
4.0 ENVIRONMENTAL CONSEQUENCES

In accordance with 40 C.F.R. 1502.16, this chapter of the EA includes a discussion of the potential environmental consequences of the Proposed Action and the No Action Alternative on 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 result (direct) or secondary result (indirect) of an action, and may be permanent and long-term or temporary and of a short duration. Impacts may vary in degree from a slightly discernible change to a total change in the environment. This impact assessment assumes that all applicant-committed measures described in the Proposed Action would be successfully implemented. If such measures were not implemented, additional adverse impacts may occur.

Residual impacts are impacts resulting from the Proposed Action after application of appropriate mitigation measures (BLM 1988). These impacts would remain for some period of time but would eventually subside or would be ameliorated by natural conditions and would not be permanent. For example, increased surface water erosion would eventually be reduced after disturbed soils are stabilized, native vegetation is planted and becomes re-established, and stream channels are naturally stabilized. Residual impacts are different from irreversible and irretrievable impacts. Residual impacts will eventually subside and would no longer result in adverse conditions, while irreversible and irretrievable impacts are permanent conditions that cannot be altered after they have occurred (e.g., the mining and burning of the federal coal within the TMRT area).

Cumulative impacts result from the incremental impacts of an action added to other past, present, and reasonably foreseeable future actions, regardless of who is responsible for such actions. Cumulative impacts may result from individually minor, but collectively significant, actions occurring over a period of time (40 C.F.R. 1508.7). The boundary of individual CIAA areas for this EA are based on the specific resource being discussed and evaluated.

Irreversible and irretrievable commitments are discussed in Sections 4.19, and short-term use of the environment versus long-term productivity is discussed in Section 4.20.

4.1 AIR QUALITY AND NOISE

4.1.1 Air Quality

4.1.1.1 Proposed Action

Air pollutant emissions would occur from construction of the mine facilities and from selected mine and reclamation operations associated with the Proposed Action. Air emissions and air pollutant impacts are limited by state and federal regulations, standards, and implementation plans established under the *Clean Air Act* and are administered within Wyoming by WDEQ/AQD. Chapter 6 of the WAQS&R requires all proposed air pollutant emission sources, including coal mining operations, to undergo a permitting review and, if necessary, to obtain a construction permit prior to construction or operation of the source. Chapter 3 of the WAQS&R specifies general emissions standards for new and existing sources, and Chapter 2 of the WAQS&R addresses ambient air quality standards. Additional state and federal programs may apply to a proposed source if certain emissions and other thresholds are met or exceeded. One such program is the PSD permit program (also administered by WDEQ/AQD) that requires major sources to perform additional analyses, including Best Available Control Technology and Air Quality-Related Values analyses for federal Class I Areas. The Proposed Action, in combination with existing Jim Bridger Mine operations, would be classified as a minor source and therefore would not be subject to the PSD permit program. The Proposed Action would be subject to WDEQ/AQD construction and operating permit requirements and would be required to operate in compliance with emission standards and ambient air quality standards.

In order to assess potential impacts of the Proposed Action, emissions have been estimated below.

Construction Activities. Air pollutant emissions from construction of the Proposed Action would be temporary in nature and would result primarily due to surface disturbance, travel on unpaved roads, and diesel engine combustion from mobile equipment. The primary air pollutants emitted would be PM₁₀, SO₂, NO_x, CO, and volatile organic compounds (VOCs).

New surface disturbance from construction activities associated with the Proposed Action would total 28 acres: construction of overland conveyor (23 acres), powerline power pole installation (2 acres), and mine access road (3 acres).

PM₁₀ emissions from wind erosion of these disturbed areas are calculated using EPA's AP-42 emission factor (EPA 1995) for industrial wind erosion and based on a full year of regional meteorological data. PM₁₀ emissions are estimated to be approximately 1 ton per year from the 25-acre construction area for 1-2 years.

Construction traffic would travel to the mine site on an existing paved road outside of the BCC mine area (Wyoming State Highway 377) and on chemically treated existing access roads once inside the BCC mine area (approximately 5.3 mi in length). The construction workers would make an estimated 75 round-trips on this route per day for the duration of construction operations. PM₁₀ emissions from construction travel are estimated at 0.3 tons per day (110 tons per year) using EPA's AP-42 emission factor for unpaved roads and a control efficiency of 50% for watering. Emissions of NO_x, SO₂, CO, and VOCs would also occur from gasoline and diesel combustion in passenger vehicles and diesel combustion from larger trucks traveling unpaved roads during construction of the Proposed Action.

Mine Operations. Upon commencement of mine operations, employees would travel to work via Wyoming State Highway 377 and existing unpaved access roads (5.3 mi). Employees would make approximately 250 round-trips on this route per day. PM₁₀ emissions from employee travel to and from the mine are estimated to be 0.41 tons per day (150 tons per year) calculated using EPA's AP-42 emission factor for unpaved roads and a control efficiency of 80% for chemical dust suppression. PM₁₀, NO_x, SO₂, CO, and VOC emissions would also occur from

other gasoline and diesel combustion engines in vehicles traveling to and from the Project Area. These mobile source emissions are not subject to state or federal air quality permitting requirements and are generally regulated under WAQS&R Chapter 13, Mobile Sources.

Various diesel- and gasoline-powered equipment would operate at the proposed underground mine. Air pollutant emissions associated with these mobile sources include PM₁₀, NO_x, SO₂, CO, and VOCs from diesel combustion in underground mining equipment. Amounts of emissions would depend on fleet composition, maintenance, and operating conditions. In the mine itself, much of the equipment would be operated by electricity. Vehicles operated underground would be diesel-powered. Fugitive dust emissions would be limited by the natural moisture content of the underground traveled surface, supplemented by water application as necessary. The underground mine would intake and exhaust air from the mine portal.

Under the Proposed Action, a maximum of 5.5 million tons per year of coal would be loaded to an overland conveyor that originates from the underground mine. The overland conveyor would be 17,000 ft in length and would transport coal to the existing Truck Dump Station #2 for further transport to the Jim Bridger Power Plant via the existing overland conveyor system. The coal would be sprayed with water or a dust suppressant to reduce potential dust emissions. No additional air emissions, beyond those currently permitted, would occur from the existing overland conveyor due to the Proposed Action. The new overland conveyor system would be enclosed at both the transfer points and along the entire length of the conveyor. WDEQ/AQD permits typically do not quantify emissions from covered and controlled coal conveyor emissions and instead limit visible emissions from coal transfer operations to a 20% opacity limit in accordance with PM₁₀ emission limits set forth in Chapter 3 of the WAQS&R (WDEQ/AQD 2000b). In other words, technically there would be no emissions from the overland conveyor system.

As discussed previously, fugitive dust from vehicle travel on unpaved roads and disturbed areas would be controlled by treatment with water and chemical dust suppressants on a regular schedule, as required by WAQS&R Section 3 (WDEQ/AQD 2000). Fugitive dust control and

emission limits would be outlined in the WDEQ/AQD construction permit required for the Proposed Action prior to construction and commencement of operations. These control requirements and limits would become part of the facility's operating permit, supplemented by reporting requirements to demonstrate that compliance with the requirements is maintained.

Mobile fuel trucks and the stationary fuel tank would be used to fuel diesel-powered equipment during operations. Equipment fueling would result in VOC and HAP emissions from volatilization of diesel fuel. Emissions from diesel storage and transfer are typically below permitting and reporting thresholds at coal mines, in part due to the inherent low volatility of diesel fuel.

Reclamation. The primary source of emissions during reclamation and revegetation operations would be associated with the repair of surface cracks due to subsidence. For the purpose of this EA, it is estimated that 1% of subsidence area within the TMRT area, or 59 acres, would require surface-disturbing activities for reclamation. PM₁₀ emissions for 59 acres of disturbed topsoil over an estimated 20-year period (2.95 acres per year) of operation were estimated to be approximately 1.1 tons per year, using EPA's AP-42 emission factor for heavy construction operations (EPA 1995). As surface mining operations and areas are reclaimed and revegetated, PM₁₀ emissions would be expected to decrease.

Ambient Impacts. No exceedances of ambient air quality standards or Class II PSD Increments are expected to occur as a result of the Proposed Action. The Proposed Action, operating in conjunction with existing emissions sources at the Bridger Mine, would be required to comply with NAAQS, WAAQS, and Class II PSD Increments for all regulated air pollutants emitted. The primary air pollutant emitted in this coal mining operation would be PM₁₀. Compliance with the established 24-hour and annual average PM₁₀ standards and increments shown in Table 3.2 would be demonstrated based on dispersion modeling performed as part of the WDEQ/AQD permit process.

Ambient PM₁₀ data collected near the mine would also serve as a demonstration of compliance with these ambient standards. The mine currently conducts ambient PM₁₀ monitoring that

measures 24-hour PM₁₀ concentrations in the vicinity of the mine. This ambient monitoring program would be continued under the Proposed Action. Additional monitors also collect ambient PM₁₀ concentrations at the nearby Jim Bridger Power Plant and Leucite Hills Mine.

Based on the discussion presented above, no violations of applicable federal or state air quality regulations would occur.

4.1.1.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, there would be no additional development in the proposed project area, and impacts to air quality resources would remain at existing levels.

4.1.1.3 Residual Impacts

Under the Proposed Action, approximately 111 tons per year of PM₁₀ would be generated during construction operations and approximately 151.1 tons per year of PM₁₀ would be generated during mining and reclamation operations. As a result, there would be some short-term deterioration to air quality in the vicinity of the proposed mine portal and surface support facility. However, implementation of appropriate air quality control methods (e.g., watering and chemical treatment of access, watering or chemical treatment of coal on the overland conveyor, etc.) would minimize and mitigate impacts to air quality resources. In addition, impacts would be within state-permitted air quality levels, would be localized and temporary, and would be quickly dispersed by the wind.

4.1.1.4 Cumulative Impacts

The Continental Divide/Greater Wamsutter II (CD/GWII) EIS, completed in 1998, and the DFP draft EIS, completed in April 2003, analyzed cumulative impacts at Class I and Class II areas from emissions sources in southwest Wyoming. The analyses used a "reasonable but

conservative" approach that included the modeling of regional sources at permitted emission rates. The regional emissions inventory and CALPUFF modeling analysis included industrial development prior to June 30, 1995, by adding background ambient monitoring data collected for that period to modeled concentrations. Industrial development after 1995 was explicitly modeled in the analysis for permitted sources in southwest Wyoming, northwest Colorado, and northeast Utah. Emissions from operation of the Jim Bridger Mine, as it existed prior to 1995, are assumed to be included in the monitored background value for that analysis. A permit modification approved by WDEQ/AQD in 2001 allowed increased PM₁₀ emissions from the Jim Bridger Mine of 157.7 tons per year. This change represents 4% of the total permitted PM₁₀ emissions at the mine. Emissions from the three permitted emissions sources in the Bridger cumulative study area, the Jim Bridger Power Plant, the Jim Bridger Mine, and the Leucite Hills Mine were also included in the CD/GWII cumulative modeling study as part of the ambient background collected in 1995.

The CD/GWII and DFP EIS analyses predicted the impacts on ambient concentrations in PSD Class I and Class II areas, the impacts of acid deposition of sensitive lakes, and the impacts to regional visibility. The study found no exceedances of PSD Class I increments in federal Class I areas and no exceedances of PSD Class II increments in Class II areas located between those project areas and distant Class I areas. Potential impacts to sensitive lakes were found to be well below applicable thresholds. One of modeled 24-hour periods at Rawah Wilderness Area PSD Class I Area was found to exhibit a "just-noticeable change" in visibility in the CD/GWII EIS study area, and no days were found to exhibit visibility degradation did not surpass the threshold for in the DFP EIS study area.

In addition, construction-related air quality emissions associated with the expansion of the flue gas de-sulfurization pond is expected to be completed by the summer of 2003 and would result in no significant short- or long-term air quality impacts to the CIAA (BLM 2002a).

