is irretrievably lost while the area serves as an access road or rock quarry site. Although this forage production loss is irretrievable, the action is not irreversible and, if the land use changes through subsequent abandonment and reclamation of these facilities, forage production would resume to some degree.

The primary irreversible and irretrievable commitment of resources resulting from the implementation of either the Proposed Action or Alternative A would be the removal and use of industrial, non-metallic minerals such as limestone, quartzite and moss rock in conjunction with mining activities. Other irreversible and irretrievable commitments of resources would include:

- € soil lost through wind and water erosion;
 - € loss of productivity (i.e., forage and wildlife habitat) from those lands disturbed in conjunction with mining activities;
 - € the inadvertent or accidental destruction of cultural resources;
 - € direct mortality of wildlife resulting from construction and associated mining activities;
 - € the labor, materials and energy expended during mining and subsequent reclamation activities associated with the proposed project; and
 - € effects upon the area viewshed resulting from mining activities.
-