Therefore, cumulative impacts to air quality resources would not be important because there are no past, present, or reasonable foreseeable future actions that, when combined with the Proposed

Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.1.2 Noise

4.1.2.1 Proposed Action

There are no federal or state regulations governing environmental noise levels related to mining or industrial activities. However, MSHA rules regarding noise in the workplace would protect construction workers and miners, and BCC would comply with all applicable noise control, mitigation, and monitoring requirements. All machines utilized for the Proposed Action would be equipped with manufacturer's recommended mufflers or other noise control devices.

Under the Proposed Action, human-related noise would increase above existing background levels; however, a majority of the mining activities would occur between 200 and 1,000 ft below the ground level and therefore would not be audible to the casual observer located within the TMRT. The highest level of noise associated with the Proposed Action would likely occur at or near the mine portal (with the blowing fan system) and surface support facility at Ramp 14. In addition, ongoing surface mining and reclamation operation, and the accompanying noise, would continue at the Jim Bridger Mine. As a result, most of the noise from the Proposed Action would be located below the existing mine highwall, would likely be less than surface mining operations, and would not be distinguishable from the existing level of background noise in the area. In addition, there are no residences, schools, or noise-sensitive human receptors within the TMRT or the CIAA. The nearest residence to the TMRT would be more than 8 mi west in the town of Superior. It is unlikely that underground mining operations would be audible or would adversely affect residents in Superior.

Noise affects on local wildlife populations are addressed separately in the wildlife portion (Section 4.18) of this EA.

4.1.2.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, there would be no additional development in the proposed project area, and impacts to noise levels would remain at existing levels.

4.1.2.3 Residual Impacts

As a result of the Proposed Action, there would be increased noise underground within the TMRT. The highest noise levels would generally be limited to activity near the mine portal and surface support facilities; however, noise levels would be comparable to or less than the existing noise levels associated with the existing surface mine. BCC would comply with all applicable noise control, mitigation, and monitoring requirements as specified by MSHA. All machines utilized for the Proposed Action would be equipped with manufacturer's recommended mufflers or other noise-control devices. Noise levels would be short-term and would generally be dispersed by the wind, and noise levels would also return to background levels when mining operations are not being conducted.

4.1.2.4 Cumulative Impacts

Existing land uses within the CIAA contribute to noise levels, but wind is generally the primary noise source. Mining within the TMRT would not greatly increase the number of noise-producing facilities within the CIAA. Noise from underground coal mining operations, associated surface support facilities, and road traffic would generally be masked by the wind and noise from the existing surface mining operations at BCC at short distances, so cumulative overlap of noise impacts would not be likely.

In addition, construction-related noise associated with the expansion of the flue gas de-sulfurization pond is expected to be completed by the summer of 2003 and would result in minimal short- or long-term noise impacts to the CIAA.

Recreational users and grazing lessees within the CIAA would likely not be able to identify noise generated from the Proposed Action. Existing noise sources within the CIAA (e.g., the Jim Bridger Mine) would generally contribute more noise than the Proposed Action.

Therefore, cumulative impacts due to noise would not be important because there are no past, present, or reasonable foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.2 CULTURAL RESOURCES

4.2.1 Proposed Action

Under the Proposed Action, 59 acres within the TMRT may be physically disturbed as a result of the repair of surface cracks due to subsidence. An additional 28 acres located away from the TMRT area would be disturbed due to the construction of associated support facilities (e.g., overland conveyor system, powerline, access road). In order to protect and mitigate potential impacts to NRHP-eligible sites (including the Point of Rocks to South Pass wagon road) within the TMRT area, BCC would enter into a cultural resource programmatic agreement with BLM, OSM, WDEQ/LQD, and Wyoming State Historic Preservation Office. This agreement would identify specific survey, testing, protection, and mitigation measures that would be implemented by BCC to address and protect NRHP-eligible historic and prehistoric sites within the TMRT area. The programmatic agreement would demonstrate compliance with all applicable cultural resource laws and regulations.

Under the Proposed Action, BLM Class III surveys would be conducted on those areas that are located outside of the TMRT, have not been previously surveyed, and would be physically disturbed by the construction activities. All historic and prehistoric resources that are potentially eligible for the NHRP that could be adversely affected by the Proposed Action would be protected from disturbance or would be appropriately mitigated if the site could not be avoided.

Where necessary and appropriate, site-specific mitigation measures would be developed and implemented in accordance with the current cultural resource protection plan contained in BCC's approved WDEQ/LQD permit. The site-specific mitigation measures would also be developed and implemented with the concurrence of the BLM, OSM, WDEQ/LDQ, and the Wyoming State Historic Preservation Office.

The Proposed Action, among other things, includes a commitment that if any cultural resources are discovered during construction or reclamation operations, work in the area of the discovery would be halted and the appropriate regulatory agency would be notified and appropriate treatment plans implemented. BCC employees would also be instructed that they would be working on both private and public land and not to search for, scavenge, or remove any cultural resources found while working on the project.

Therefore, documented and undocumented cultural resources would be protected during construction, operations, and maintenance operations, and no unmitigated cultural resources that are eligible for listing on the NRHP would be impacted by the Proposed Action.

4.2.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, there would be no additional development in the proposed project area (beyond the existing mining and other industrial development), and no additional impacts to cultural resources would occur.

4.2.3 Residual Impacts

The Proposed Action would not result in any residual impacts to identified cultural resource. However, some loss of unidentified cultural resources sites or artifacts may occur. However, if it becomes necessary to disturb an area within the TMRT to remediate subsidence-related

reclamation problems and previously unidentified cultural resources are located, activity in the area would be halted, the proper regulatory authority would be contacted, and appropriate treatment of the resource undertaken to avoid impacts to NRHP-eligible cultural resource sites.

4.2.4 Cumulative Impacts

With the presence of the Jim Bridger and Leucite Hills Mines, a large area within the CIAA has been inventoried for cultural resources, and historic and prehistoric sites have been identified. Many of the sites have been determined to be eligible for the NRHP. Eligible sites within the mine properties that would be disturbed have been treated, and other eligible sites would be avoided. Employees at Jim Bridger and Leucite Hills Mines are instructed that they are not to disturb or vandalize any cultural resource site. However, property outside of the mines' boundaries do not have any such protection; they may be accessed and potentially vandalized by the general public.

Based on the identified reasonably foreseeable future actions, there would be no proposed disturbance within the CIAA to cultural resources except for that associated with the Proposed Action.

Therefore, cumulative impacts to cultural resources would not be important because there are no past, present, or reasonably foreseeable future action that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.3 GEOLOGY AND GEOLOGIC HAZARDS

4.3.1 Proposed Action

The primary impact of the Proposed Action on geology would be the removal of approximately 44 million tons of in-place federal coal reserves included in the total of approximately

121.5 million tons of in-place federal, private, and state coal reserves from the TMRT area. A more detailed discussion of impacts to mineral resources is presented in Section 4.6 of this EA.

Under the Proposed Action, there would be a slight lowering (6.0 to 9.5 ft) of elevation within a majority of the TMRT. Based on the subsidence discussion presented in Chapter 2 of the EA (refer to Section 2.1.5.8), BCC estimates that the Proposed Action may result in the permanent lowering of surface elevation within the TMRT of between approximately 6.0 and 9.5 ft. Subsidence would not occur over the main and submain entries because they would be designed to last beyond the life of the project. Therefore, material overlying the mains would remain intact at the original elevation as the remaining mined longwall panel areas settle. In an area with a flat topographic surface, trough subsidence would result in a series of ridges and basin. However, since the premining topographic surface within the TMRT is naturally undulating, there would likely be no identifiable surface expression of any ridges or basins within the TMRT area. After mining operations have been completed in an area, the surface would gradually settle over the longwall coal panel areas during an approximate 2-year period.

Studies at similar longwall underground coal mines in Utah indicate that the effects of subsidence typically do not extend more than 50 ft beyond the limits of the longwall panels (U.S. Department of Energy 1995). Therefore, subsidence would not be expected much past the underground limits of the longwall panels.

As part of the WDEQ/LQD mine permit application required for the Proposed Action, BCC would be responsible for developing a subsidence plan that would include a subsidence monitoring and mitigation plan. Subsidence from the underground mine would have the following effects and would be mitigated as follows.

The amount of subsidence that reaches the surface depends on such factors as time, depth of mining, thickness of the coalbed extracted, thickness and strength of the overlying rock, and any previous mining of overlying coalbeds (U.S. Department of Energy 1995). BCC anticipates that 85% of the mined-out coal area may eventually be evident at the surface by a slight lowering

(6.0-9.5 ft) of elevation. Based on the corporate mining experience from other underground operations (i.e., Deer Creek Mine and Trail Mountain Mine in Utah) being conducted by BCC (PacifiCorp), BCC expects that it would take approximately 3-4 weeks for subsidence caused by the longwall mining of the TMRT to initially reach the surface. In addition, BCC expects subsidence activities to be substantially complete within 2 years of the completion of mining operations at any particular location.

Material overlying the mains would generally remain intact at the original elevation, while the remaining mined longwall panel areas would settle. The surface would gradually settle over the longwall coal panel area following the completion of mining operations. While the area located above the longwall coal panels would subside, the settling would cause little or no surface disturbance (e.g., surface cracks, channel displacement, etc.) that would require corrective action (i.e., reclamation and revegetation) by BCC. This assessment is based on other longwall mining operations conducted in Wyoming (personal communication, April 19, 2002, with Bill Hogg, WDEQ/LQD; April 23, 2002, with Amy Boil, WDEQ/LQD; and April 17, 2002, with Jeff Clawson, BLM Mine Engineer). Therefore, for the purpose of this EA, it will be assumed at 1% (or 59 acres) of the surface area within the TMRT would be impacted by subsidence over the LOM to a point that would require corrective action (i.e., repair and revegetation of surface cracks). The 1% value is likely much higher than would likely occur but is a reasonable assumption for this analysis.

If the project area were completely flat, the final topographic surface would be composed of ridges and basins. However, combined with the natural undulations of the topographic surface, the subsidence within the TMRT would generally not be noticeable to the causal observer (personal communication, April 19, 2002, with Bill Hogg, WDEQ/LQD; April 23, 2002, with Amy Boil, WDEQ/LQD; and April 17, 2002, with Jeff Clawson, BLM Mine Engineer).

Local surface water drainage patterns within the TMRT would be disrupted by the basins and ridges created by subsidence. Therefore, besides the 59 acres of estimated subsidence that would need to be reclaimed, BCC would be responsible for repairing and revegetating any drainage

channel affected by subsidence-related disturbance within the TMRT in accordance with WDEQ/LQD rules and regulations.

There may be slightly increased soil erosion from ridges into basins. Soil loss would occur primarily due to wind and water erosion. Wind and water erosion would eventually reduce the relief between ridges and basins. Soils would be locally affected if cracks develop at the surface. BCC would be responsible for repairing and revegetation any area affected by subsidence-related disturbance within the TMRT in accordance with WDEQ/LQD rules and regulations.

Vegetation would not be directly disturbed unless subsidence cracks form; however, BCC would repair and revegetate any area affected by subsidence-related disturbances within the TMRT in accordance with WDEQ/LQD rules and regulations. Indirect impacts would occur because the basin and ridge topography would alter local soil moisture regimes, which may eventually affect species distribution within the TMRT. The basin and ridge topography may also alter snow distribution and thus moisture accumulation patterns, which may eventually cause gradual permanent changes to vegetation communities.

Some wildlife would be affected due to changes in vegetation, but the changes would be limited to the affected areas within TMRT and thus would not likely cause any noticeable impacts to wildlife populations. The low ridges may alter small-scale movement patterns of wildlife but would not affect regional patterns.

There is a potential for wildlife, livestock, and individuals walking or moving through the area to trip over or become injured in surface cracks; however, BCC would monitor and promptly repair and reclaim this type of surface disturbance.

Earthquake and landslide potential in the TMRT and CIAA is relatively low, so impacts from earthquakes and landslides would be unlikely.

4.3.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, there would be no additional development in the proposed project area (beyond the existing mining and other industrial development), and there would be limited impacts to geology and geologic hazards.

4.3.3 Residual Impacts

Residual impacts to geology and geologic hazards would be similar to those discussed under the Proposed Action and will not be repeated here. The major impact would be the lowering of the topography due to subsidence within the TMRT area.

4.3.4 Cumulative Impacts

Surface and underground coal mining operations would be the only industrial activity that would occur within the CIAA and, cumulatively, approximately 5 to 6 million tons of coal per year would be mined and utilized at the Jim Bridger Power Plant. This amount of coal would not be expected to change as a result of the Proposed Action, and leasing of coal within the TMRT would continue the long-term trend within the CIAA of development of public- and private-sector coal reserves. Surface geology within the existing surface mine area would change slightly due to the surface mining methods being employed; however, surface geology within the TMRT would remain essentially unaltered, with the topography lowered by approximately 6.0 to 9.5 ft due to anticipated subsidence. This risk of geologic hazards (e.g., earthquakes, landslides, floodplains, and floods) occurring within the CIAA would remain unaltered as a result of the Proposed Action.

Therefore, cumulative impacts to geology and geologic hazards would not be important because there are no past, present, or reasonable foreseeable future actions that, when combined with the

Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.4 HEALTH AND SAFETY (TRANSPORTATION)

4.4.1 Proposed Action

Under the Proposed Action, approximately 10-75 temporary construction workers would be employed from approximately mid-2005 through the end of 2007, and an additional 50 miners may eventually be employed at the Jim Bridger Mine. Both temporary and full-time employees would travel to the mine site either in individual vehicles, vans, or buses. Based on the average daily trips numbers from the Wyoming Department of Transportation, an average of 12,500 vehicles per 24-hour period utilize Interstate 80 between Superior and Point of Rocks and 1,200 vehicles per 24-hour period utilize Wyoming State Highway 377 north of Point of Rocks (Wyoming Department of Transportation 2001). If it is assumed that the number of vehicles would increase on a one-person to one-vehicle basis, the maximum number of vehicles on Interstate 80 would increase from an average of 12,500 to 12,650 over a 24-hour period (two one-way trips per 24-hour period), and the number of vehicles on Wyoming State Highway 377 would increase from an average 1,200 to 1,350 per 24-hour period. As a result, the number of individual vehicles, vans, and buses would not greatly increase from the existing numbers of vehicles that currently utilize Interstate 80 or Wyoming State Highway 377. It is also follows that there would not be a large increase in the number of traffic accidents on both roads.

In addition, construction and new miners would travel on access roads controlled and maintained by BCC, and drivers would be required to comply with posted speed limits. The public would not have access to the working portions of the mine and these access roads. The existing mine access roads would be maintained according to appropriate transportation standards in order to handle the estimated 180 to 250 miners that would eventually work at and travel to the proposed underground mine. The actual number of vehicles that would utilize these roads at any one time cannot be accurately estimated but would be based on the average number of workers per vehicle

and the number of employees that would be working in any specific work shift (the mine would generally be operated 24 hours per day 7 days per week).

Due to the remote location of the project area, there are a series of improved and unimproved (dirt or two-track) roads that access the surface of the TMRT area. Underground mining operations would be conducted in a manner intended to prevent and minimize endangerment to the public safety and human and animal life. The TMRT area would continue to be utilized for livestock grazing; therefore, public access to the TMRT and the mine highwall area cannot be completely restricted or eliminated. However (in accordance with the *Wyoming Environmental Quality Act* and OSM regulations), mine entrance signs would be posted on all major roads leading on to the TMRT area, and mine employees would be instructed to watch for unauthorized personnel and to notify mine management if unauthorized personnel are observed within the TMRT.

Since the TMRT would be incorporated into an existing WDEQ/LQD permit area, speed limits would be established for the TMRT area to promote safe conditions for the public and to decrease potential encounters with grazing animals and wildlife. Currently, speed within the Jim Bridger Mine varies but is generally limited to 35 mi per hour due to the conditions in the area. All employees would be advised of the posted speed limits.

4.4.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no mining would be conducted, there would be no additional development in the proposed project area (beyond the existing mining and other industrial development), and impacts to health and safety (transportation) issues would remain at their current levels.

4.4.3 Residual Impacts

There would be a limited increase in the volume of traffic and in the rate of traffic accidents on Interstate 80, Wyoming State Highway 377, and County Road 15 due to the Proposed Action. Properly designed and maintained roads, increased signage on these roads, proper licensing, and safety awareness training for employees by the BCC would mitigate and minimize the increased risk to the public and mine employees.

4.4.4 Cumulative Impacts

There would be an increase in the traffic on some public roads in the immediate project area (i.e., Interstate 80, Wyoming State Highway 377, and County Road 15) due to the Proposed Action. However, the estimated increase in traffic would not likely create any major traffic congestion or accident problems. Properly designed and maintained roads, increased signage on both roads, proper licensing, and safety awareness training for employees by the BCC would mitigate and minimize the increased risk to the public and the mine employees. Therefore, cumulative impacts to health and safety (i.e., transportation) would not be important because there are no past, present, or reasonably foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.5 LAND RESOURCES AND USE

4.5.1 Proposed Action

Under the Proposed Action, landownership and mineral ownership would not change. Other current land uses within the TMRT (i.e., livestock grazing, wildlife habitat, and dispersed recreation) would continue at their current rates, unaltered and unaffected by the Proposed Action. However, current land uses in the approximate 28 acres that would be disturbed by the proposed construction of the mine facilities (e.g., overland conveyor, powerline, etc.) would be

temporarily unavailable for livestock grazing, wildlife habitat, and/or recreational use. However, once mining operations have been completed, facilities removed, and the disturbed area reclaimed, previous land uses would be available.

4.5.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, there would be no additional development in the proposed project area (beyond the existing mining and other industrial development), and there would be no impacts to land resources or use.

4.5.3 Residual Impacts

There would be limited residual impacts to land resources or use due to the Proposed Action within the TMRT; however, there would be a temporary hiatus in non-mining-related land use within the approximately 28 acres that would be disturbed for the construction of mine support facilities. The Proposed Action would result in limited short-term impact to range vegetation and the temporary displacement of livestock grazing, wildlife habitat, and recreational use from the ROW areas. However, once mining and reclamation operations are completed, reclamation efforts would re-establish the vegetative habitat and would mitigate any long-term impacts to livestock grazing, wildlife habitat, and recreational use.

4.5.4 Cumulative Impacts

Based on the disturbance calculations presented in Chapter 3, approximately 6,308 acres are currently disturbed within the CIAA. This represents 8.07% of the total area within the CIAA. Reasonably foreseeable future actions (including the Proposed Action) within the CIAA would result in an additional 109 acres of disturbance (6,417 acres of total disturbance due to existing activities, the Proposed Action, and reasonably foreseeable future actions). This represents

0.14% of the total area within the CIAA (78,200 acres) or 8.21% based on the total disturbance due to existing activities and reasonably foreseeable future actions.

Once reclamation operations are complete on existing surface-mined lands, they would eventually be capable of supporting predisturbance uses. Disturbance from the Jim Bridger Power Plant ponds, roads, powerlines, and pipelines are part of the long-term economic development within the CIAA. None of the current land uses within the CIAA limits the area's ability to support grazing, wildlife habitat, and recreation.

Therefore, cumulative impacts to land resources and use would not be important because there are no past, present, or reasonably foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.6 MINERALS (SOLID AND FLUID)

4.6.1 Proposed Action

The primary purpose of the Proposed Action would be the mining and removal of approximately 44 millions tons of in-place federal coal reserves and a total of approximately 121.5 million tons of in-place federal, private, and state coal reserves from the entire TMRT area. All of the mined coal would be utilized at the nearby Jim Bridger Power Plant. Once removed, coal from the D-41 coal seam within the TMRT would no longer be available.

There are no known producing oil, gas, or coalbed methane wells or fields within the TMRT or the CIAA. Therefore, the Proposed Action would have no impacts on existing oil, gas or coalbed methane wells within the TMRT or the CIAA. The BLM would expect lessees to resolve any development conflicts if existing oil or gas leases within the TMRT were to be developed while mining operations are being conducted and development conflicts arise.

As administrators of public land, including some of those within the TMRT, the BLM has prepared Instruction Memorandum No. 2000-081 that indicates BLM would work to achieve three principal goals in resolving mineral development conflicts. The three goals are:

- to protect the rights of each lessee under the terms of its lease, the MLA and the implementing regulations, including those concerning conservation of natural resources;
- to optimize the recovery of multiple resources; and
- to optimize the return to the public while protecting public safety and the environment and minimizing impacts on local communities.

The BLM prefers that these goals be achieved through agreement among the lessees, but BLM would use its authority to manage mineral development on public lands when it is necessary. Therefore, the Proposed Action would have few, if any, impacts on existing oil or gas leases within the TMRT.

In addition, since there are no producing oil or gas wells and no proven oil or gas reserves within the TMRT area and the potential for near-term oil and gas development within the TMRT is moderate, few, if any, future leases would likely be applied for in the TMRT area. Correspondingly, there would be no impacts on oil or gas resources due to the Proposed Action. Any future oil and gas leases that might be issued would be subject to BLM's coincidental development stipulations.

Coalbed methane testing conducted by BCC within the TMRT area indicates that there is no evidence of economic reserves of coalbed methane in any of the four holes that were drilled by BCC (BLM 2003b; PacifiCorp 2003). Given the lack of existing coalbed methane development within the TMRT and the lack of any proven reserves within the TMRT or even the CIAA, there would be no loss of proven reserves of coalbed methane within the LBA area and no impacts to this resource.

In addition, there are no active locatable mineral (e.g., precious metals, bentonite, etc.) mines or economically recoverable deposits of locatable minerals within the TMRT or the CIAA, and

there are no claims for locatable minerals within the TMRT or CIAA (BLM 1996b). There are also no construction aggregate quarries (a saleable mineral) within the TMRT or the CIAA; however, the BLM has identified several sand and gravel deposits along the western boundary of the CIAA (BLM 1996b). Due to the limited size and remoteness of these deposits outside of the TMRT area, it is unlikely that these deposits would be developed in the near-term and therefore would be unaffected by the Proposed Action.

Exploration, including seismic testing, for and development of oil, gas, coalbed methane, locatable minerals, and salable minerals would continue to be permitted by the BLM within the TMRT in accordance with applicable regulations and as long as exploration activities would not interfere with ongoing coal mine development and operations.

4.6.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, and there would be no additional development in the TMRT area (beyond the existing mining and other industrial development). Other mineral developments, including coal and/or oil and gas, may be proposed in the future.

4.6.3 Residual Impacts

There would be no residual impacts to mineral resources; however, the removal of coal with the D-41 coal seam within the TMRT, as described within the Proposed Action, would constitute an unavoidable impact.

4.6.4 Cumulative Impacts

Cumulative impacts to mineral resources would include large-scale removal of coal from the TMRT. Access to oil, gas, and coalbed methane reserves may be temporarily hindered due to underground coal mine development, and the BLM would provide direction and clarification on resolving mineral development conflicts in the unlikely event they arise. However, to date, there have been no mineral development conflicts within the TMRT. Exploration for and development of locatable and salable minerals would continue to be permitted by the BLM within the TMRT in accordance with applicable regulations and as long as exploration would not interfere with ongoing coal mine development and operations.

Therefore, cumulative impacts to solid and fluid mineral resources would not be important because there are no past, present, or reasonably foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.7 NATIVE AMERICAN RELIGIOUS CONCERNS

4.7.1 Proposed Action

No sites of Native American religious concern are known to occur within the TMRT; if such sites or localities are identified at a later date, they would be taken into consideration by the BLM and would be addressed in accordance with applicable rules, regulations, and policies.

4.7.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, there would be no additional development in the proposed project area (beyond the existing mining and other industrial development), and there would be no impacts to Native American religious concerns.

4.7.3 Residual Impacts

No residual impacts to Native American concerns are expected from implementation of the Proposed Action.

4.7.4 Cumulative Impacts

Cumulative impacts to Native American religious concerns would not be important because there are no past, present, or reasonably foreseeable future actions that, when combined with the Proposed Action, would result in any impacts to Native American religious concerns.

4.8 RANGELAND AND LIVESTOCK GRAZING

4.8.1 Proposed Action

It is difficult to accurately predict if reclamation operations would be necessary to repair surface cracks due to subsidence or to estimate how many acres would be disturbed by reclamation operations. However, reclamation operations associated with underground longwall mining operations typically disturbed only a limited number of acres within the entire mining area (personal communication, March 15, 2001, with John Wagner, WDEQ/LQD Cheyenne, Wyoming). Under the Proposed Action, it is assumed that only 59 acres (1%) within the TMRT would be disturbed as a result of the repair of surface cracks due to subsidence. Livestock grazing would continue to be permitted within the TMRT and would continue uninterrupted by underground mining operations. Approximately 5 AUMs may potentially be temporarily displaced by reclamation operations associated with the repair of the surface cracks due to subsidence. This would account for less than 0.006% of the utilized AUMs within the Rock Springs grazing allotment. This displacement would be short-term (i.e., less than 10-20 years after reclamation operations have been completed) and would be mitigated by timely implementation of reclamation operations. Reclamation and revegetation operations would be conducted in accordance with and approved by WDEQ/LQD. There would be no permanent

displacement of livestock as a result of the Proposed Action. Noise from the underground mining operation would be minimal, and noise from the mine portal and surface support facilities would be similar to the existing noise being generated at the Jim Bridger Mine; therefore, there would be no displacement of livestock from the project area due to increased noise.

In addition, approximately 28 acres of native rangeland would be disturbed during the construction of the mine facilities. This would potentially result in the temporary displacement of livestock grazing from the affected area. This would account for only approximately 3 AUMs of the 90,000 AUMs (<0.003%) currently utilized within the Rock Springs grazing allotment. Since most of these areas are located within the current Jim Bridger Mine, it is unlikely that many of the permitted AUMs are regularly utilized.

Once stabilization and reclamation operations for subsidence repair and support facility removal operations are completed, revegetation efforts would re-establish the vegetative habitat and would mitigate any long-term impacts to range vegetation and livestock grazing. Other direct impacts to livestock grazing would include an increased risk of accidents between livestock and vehicles owned by BCC. Should such accidents occur, the party responsible for the accident would be liable to provide appropriate compensation to the livestock owner.

4.8.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, there would be no additional development in the proposed project area (beyond the existing mining and other industrial development), and impacts vegetation resources and livestock grazing operations would continue to occur at current rates.

4.8.3 Residual Impacts

The Proposed Action would result in the temporary disturbance of an estimated 59 acres within the TMRT and 28 acres associated with the mine support facilities and the temporary displacement of approximately 8 AUMs. However, once mine operations are completed, reclamation efforts would re-establish the vegetative habitat and would mitigate any long-term impacts to vegetation and livestock grazing. It could take 10-20 years after reclamation operations have been completed for some of the reclaimed areas to have shrub conditions and vegetation diversity comparable to predisturbance conditions.

4.8.4 Cumulative Impacts

Approximately 43,364 acres (or 2.03%) of the entire CIAA for livestock grazing is currently disturbed. This includes approximately 11,256 acres of disturbance due to unimproved roads (i.e., dirt and two-track roads), 10,736 acres due to major industrial facilities, 9,246 acres due to cities (i.e., Rock Springs, Green River, and Superior), 8,673 acres due to minor industrial facilities, 2,910 acres due to wells and associated facilities, and 543 acres due to Interstate 80, state highways, and paved county roads. Total proposed disturbance due to the Proposed Action would account for an additional 87 acres (0.004% of the total CIAA), and reasonably foreseeable future actions would account for an additional 2,803 acres (0.13% of the total CIAA). Approximately 2,225 acres of disturbance would be associated with wells and related facilities and 578 acres would be associated with minor industrial facilities. Total existing, Proposed Action, and reasonably foreseeable future actions disturbance within the CIAA would be approximately 46,253 acres (or 2.17% of the total CIAA).

Disturbance from the major industrial facilities (e.g., Jim Bridger Power Plant, Jim Bridger Mine, Leucite Hills Mine, Black Butte Mine) and wells and associated facilities are part of the long-term economic development within the CIAA and would not be available for livestock grazing until the specific facility is removed and the land revegetated. In addition, disturbance from cities and Interstate 80, state highways, paved county roads, and most dirt or two-track

roads are also part of the economic infrastructure of southwest Wyoming and would not be removed in the foreseeable future. None of the current land uses within the CIAA appear to limit the area's ability to support livestock grazing. In addition, only 50% of the available AUMs in the CIAA are currently being utilized.

Therefore, cumulative impacts to rangeland and livestock grazing would not be important because there are no past, present, or reasonable foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.9 RECREATION

4.9.1 Proposed Action

Recreational activities (including activities such as big game hunting) within the TMRT would be discouraged by BCC because of the potential safety hazard to the public due to ongoing surface mining operations and the potential hazards to mine workers that could be affected by big game hunting. However, BCC would not be able to prohibit or restrict public access to the TMRT area due to the lack of controlled access points and authorized ongoing activities such as livestock grazing. As a result, BCC would not be able to prevent the public from entering the TMRT area from the north, east, or west sides of the area. Access from the southern portion of TMRT area would be restricted by the controlled entry points leading into the BCC mine facilities. However, in accordance with WDEQ/LQD regulations, signs would be posted on main two-track roads leading into the TMRT area to inform the public that they are entering a mine area and that authorized personnel are only allowed on the property.

Under the Proposed Action, recreation opportunities within the TMRT would be discouraged but would not be restricted. Hunting and other dispersed recreational activities that currently occur within the TMRT project area would likely continue and would not be altered or impacted by the Proposed Action.

The Continental Divide dissects the TMRT LBA area; however, no segments or routes of the CDNST have been designated by the BLM along the southern branch around the Great Divide hydrologic drainage basin. However, the BLM may designate an official route in this area in the future (refer to Figure 3.6). If an official segment of the CDNST is developed in the TMRT area, the BLM would have to secure legal access for the public to cross private lands along the route including those portions of the CDNST located within the TMRT LBA area.

Underground coal mining operations conducted under the Proposed Action would have no effect on the public's ability to travel along the Continental Divide. In addition, no new surface facilities would be located within the TMRT LBA area. With longwall mining operations specified under the Proposed Action, trough-type subsidence would occur above the area where the coal has been mined or removed (refer to Figure 2.11). Trough-type subsidence would not pose a safety concern to persons travelling along the Continental Divide. Subsidence activities would occur gradually and would not be observed or perceived by the public.

Any new route or segment of the CDNST that would follow the Continental Divide within the TMRT LBA would only be approximately 0.5 to 1.0 mi away from the location of the proposed surface support facilities for underground mining operation and the active highwall mining area of the existing surface coal mining operations at the Jim Bridger Mine. Persons travelling on any proposed segment of the CDNST that follows the Continental Divide within the TMRT LBA may become endangered if they were to leave the trail and go sightseeing to the highwall area to view mining or reclamation operations. Highwall areas can be dangerous to the public for numerous reasons including the presence of unstable, loose, and/or sloughing materials. In accordance with MSHA regulations (30 CFR Part 77.1006), only authorized personnel are allowed access to highwall areas.

Therefore, regardless of whether the Proposed Action is approved or not or if the current applicant is the successful bidder for the federal coal reserves, BCC would likely request that BLM temporarily locate any proposed route or segment of the CDNST several miles away from the existing surface mining operations, including the TMRT LBA area. The temporary

relocation of the route or segment of the CDNST located near the TMRT LBA area or the existing surface coal mining operations away from the Continental Divide would minimize the physical dangers to the public travelling on the trail. In addition, the temporary relocation would also minimize visual intrusion that the surface mining operations would have on the trail viewshed and the accompanying trail experience. The temporary trail relocation would conform with typical BLM siting criteria for the CDNST. The trail segment or route may eventually be relocated back to the Continental Divide after all mining and reclamation operations have been completed at the Jim Bridger Mine.

4.9.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, there would be no additional development in the proposed project area (beyond the existing mining and other industrial development), and recreational opportunities within the TMRT project area would continue at current rates.

As discussed above, any new route or segment of the CDNST that would follow the Continental Divide would only be approximately 0.5 to 1.0 mi away from the active highwall mining area of the existing surface coal mining operations at the Jim Bridger Mine. Persons travelling on any proposed segment of the CDNST that follows the Continental Divide near the active mine area may become endangered if they were to leave the trail and go sightseeing to the highwall area to view mining or reclamation operations. Highwall areas can be dangerous to the public for numerous reasons including the presence of unstable, loose, and/or sloughing materials. In accordance with MSHA regulations (30 CFR Part 77.1006), only authorized personnel are allowed access to highwall areas.

Therefore, even if the Proposed Action is not approved, BCC would likely request that BLM temporarily locate any proposed route or segment of the CDNST several miles away from the existing surface mining operations. The temporary relocation of the route or segment of the CDNST located near the existing surface coal mining operations away from the Continental

Divide would minimize the physical dangers to the public travelling on the trail. In addition, the temporary relocation would also minimize visual intrusion that the surface mining operations would have on the trail viewshed and the accompanying trail experience. The temporary trail relocation would conform with typical BLM siting criteria for the CDNST. The trail segment or route may eventually be relocated back to the Continental Divide after all mining and reclamation operations have been completed at the Jim Bridger Mine.

4.9.3 Residual Impacts

There are no developed recreational facilities, wilderness areas, etc., in the TMRT project area, and the majority of the land is seldom used by the public except for limited dispersed recreation (e.g., hunting). Therefore, no residual impacts to recreational opportunities would occur as a result of the Proposed Action.

4.9.4 Cumulative Impacts

There are no developed recreational areas, wilderness areas, etc., in the vicinity of the TMRT, and the majority of the land is seldom used by the public for recreation except for hunting and other dispersed recreational activities. Surface disturbances in the vicinity of the TMRT area include the Jim Bridger Mine, Leucite Hills Mine, Jim Bridger Power Plant, several county and numerous two-track roads, wells and associated facilities, powerlines, and pipelines. Disturbance from these activities are part of the ongoing economic development of the Sweetwater County. None of the current land uses within the vicinity of the TMRT limits the area's ability to support recreational activities including travel on the CDNST.

Therefore, cumulative impacts to recreational opportunities would not be important because there are no past, present, or reasonable foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.10 SOCIOECONOMICS

4.10.1 Proposed Action

Under the Proposed Action, approximately 10-75 temporary construction workers and possibly approximately 50 miners in addition to those employed at the existing surface mine would be employed at the proposed underground mine. Construction operations would start in approximately mid-2005 and would continue through the end of 2007; however, precise dates would depend upon the overall project schedule, weather conditions, and the approval of all required regulatory permits and authorizations. The additional miners would begin work after construction operations have been completed and the miners needed to meet production requirements would probably be required over the 15- to 20-year life of the operation.

It is likely that most of the specialized temporary construction workers would come from outside of the Sweetwater County area. However, with underground longwall-type mining operations currently being conducted at the trona mines located west of Green River, it is possible that some of the additional miners may be hired from within the existing workforce.

For the purpose of this analysis, it is assumed that 25 (or 50%) of the miners would be hired from the existing Sweetwater County workforce and the remaining 25 (or 50%) of the miners would come from outside of existing Sweetwater County workforce.

Based on the most current housing data available from the U.S. Census Bureau of the year 2000, there are 15,921 housing units in Sweetwater County and 1,816 (11.4%) of these units were vacant. In Rock Springs and Green River, there is a total of 13,524 housing units and 1,301 (9.6%) of these units were vacant. The home ownership rate is 75.1% in Sweetwater County (U.S. Census Bureau 2003). Housing units in Rock Springs and Green River are a mix of new and historic multi- and single-family units and there is a wide variety of multi-family units (including town-homes, condominiums, duplexes, and apartment complexes) available to accommodate the housing needs of singles and families (Sweetwater County Economic

Development 2003). In addition, there are 30 hotels/motels and 11 private campgrounds/mobile home parks in Rock Springs and Green River. Based on this information, there would likely be no shortage of housing units for the 10-75 temporary construction works or the 25 miners that might relocate to the Sweetwater County area. The 25 miners that might relocate from existing operations would not require new housing units since they are already living in the area.

Existing infrastructure in Sweetwater County (e.g., utilities, schools, hospitals, etc.) would be adequate to accommodate the limited additional temporary construction and permanent mining jobs created by Proposed Action.

In 1999, the average annual wage for coal miners in Wyoming (not including benefits) was approximately \$58,100. As a result, the 50 additional miners would generate approximately \$2,905,000.00 in total annual wages. Assuming a 3.0 multiplier (secondary employment to primary employment), it is estimated that approximately 150 jobs (full-time equivalents) may be potentially created in the area of secondary employment associated, with possibly 50 additional miners that would be employed under the Proposed Action (Borden et al. 1994). These jobs would be in the areas of wholesale and retail trade, local government, services, and other business and would have an estimated average annual wage of between \$13,000 to \$25,000 (Borden et al. 1994).

Assuming a 70% recovery of in-place coal reserves from underground longwall mining operations, approximately 30.8 million tons of federal coal would be removed and a total of approximately 85 million tons of federal, state, and private coal from the entire TMRT area over the LOM. Projected revenue to the State of Wyoming is estimated at \$93.5 million from mining the entire TMRT area, of which \$33.9 million would be generated from mining of the federal coal, based on \$1.10 per ton of coal sold and including income from severance tax, property and production taxes, sales and use taxes, and Wyoming's share of federal royalty payment (Borden et al. 1994). Locally, mining of coal from the TMRT area would help stabilize municipal, county, and state economies.

4.10.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, and there would be no additional development in the proposed project area (beyond the existing mining and other industrial development). As a result, BCC would have to identify, lease, and permit other coal reserves in order stay competitive and to meet coal supply requirements. In addition, none of the financial or employment benefits identified under the Proposed Action would be realized.

If the No Action Alternative were selected, BCC would likely not be able to sustain historic coal production levels because the remaining coal reserves located within the existing lease area would become uneconomical to mine using only surface mining operations. Therefore, it is likely that BCC would have to use a combination of limited surface mining methods along with highwall mining methods to produce coal at some reduced level of production. BCC would continue to produce coal for the Jim Bridger Power Plant as long as the production costs for coal from the Jim Bridger Mine were competitive with market alternatives. Undoubtedly, there would be a decrease in the amount of coal mined at the Jim Bridger Coal Mine with a corresponding reduction in the number of miners employed at BCC. However, BCC has not completed a detailed analysis of this scenario and does not have specific information on how long surface and highwall mining operations could continue or how many workers would be required for ongoing mining and reclamation operations under the No Action Alternative.

The coal mined at the Jim Bridger Mine includes minimal transportation costs because the mine is less than 10 mi away from the power plant, and, once it is mined, the coal is transported directly to the power plant via an overland conveyor system. This type of mine-mouth operation helps minimize coal transportation cost to the Jim Bridger Power Plant, thus benefiting the customers of PacifiCorp and Idaho Power Company (PacifiCorp owns two-thirds interest and Idaho Power Company owns one-third interest in the Jim Bridger Power Plant). Coal purchased by the power plant from other suppliers would likely have to be transported to the power plant

by rail and would include increased transportation costs that are not currently incurred on the coal that is produced at the Jim Bridger Mine.

The Jim Bridger Power Plant is capable of generating 2,120 MW of electricity and is the largest coal-fired power plant in the joint owner's power generation systems. In addition, the Jim Bridger Power Plant and is connected to the western power grid through a series of transmission lines. The western power grid provides electricity to 13 western states, the provinces of British Columbia and Alberta, and a portion of northern Mexico. If the No Action Alternative were selected, representatives for the Jim Bridger Power Plant would need to secure additional supplies of suitable coal from other mines in the region so that the power plant could continue to operate. There would likely be no disruption of service or decrease in output from the Jim Bridger Power Plant.

4.10.3 Residual Impacts

The Proposed Action would provide continuing employment for employees of BCC and would generate millions of dollars over the life of the proposed project in wages for employees and tax revenue for federal and state governments. There would also be no negative impact on the local infrastructure in Rock Springs, Green River, or the Sweetwater County area. Therefore, there would be no unavoidable adverse impacts to socioeconomic condition from either the Proposed Action. The Proposed Action would provide numerous economic benefits to Rock Springs, Green River, Sweetwater County, and Wyoming economies.

4.10.4 Cumulative Impacts

The Proposed Action would create 10-75 temporary construction-related jobs and (possibly) approximately 50 additional mining jobs. The Proposed Action would be one additional source of jobs in southwestern Wyoming, especially Sweetwater County, and another source of tax revenues for the federal, state, county, and municipal governments, both of which are desirable outcomes from an economic development perspective. The Proposed Action would also provide

increased economic stability for Rock Springs, Green River, Sweetwater County, and the state of Wyoming. The current infrastructure within Sweetwater County would be capable of accommodating the additional primary and secondary employment created by the Proposed Action without having any adverse socioeconomic impacts.

Therefore, cumulative adverse impacts to socioeconomic resources would not be important because there are no past, present, or reasonable foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.11 SOIL RESOURCES

4.11.1 Proposed Action

The Proposed Action would result in approximately 28 acres of initial disturbance from the construction of mine support facilities. In addition, an estimated 59 acres, associated with reclamation effort to repair surface cracks due to subsidence (i.e., 1% of the TMRT), would be disturbed over the life of the mine. 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 sedimentation to the any receiving water system. Short-term control of surface runoff and sedimentation would be accomplished by implementation of alternate sediment control measures required by the WDEQ/LQD and described in the mine plan portion of the Proposed Action.

In addition, long-term control of surface runoff would be accomplished by successful implementation of the reclamation plan described in the Proposed Action. Reclamation and revegetation procedures would be designed to reduce the susceptibility of disturbed areas to soil erosion in both the short-term and for the life of the project. Implementation of the WDEQ/LQD-approved mine and reclamation plan described in the Proposed Action includes

specific measures to protect soil resources. These mitigation measures include proper construction of topsoil stockpiles (including installation of toe ditches and temporary reclamation), implementation of alternate sediment control measures, and the successful implementation of the reclamation plan for the facilities construction areas and subsidence repair areas within the TMRT.

4.11.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, there would be no additional development in the proposed project area (beyond the existing mining and other industrial development), and existing impacts to soil resources in the proposed project area would continue to occur at current rates.

4.11.3 Residual Impacts

The Proposed Action 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 temporary removal of vegetation, exposure of the soils, mixing of soil horizons, and increased susceptibility to wind and water erosion. However, these impacts would be mitigated by implementation of specific operational and reclamation procedures discussed under the Proposed Action.

4.11.4 Cumulative Impacts

Within the CIAA, a total of 6,511 acres have been disturbed; the Jim Bridger Mine and Jim Bridger Power Plant have disturbed approximately 4,828 acres, other human-related disturbance within the CIAA (e.g., roads and wells) has disturbed an additional estimated 381 acres, and minor industrial facilities have disturbed 1,302 acres. Under the Proposed Action, approximately 87 acres would be disturbed by mine facilities and reclamation operations from the repair of surface cracks due to subsidence. Based on these acreages, approximately 9.60% of

the CIAA is currently disturbed and approximately 9.76% of the CIAA would be cumulatively disturbed by the Proposed Action and reasonably foreseeable future actions.

Disturbed surface- and underground-mined lands would eventually (10-20 years) be capable of supporting predisturbance uses once reclamation operations are completed. Soil resources would be protected from long-term impacts by implementation of erosion control measures including in the Proposed Action.

Therefore, cumulative impacts to soil resources would not be important because there are no past, present, or reasonable foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.12 THREATENED, ENDANGERED, CANDIDATE, PROPOSED, AND SENSITIVE SPECIES

4.12.1 Proposed Action

Federally listed TEC&P species with the potential to occur in the project area are black-footed ferret and bald eagle. Impacts to federally listed TEC&P species due to the Proposed Action likely would occur in direct proportion to the amount of their habitat disturbed.

4.12.1.1 Black-footed Ferrets

The TMRT contains white-tailed prairie dog--the primary food source for black-footed ferrets. Therefore, any impacts to prairie dogs may result in an adverse affect to black-footed ferrets. In order to assess the potential habitat for black-footed ferrets within the TMRT, BCC would inventory and map all white-tailed prairie dog towns within 0.5 mi of the TMRT and would identify any prairie dog towns within the TMRT. Prior to any physical disturbance to the white-tailed prairie dog town within the TMRT, BCC would consult with the BLM and would undertake clearance surveys for black-footed ferrets as directed by the BLM in accordance with USFWS (1989) guidelines. Results of all prairie dog town inventories and black-footed ferret

surveys would be submitted to the BLM and USFWS for review and approval prior to the initiation of ground-disturbing activities. If black-footed ferrets or signs of black-footed ferrets are found, BCC would consult with BLM and USFWS and would undertake appropriate measures as directed by the USFWS that would mitigate any potential impacts to black-footed ferrets.

4.12.1.2 Bald Eagle

Underground mining operations would not conflict with normal bald eagle foraging or travel behavior; however, direct impacts to bald eagles may include mortality due to electrocutions and collisions with project-related powerline structures. As described in the Proposed Action, the powerline would be designed, constructed, operated, and maintained in conformance with the *National Electrical Safety Code* and other applicable codes and standards, as well as *Suggested Practices for Raptor Protection on Powerlines: The State of the Art in 1996* (APLIC 1996) and *Mitigating Bird Collisions with Powerlines: The State of the Art in 1994* (APLIC 1994). Implementation of these standards would reduce the risk of raptor electrocutions and collisions with powerline structures.

4.12.1.3 BLM-sensitive Species

All BLM-sensitive species likely to occur within the TMRT and vicinity have been identified in Table 3.5 of this EA. BLM-sensitive species documented in or in the vicinity of the TMRT include white-tailed prairie dog, pygmy rabbit, white-faced ibis, ferruginous hawk, greater sage-grouse, long-billed curlew, burrowing owl, sage thrasher, loggerhead shrike, Brewer's sparrow, mountain plover, northern leopard frog, Great Basin spadefoot, Nelson's milkvetch, and mystery wormwood (WNDD 2003). Most of the BLM-sensitive species likely to occur within the TMRT are mobile enough that they would likely not be affected by the Proposed Action. However, it is also possible that some individuals of BLM-sensitive species may occur and may be adversely affected by the Proposed Action. However, due to the limited amount and dispersed nature of the area that would be disturbed (approximately 87 acres), the impacts would be isolated to the

specific areas that would be disturbed, and the impacts would be important to the specific populations that might occur in the project area.

Several of the BLM-sensitive species likely to occur in or in the vicinity of the TMRT are fossorial in nature (i.e., they live in burrows or underground) (such as white-tailed prairie dogs) or they utilize burrows for a portion of their breeding period (such as burrowing owls). As such, some individuals that might occur in the TMRT may be adversely impacted by the Proposed Action. Potential adverse impacts to white-tailed prairie dogs or burrowing owls that occur in the area directly affected by subsidence include direct mortality, loss of suitable nesting or burrowing habitat, or displacement from the burrow or nesting areas. While it may be possible that individual white-tailed prairie dogs or burrowing owls that live in areas directly affected by mine-related subsidence may be adversely affected by the Proposed Action, the impacts would be limited to few individuals and would not have an adverse impact on their populations. In addition, the Proposed Action would not contribute to the need to list the species under the provisions of the federal *Endangered Species Act*.

4.12.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, there would be no additional development in the proposed project area (beyond the existing mining and other industrial development), and impacts on TEC&P and BLM-sensitive species populations would continue at present levels, with fluctuations due primarily to weather, disease, and other natural causes.

4.12.3 Residual Impacts

It is possible that individual bald eagles, black-footed ferrets, and mountain plovers and other individual BLM-sensitive species may be impacted by the Proposed Action; however, there have been no sightings of any bald eagles or black-footed ferrets within the TMRT project area and

appropriate surveys and/or mitigation measures would be implemented. All required species-specific surveys and mitigation measures would also be implemented.

4.12.4 Cumulative Impacts

Cumulative impacts to TEC&P and BLM-sensitive species would likely occur in direct proportion to the amount of physical impacts that occur to habitat of the specific species. Potential impacts to TEC&P species due to the Proposed Action would be minimized by conducting species-specific surveys and the implementation of species-specific mitigation measures if the species are found. In addition, impacts to individual BLM-sensitive species due to the Proposed Action would be isolated to the specific areas that would be disturbed and the impacts would not be detrimental to the specific populations that might occur in the project area. There is also no information that there are or have been any important cumulative impacts to any TEC&P and BLM-sensitive species within the vicinity of the TMRT area.

Therefore, cumulative impacts to TEC&P and BLM-sensitive species would not be important because there are no past, present, or reasonably foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.13 VEGETATION (INCLUDING INVASIVE SPECIES)

4.13.1 Proposed Action

The Proposed Action would result in approximately 28 acres of new disturbance from the construction of mine facilities and an estimated 59 acres of disturbance associated with reclamation effort to repair surface cracks due to subsidence (i.e., 1% of the TMRT). Direct impacts to vegetation due to the Proposed Action include the removal of existing vegetation community from disturbed area. In turn, vegetation removal would result in increased runoff, erosion, and sedimentation to the any receiving water systems. Short-term control of surface

runoff would be accomplished by implementation of alternate sediment control measures required by the WDEQ/LQD and described in the mine and reclamation plan of the Proposed Action. In addition, long-term control of surface runoff would be accomplished by successful implementation of the reclamation plan described in the Proposed Action. Reclamation and revegetation procedures would be designed to vegetate the disturbed area to a condition comparable to pre-disturbance conditions and to meet post-mining reclamation bond release standards.

Indirect impacts to plant species would occur as a result of the subsidence of the underground mine; however, projected subsidence is expected to be minimal (approximately 6.0 to 9.5 ft in height), and areas that require reclamation are expected to be limited to approximately 1% of the total TMRT area (59 acres). Vegetation is not likely to be directly disturbed unless surface cracks form, and if such cracks form, BCC would revegetate such disturbances as directed by WDEQ/LQD. Indirect impacts would occur because basin and ridge topography would alter local soil moisture regimes, which may gradually affect species distribution. Spots that are lowered may receive more moisture, which would enhance shrub growth, or they may receive too much moisture, thus stunting or precluding shrub growth, but promoting more herbaceous growth. The final postmining topography may also alter snow distribution and thus moisture accumulation patterns, which may also cause gradual permanent changes to vegetation and wildlife distribution. These impacts would be minor and limited to the area directly affected by the subsidence.

As part of the WDEQ/LQD permit to mine, BCC would be responsible for the development of mine subsidence and reclamation plan that would include detailed information concerning the amount of anticipated subsidence, mitigation measures to prevent or minimize the impacts of subsidence, mitigation measures to prevent, lessen, or mitigate material damage or loss of value of physical property in the area, a subsidence monitoring and mitigation plan, and a reclamation plan to address reclamation and revegetation requirements on affected areas. Following the completion of reclamation operations, the revegetated areas would be monitored at least annually for five years by BCC and WDEQ/LQD to assess the subsidence and the adequacy or need for

additional reclamation and revegetation efforts. Subsidence and erosional features would be monitored and appropriate corrective actions instituted if conditions warrant. Additional erosion control features would be employed as needed and as directed by WDEQ/LQD. All mitigation and corrective actions would be conducted in accordance with the approved WDEQ/LQD mine permit.

Invasive species (i.e., weed) control measures would also remain in place during all phases of the mining and reclamation process. Designated or prohibited noxious weeds on disturbed lands within the TMRT area would be controlled. In general, the following procedures would be instituted.

- Land disturbance would be kept to a minimum, wherever possible, during the mining process.
- BCC would utilize only certified weed-free mulch and seed during reclamation operations.
- Chemical herbicides may be used to control noxious or prohibited weeds. The local weed and pest agency would be contacted, and the problem would be addressed in compliance with appropriate regulations. If required, a Pesticide Use Plan would be prepared and approved by WDEQ/LQD and BLM prior to application of pesticides.

BCC would also be required to post a reclamation performance bond with the State of Wyoming to ensure that they comply with all the requirements of the WDEQ/LQD permit and that reclamation goals and objectives are met. Once mining and reclamation operations have been completed, BCC would follow reclamation bond release procedures specified by WDEQ/LQD. Reclamation bond release procedures for an underground coal mine are identical to surface coal mines, including the 10-year bond release period after the completion of permanent reclamation operation, and require that a stable land form exists and that revegetation standards have been met. WDEQ/LQD would release the full reclamation performance bond only after strict reclamation standards have been met and the public has been provided an opportunity to comment.

4.13.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, there would be no additional development in the TMRT area by BCC (beyond the existing mining and other industrial development), and existing impacts to vegetation resources in the proposed project area would continue to occur at current rates.

4.13.3 Residual Impacts

The Proposed Action would result in the temporary removal of vegetation from an estimated 87 acres associated with the mine facilities and areas associated with repair of mine-related subsidence. However, once mine operations are completed, reclamation efforts would re-establish the vegetative community that would be similar to pre-mining conditions and would mitigate any long-term impacts to vegetation resources. It could take 10-20 years after reclamation operations have been completed for some of the reclaimed areas to have shrub conditions and vegetation diversity comparable to predisturbance conditions.

4.13.4 Cumulative Impacts

Based on the disturbance calculations presented in Chapter 3, approximately 6,511 acres are currently disturbed within the CIAA. This represents approximately 9.6% of the total area within the CIAA. Reasonably foreseeable future actions (including the Proposed Action) within the CIAA would result in an additional 109 acres of disturbance (which amounts to 6,620 acres of total disturbance due to existing activities, the Proposed Action, and reasonably foreseeable future actions). This represents 0.16% of the total area within the CIAA or 9.76% based on the total disturbance due to existing activities, the Proposed Action, and reasonably foreseeable future actions.

Vegetation resources would be protected from long-term impacts by implementation of reclamation operation included in the Proposed Action, and the vegetation would eventually be capable of supporting pre-disturbance land uses once reclamation operations have and vegetation has become reestablished. The Jim Bridger Power Plant, minor industrial facilities, wells and associated facilities, and roads are part of long-term economic development in Sweetwater County and would not likely be removed or reclaimed in the foreseeable future. Therefore, cumulative impacts to vegetation resources would not be important because there are no past, present, or reasonably foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.14 WASTES (HAZARDOUS AND SOLID)

4.14.1 Proposed Action

Based on the Proposed Action, BCC does not anticipate that any hazardous waste would be generated during mining or reclamation operations. However, any hazardous substances that are released (leaks, spills, etc.), whether at the surface support facilities or within the underground mining workings, that may no longer be used for its original purpose would be treated as a hazardous waste in accordance with state and federal regulations. Any release of hazardous substances in excess of reportable quantities, established in Title 40 C.F.R. Part 117, would be reported as required by CERCLA, as amended. If a release of a reportable quantity of any hazardous substances occurs, a report would be furnished to WDEQ and all other appropriate federal and state agencies. Prior to construction of any facilities associated with the Proposed Action, inventories of hazardous chemical categories pursuant to Section 312 of the SARA, as amended, would be updated.

Toilets would be provided for workers on-site and at the proposed change house located at Ramp 14, and the waste would be properly disposed of through the septic system or at an approved waste disposal facility on an as-needed basis or it would be handled through a septic

system located near the proposed change house. Solid waste such as garbage and other discarded solid materials would be collected at a designated collection site and disposed of at an approved solid waste management facility. Solid waste would not be imported or disposed of within the TMRT area. Spills of petroleum products may occur during mining due to periodic equipment maintenance and/or accidents. Petroleum-contaminated soils would be disposed of in an approved facility capable of accepting such waste. All nonhazardous material would be disposed of in accordance with appropriate local, state, and federal regulations.

Unanticipated release events (such as spills or leaks) are always possible but unlikely, and BCC would comply with all applicable planning and emergency procedures regarding spill prevention, reporting, and cleanup required by local, state, and federal laws and regulations should an accident occur.

4.14.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, there would be no additional development in the proposed project area (beyond the existing mining and other industrial development), and impacts to hazardous and solid waste would remain at existing levels.

4.14.3 Residual Impacts

Impacts to soils, surface water, groundwater, vegetation, and wildlife could result from nonremediated accidental spills, releases, or leaks of hazardous and solid waste. In the event of a hazardous waste spill or leak, it is likely that only a small amount of soil would be contaminated. However, if a spill or leak occurs, the affected area would be cleaned up in a timely manner and in accordance with state and federal rules and regulations.

4.14.4 Cumulative Impacts

Under *Resource Conservation and Recovery Act* regulations, the Jim Bridger Mine and the Jim Bridger Power Plant are both registered as a small-quantity hazardous waste generators. There are two active solid waste disposal sites within the vicinity of the TMRT, one operated by BCC and one operated by the Jim Bridger Power Plant (personal communication, April 18, 2002, with Kathy Brown, WDEQ/SHWD, Lander, Wyoming). As a result, any hazardous or solid waste generated by these facilities are handled in accordance with specific federal and state rules and regulations.

Therefore, cumulative impacts due to hazardous and solid waste would not be important because there are no past, present, or reasonably foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.15 WATER RESOURCES

4.15.1 Surface Water Resources

4.15.1.1 Proposed Action

The Proposed Action would result in approximately 28 acres of new disturbance from the construction of mine facilities and an estimated 59 acres of disturbance associated with reclamation effort to repair surface cracks due to subsidence (i.e., 1% of the TMRT). Direct impacts to surface water resources would include an increase in runoff, wind and water erosion, and sedimentation to the any receiving system as a result of surface disturbance, removal of vegetation, exposure of the soil to the elements, and soil compaction. Ephemeral channels may also be impacted as a result of subsidence that may cause limited head-cutting or ponding within affected channels. Short-term control of surface runoff would be accomplished by implementation of alternate sediment control measures required by the WDEQ/LQD and

described in the mine plan portion of the Proposed Action. However, there would be no temporary or permanent depletion of surface water resources. In addition, long-term control of surface runoff would be accomplished by successful implementation of the reclamation plan described in the Proposed Action. Reclamation and revegetation procedures would be designed to reduce the susceptibility of disturbed areas to soil erosion in both the short-term and for the life of the project.

In addition, excess mine water not needed for dust suppression would be pumped into an existing WDEQ/LQD- and WDEQ/WQD-approved holding pond where the water would be monitored and discharged into the Deadman Wash drainage channel after it meets NPDES discharge standards. This activity would be conducted as part of ongoing mine dewatering operations conducted at the Jim Bridger Mine and in accordance with BCC's existing NPDES discharge permit issued by WDEQ/WQD.

No perennial streams would be directly impacted by the underground mining activities, and there would be no depletion of surface water resources. Therefore, no additional mitigation measures beyond those already included in the Proposed Action would be required.

None of the drainages within the TMRT or the CIAA are included in the WDEQ/WQD 303(d) list of water bodies with water quality impairments (WDEQ/WQD 2000). This list includes rivers, streams, creeks, or any water bodies of water for which effluent limitations required by the federal *Clean Water Act*, as amended, are not stringent enough to implement any water quality standards applicable to such waters.

4.15.1.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, there would be no additional development in the project area (beyond the existing mining and other industrial development), and impacts to surface water resources would continue at current rates.

4.15.1.3 Residual Impacts

There would be an unavoidable minor increase (87 acres) in the disturbance in the watersheds under the Proposed Action and the potential for some increase in runoff and sediments that would likely reach local waterways. In addition, some ephemeral channels may be impacted as a result of subsidence. However, implementation of sediment control measures required by the WDEQ/WQD and WDEQ/LQD would minimize these impacts. There would also be temporary and limited loss of surface water due to the utilization of the alternative sediment control measures. Following the successful completion of permanent reclamation operations, surface water flow and quality would eventually mimic predisturbance conditions.

4.15.1.4 Cumulative Impacts

Based on the disturbance calculations presented in Chapter 3, approximately 6,308 acres are currently disturbed within the CIAA. This represents 8.07% of the total area within the CIAA. reasonably foreseeable future actions (including the Proposed Action) within the CIAA would result in an additional 109 acres of disturbance (6,417 acres of total disturbance due to existing activities, the Proposed Action, and reasonably foreseeable future actions). This represents 0.14% of the total area within the CIAA or 8.21% based on the total disturbance due to existing activities and reasonably foreseeable future actions.

Existing surface mining operations at the Jim Bridger Mine would likely result in more cumulative impacts to surface water resources than any other activity within the CIAA. Impacts include the temporary reduction of surface water flow and potential impacts to surface water quality. However, all mining operations, including the Proposed Action, are regulated by the WDEQ/LQD and WDEQ/WQD, which requires the implementation of specific mitigation measures to reduce and limit impacts to surface water resources. As a result, these operations would have no important impacts on surface water flow and quality.

Therefore, cumulative impacts to surface water resources would not be important because there are no past, present, or reasonable foreseeable future actions that, when combined with the

Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.15.2 Groundwater Resources

4.15.2.1 Proposed Action

Under the Proposed Action, BCC would require approximately 100,000 to 500,000 gallons of water per day from the Deadman coal zone for dust suppression and equipment washdown and at the surface support facilities. In addition, approximately 5,915 acres of coal aquifer (the same one that would be mined) would be temporarily removed during mining.

Underground coal mining within the TMRT would be expected to have little, if any, short-term or long-term effect on the regional hydrologic regime. It is anticipated that mining operations would intercept groundwater resource contained within the Deadman coal zone of the Fort Union Formation. Groundwater intersected by mining operations would be pumped out of the mine portal. If the water is not needed for dust suppression or equipment washdown, it would be eventually discharged into Deadman Wash drainage in accordance with the BCC's existing and approved NPDES permit.

Drawdown of the coal aquifer would occur throughout the life of the mine and would likely mimic groundwater drawdown patterns currently observed as a result of BCC's surface coal mining operation. The drawdown limit of the Deadman coal zone would likely continue to extend northwest of the existing surface mine operation. In addition, a limited amount of drawdown would also occur in the Lance Formation and Fort Union Formation overburden. The amount of drawdown would depend upon numerous hydrogeologic factors including the amount of hydraulic connectivity between the various formations. Prior to the initiation of underground mining operations, BCC would apply for and obtain groundwater rights from the WSEO for the groundwater resource that would be impacted. There are no known groundwater appropriations within the vicinity of the TMRT, except those currently held by BCC. However, in accordance with WSEO regulations and Wyoming state law, if it is determined that groundwater drawdown

from mining operations has affected any pre-existing appropriated groundwater right, BCC would be required to provide said water right holder(s) with an alternative source of water.

After mining operations have been completed and subsidence has begun, there might be changes in the Fort Union Formation overburden aquifer, the replaced Deadman coal zone aquifer, and the Lance Formation aquifer due to interruption and deformation of strata located near the mined out longwall panels. The amount and extent of aquifer changes would depend upon numerous hydrogeologic factors including the extent of fractures and their ability to seal themselves. For western underground coal mines, the relationship of fracture height is predicted to be equal to 30 times the height of the coal that was removed (Kadnuck 1994). Assuming approximately 7 to 11 ft of coal would be removed during mining, this relationship predicts that a majority of the fracturing would occur approximately 210 to 330 ft above the mined longwall panels within the project area. Above this interval, continuous bending of strata generally occurs and pre-existing fractures can dilate (i.e., swell or expand) and would likely result in limited groundwater flow variations to the natural system (Kadnuck 1994).

In addition, after mining operations are completed, affected aquifers would be physically replaced with existing overburden material as subsidence occurs and the void created by longwall mining is eliminated. Affected aquifers would then begin to resaturate as postmining potentiometric elevations recover in the surrounding undisturbed aquifers. The recharge rate would depend on the specific physical characteristics of the replaced aquifer (Deadman coal zone) and the indirectly impacted aquifers (the Fort Union Formation overburden and the Lance Formation). While it may require 100 years or more for postmine groundwater levels to recharge to premine levels (BLM 2003), aquifer drawdown (due to the Proposed Action) would not be permanent and the affected aquifers would eventually be reestablished.

Groundwater quality in the postmining subsidence aquifer would likely contain higher levels of calcium, sulfate, magnesium, manganese, and TDS than premining waters because infiltrating water would flow across relatively fresh-cut rock faces where newly exposed minerals would be readily dissolved (Rahn 1976; Van Voast 1978). Premining groundwater quality is moderate and

suitable only for agricultural use, livestock and wildlife watering, and industrial purposes. Postmining groundwater quality would be similar to premining conditions and may, in some situations, change from Class II (agricultural use) water to Class III (livestock and wildlife watering use) water.

The closest surface expression of groundwater to the TMRT is at Radar Springs, approximately 1 mi northwest of the TMRT. However, based upon the slope of the coal beds that would be impacted by the Proposed Action and knowledge gained at the existing Jim Bridger Mine and local geologic maps, the proposed underground mine would be located down-gradient of Radar Springs and most likely is not connected to Radar Springs and would not impact Radar Springs (personal communication, February 4, 2002, with Dennis Doncaster, BLM hydrologist).

4.15.2.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, there would be no additional development in the proposed project area (beyond the existing mining and other industrial development), and impacts to groundwater resources would continue at current rates.

4.15.2.3 Residual Impacts

Under the Proposed Action, approximately 100,000 to 500,000 gallons of water per day for approximately 15 to 20 years would be utilized, and approximately 5,915 acres of coal aquifer would be removed from the TMRT area. Water quality may be slightly altered by the Proposed Action; however, any impacts to groundwater quality would be similar to what is occurring within the current mining operations at the Jim Bridger Mine and water quality would still meet either Class II or III standards for use. It may require 100 years or more for postmining groundwater levels to recharge to premining levels; however, these impacts would not be permanent. In addition, it is possible that some groundwater resources would be temporarily altered by the Proposed Action; however, there are no known legally appropriated groundwater

sources (i.e., water rights), besides those held by BCC, within the TMRT or the general vicinity. Under Wyoming state law, if needed, BCC would also be required to mitigate any impacts to pre-existing water rights.

4.15.2.4 Cumulative Impacts

Surface mining operations at the Jim Bridger Mine likely result in more impacts to groundwater resources than any other human-related activity within the CIAA. Impacts similar to those discussed above, include removing groundwater, replacing the existing water-bearing zones, potentially impacting groundwater quality, and altering groundwater recharge rates (BCC 2003). However, these impacts are not expected to be permanent.

As a result of ongoing surface coal mining operations by BCC, portions of the TMRT have likely already been impacted to some extent by groundwater drawdown northeast of the current Jim Bridger Mine permit boundary (BCC 2003). The Leucite Hills surface coal mine removes coal from the Almond Formation located geologically below the Fort Union Formation. Within the CIAA, the Fort Union and Almond Formations are hydrologically isolated from each other. Therefore, groundwater drawdown in the Fort Union Formation is not affected by mining and groundwater removal operations conducted in the Almond Formation and would not result in cumulative impacts between the two formations (BCC 2003). The addition of the Proposed Action would likely result in the limited cumulative groundwater drawdown in the Fort Union Formation farther to the northeast of the TMRT area. WDEQ/LQD requires all coal mining companies to determine the predicted extent of the 5-ft drawdown contour prior to the approval of the mine and reclamation permit. Therefore, BCC would conduct necessary groundwater studies to determine the predicted 5-ft drawdown levels during the mine permitting phase of the project. Based on information presented in BCC's existing mine and reclamation permit, the 5-ft groundwater level would likely be limited within the CIAA and would have no important impact on regional groundwater resources.

All mining operations, including the Proposed Action, would be regulated by the WDEQ/LQD and WDEQ/WQD, which would require the implementation of appropriate mitigation measures to reduce and limit impacts to groundwater resources. Existing appropriated groundwater rights would also be protected. As a result, BCC has existing permits from regulatory agencies in accordance with applicable federal and state laws.

Therefore, cumulative impacts to groundwater resources would not be important because there are no past, present, or reasonable foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.16 WETLANDS AREAS

4.16.1 Proposed Action

The Proposed Action would result in approximately 28 acres of new disturbance from the construction of mine support facilities and an estimated 59 acres of disturbance associated with reclamation effort to repair surface cracks due to subsidence (i.e., 1% of the TMRT). Based on the results of a wetland inventory, there are no jurisdictional wetlands located within the TMRT project area (Intermountain Resources 2002). Therefore, the Proposed Action would not be expected to have any impacts on wetland resources.

However, during the mine permitting process, the U.S. Army Corps of Engineers would complete a review of the wetlands inventory report and would make a formal determination as to the jurisdictional status of any potential wetland resource. Only the U.S. Army Corps of Engineers has the legal responsibility and authority to make any such legal determinations for jurisdictional wetland areas. No additional permitting requirements or mitigation measures would be necessary if the U.S. Army Corps of Engineers formally determines that there are no jurisdictional wetlands within the project area. On the other hand, if the U.S. Army Corps of Engineers determines that jurisdictional wetlands are present within the TMRT project area,

BCC would prepare the appropriate information and would likely obtain coverage under an existing nationwide permit from the U.S. Army Corps of Engineers. It is unlikely that an individual wetland permit would be necessary for the Proposed Action. BCC would also incorporate any necessary and appropriate wetland reclamation plans for this area into their mine and reclamation permit application that would be reviewed and approved by WDEQ/LQD. Therefore, if jurisdictional wetland areas are identified, permitted, and impacted by the Proposed Action, proper reclamation procedures would ensure that these areas are reclaimed and revegetated in accordance with WDEQ/LQD and U.S. Army Corp of Engineers rules and regulations.

4.16.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT (beyond the existing mining and other industrial development), there would be no additional development in the proposed project area, and impacts to wetlands areas would continue at current rates

4.16.3 Residual Impacts

There would be no residual impacts to wetland areas.

4.16.4 Cumulative Impacts

Based on the disturbance calculations presented in Chapter 3, approximately 6,511 acres are currently disturbed within the CIAA. This represents approximately 9.60% of the total area within the CIAA. reasonably foreseeable future actions (including the Proposed Action) within the CIAA would result in an additional 109 acres of disturbance (which equals 6,620 acres of total disturbance due to existing activities, the Proposed Action, and reasonably foreseeable future actions). This represents 0.16% of the total area within the CIAA or 9.76% based on the total disturbance due to existing activities and reasonably foreseeable future actions.

Existing surface mining operations at the Jim Bridger Mine have likely resulted in more impacts to wetland or riparian areas than any other current activity within the CIAA. Existing impacts include the temporary removal of wetland and riparian areas. However, these impacts are not expected to be permanent, and wetland and riparian areas would be replaced or reclaimed.

The Proposed Action would result in no additional impacts to wetland resources. Therefore, there would be no cumulative impacts to wetlands because there are no past, present, or reasonable foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.17 WILD HORSES

4.17.1 Proposed Action

Direct impacts to wild horse populations would result from the temporary loss of 87 acres of habitat due to vegetation removal; displacement of wild horses due to disturbance by project-related activities; direct mortality due to construction-related activities; and an increased likelihood of vehicle/animal collisions due to increased vehicle traffic. Impacts to vegetation due to disturbance would be limited in part due to the fact that the 87 acres of disturbance would be spread over a larger area and would not occur in a single block of disturbance. In addition, the population of wild horses within the GDBWHMA is within the BLM management level for this area. No impacts to the local wild horse population would be expected due to the Proposed Action.

Individual wild horses may also be injured if they trip in surface cracks created by subsidence. The temporary loss of wild horse habitat due to vegetation removal and danger of injury to wild horses would be mitigated with appropriate and timely reclamation and revegetation measures included in the Proposed Action and required for the WDEQ/LQD permit. However, once reclamation and revegetation operations have been completed and suitable vegetation habitat re-established, wild horses would likely re-occupy the impacted portion of the TMRT area. The direct removal of wild horse habitat would be minimal.

The potential for vehicle/wild horse collisions during project-related construction activities would be mitigated by imposing speed limits on all roads. Noise from traffic, surface-related activities, and the underground mining operation would be minimal; therefore, displacement of wild horses from the project area is expected to be limited.

4.17.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, there would be no additional development in the proposed project area (beyond the existing mining and other industrial development), and impacts on wild horse populations would continue at present levels, with fluctuations due primarily to weather, disease, and other natural causes.

4.17.3 Residual Impacts

The Proposed Action would result in the temporary removal of vegetation from an estimated 59 acres associated with reclamation of subsidence areas within the TMRT and 28 acres associated with the mine facilities. However, once mine operations are completed, reclamation efforts would re-establish the vegetative habitat and would mitigate any long-term impacts to wild horse populations. There would also be the potentially unavoidable impact to wild horses due to possible collisions with vehicles; however, posting of speed limits on public and BCC roads would mitigate impacts. The Proposed Action may temporary displacement of some wild horses from active areas of the mine; however, displacement would likely be no more than is currently occur with the existing surface mine operation.

4.17.4 Cumulative Impacts

Based on the disturbance calculations presented in Chapter 3, approximately 18,360 acres are currently disturbed within the CIAA. This represents approximately 2.36% of the total area within the CIAA. Reasonably foreseeable future actions (including the Proposed Action) within

the CIAA would result in an additional 877 acres of disturbance (which equals 19,237 acres of total disturbance due to existing activities, the Proposed Action, and reasonably foreseeable future actions). This represents 0.11% of the total area within the CIAA or 2.47% based on the total disturbance due to existing activities, the Proposed Action, and reasonably foreseeable future actions.

Once reclamation operations have been completed, disturbed surface-mined lands would eventually be capable of supporting pre-disturbance levels of livestock grazing uses including wild horses. Disturbance from the Jim Bridger Power Plant and roads are part of the long-term economic development within the CIAA and would no longer be available for wild horse habitat. None of the current land uses within the CIAA limits the area's ability to support wild horse grazing.

Therefore, cumulative impacts to wild horse populations would not be important because there are no past, present, or reasonably foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.18 WILDLIFE

4.18.1 Proposed Action

4.18.1.1 Big Game

Direct impacts to big game would result from the loss of habitat due to vegetation removal; displacement of wildlife due to disturbance by project-related activities; direct mortality due to construction-related activities; increased mortality due to poaching and harassment; and an increased likelihood of vehicle/animal collisions due to increased traffic in the area. Due to the depth of the mining operations, noise from the underground mining operations would be

minimal; therefore, no big game would be expected to be displaced from within the TMRT due to noise.

Construction and reclamation activities would likely cause some big game that currently utilize the area--the proposed conveyor, road, and powerline ROW areas and areas within the TMRT that would be impacted by subsidence (i.e., reclamation operations)--to temporarily vacate the immediate vicinity (up to 0.5 mi or more) around the active area before construction and revegetation operations have been completed. However, once construction activities are completed, most of the big game animals in the area would be expected to become acclimated to the traffic and noise along the ROWs and to return to areas located within 0.5 mi of the roads, powerline, and conveyor. The temporary loss of 87 acres of big game habitat for individual animals due to vegetation loss 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. It could take 10-20 years after reclamation operations have been completed for some of the reclaimed areas to have shrub conditions and vegetation diversity comparable to pre-disturbance conditions. However, once reclamation and revegetation operations are completed and suitable vegetation habitat re-established, big game would likely re-occupy the disturbed ROWs and mine areas within the TMRT. In addition, the mine-related disturbance would be scattered over a large area and would have little or no impact on big game populations in the area.

Pronghorn Antelope. Approximately 1,726 acres or 30% of the TMRT area would be located within crucial winter/yearlong pronghorn antelope range (refer to Figure 3.12). However, a majority of the TMRT area (70%) would be located in winter/yearlong habitat. Impacts to pronghorn antelope due to vegetation removal would be limited due in part to the fact that the 87 acres of project-related disturbance would occur in small amounts over a large area. In addition, only 30 acres of the disturbance would occur within crucial winter/yearlong range. The population of pronghorn antelope within the Red Desert herd unit is currently at 93% of the population objective for the herd unit. Therefore, there would be no impacts to the population of pronghorn antelope within the Red Desert herd unit due to the Proposed Action.

In accordance with WGFD recommendations, construction activities and reclamation operations would not be conducted on crucial winter/yearlong range from November 15 to March 30. However, if necessary, BCC would request a waiver of the seasonal restriction stipulation from the BLM. Depending upon specific weather conditions at the time of the request, the BLM would evaluate the request on a case-by-case basis and would inform BCC if the waiver can be granted. The small amount of habitat disturbed and the timely implementation of reclamation and revegetation procedures that would be followed would minimize long-term impacts to the pronghorn antelope population.

Mule Deer and Elk. The TMRT does not contain any crucial winter mule deer or elk range. Once construction activities and reclamation operations are completed and suitable vegetation habitat is re-established, mule deer and elk would likely reoccupy the ROWs and areas within the TMRT that are impacted by subsidence. Therefore, there would be no impacts to mule deer or elk populations due to the Proposed Action.

4.18.1.2 Other Mammals

Impacts to other mammals due to the Proposed Action would include direct mortality during construction activities and reclamation operations, especially to those that may take refuge in burrows that would be destroyed by areas of subsidence and required reclamation and revegetation operations, and a potential increase in mortality from vehicle/animal collisions. Generally, the dispersed and relatively small amount of wildlife habitat physically impacted by the Proposed Action (estimated at 87 acres) would limit impacts to all wildlife species. Most small mammal populations are relatively tolerant of human activity and would likely experience reduced populations in direct proportion to the amount of habitat removed. This would most likely be true for species with relatively small home ranges (rodents, lagomorphs, etc.) and would be less applicable to more wide-ranging species such as coyote, badgers, etc. Project-related impacts to small mammals would likely be masked by natural variations in populations due to weather, disease, and other natural factors. Impacts to rare habitats (e.g., wetlands areas) would be minimal, and measures included in the Proposed Action to minimize impacts to

wildlife would mitigate and reduce impacts to other animals. In addition, the temporary loss of habitat for other mammals due to vegetation loss 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.

4.18.1.3 Raptors

Direct impacts to raptors include mortality due to electrocutions and collisions with powerline structures. Other potential indirect impacts to nesting raptors include decreased raptor reproductive success due to the physical disturbance of the nest or to increased human activities near the nest; destruction of nest, egg, and/or young; increased predation of the eggs or young; and impacts to hunting, foraging, and roosting habitat (National Wildlife Federation 1987). It is unlikely that raptor populations would be impacted by the Proposed Action; however, individual birds may be impacted. Several raptor nests are located in the TMRT area; however, no raptor nests were documented within the ROW areas.

Prior to the initiation of mining operations, BCC would be required by WDEQ/LQD to conduct raptor nest surveys for occupancy and production of the TMRT area and a 1-mi buffer. Monitoring information would be submitted to the appropriate regulatory agencies, and if necessary, a raptor mitigation plan would be developed and implemented with the concurrence of the WDEQ/LQD, BLM, USFWS, and the WGFD. The raptor mitigation plan would identify appropriate mitigation techniques described in the *Raptor Mitigation Handbook* (Wyoming Cooperative Fishery and Wildlife Research Unit 1994) and the *Raptor Management Techniques Manual* (National Wildlife Federation 1987). The raptor mitigation plan would protect all raptor species from unauthorized disturbance or other activities that may adversely affect individual raptors.

As described in the Proposed Action, the mine facilities (i.e., powerline and electric substation modifications) would be designed, constructed, operated, and maintained in conformance with the *National Electrical Safety Code* and other applicable codes and standards, as well as

Suggested Practices for Raptor Protection on Powerlines: The State of the Art in 1996 (APLIC 1996) and *Mitigating Bird Collisions with Powerlines: The State of the Art in 1994* (APLIC 1994). Implementation of these standards would reduce the risk of raptor electrocutions and collisions with powerline structures.

The construction of the mine support facilities would disturb approximately new 28 acres, and approximately 59 acres may be disturbed as a result of reclamation operations to repair cracks due to subsidence. Reductions in prey species abundance are not anticipated to adversely affect raptor populations because physical disturbance would be minimal (87 acres total). Foraging habitat for raptors within the proposed project area would be reduced until revegetation successfully attracts small mammals and birds that serve as the prey base for the raptors. In addition, the temporary loss of foraging habitat for raptors due to vegetation loss 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.

4.18.1.4 Upland Game Birds

Direct impacts to greater sage-grouse and other upland game birds include loss of breeding and nesting habitat, wintering areas, and possibly strutting grounds (leks); displacement due to increased human activity; and collisions with vehicles and/or powerlines. Indirect impacts include the displacement due to noise, ground vibrations, and/or subsidence. The BLM requires special mitigation measures if greater sage-grouse leks are located within 0.25 mi of any proposed surface disturbance. Typical mitigation measures utilized to reduce impacts to greater sage-grouse include the following:

- avoiding surface disturbance and high-profile structures (e.g., powerline structures, etc.) within 0.25 mi of active greater sage-grouse leks;
 - avoiding disturbance activities during the male greater sage-grouse strutting period (March 1 to May 15) within 1.0 mi of active leks; and
 - restricting surface-disturbing activities in occupied greater sage-grouse nesting habitat within 2.0 mi of active leks during the nesting season (April 1 to July 31).
-

Only approximately 1% (59 acres) within the TMRT may be physically disturbed as a result of reclamation operations to repair cracks due to subsidence, and it is possible, but unlikely, that one or more of the two greater sage-grouse leks within the TMRT would be physically impacted by these operations. In order to minimize potential impacts to greater sage-grouse within the TMRT, reclamation operations would be conducted in accordance with standard BLM mitigation measures described above and WDEQ/LQD requirements specified in the mine and reclamation permit application prepared by BCC. BLM, WDEQ/LQD, and WGFD would carefully evaluate the need for and extent of any surface-disturbing activity that would occur within 1 mi of any greater sage-grouse lek. Priority would be given to minimizing any physical disturbance to greater sage-grouse leks.

Bird/vehicle and bird/powerline collisions may also result in direct impacts on greater sage-grouse. However, the overland conveyor (which would account for most of the construction-related disturbance) would not be located within 1 mi of any the greater sage-grouse leks. In addition, no new powerlines would be constructed within the TMRT near any of the greater sage-grouse leks.

Due to the depth of underground mining operations (i.e., 200 ft to 1,000 ft below the surface) and the limited amount of blasting, noise and/or ground vibrations at the surface within the TMRT due to mining operation would be minimal compared to nearby surface coal mining operations. Subsidence would also occur within the longwall coal panel areas. However, there is no documented or anecdotal evidence of impacts of noise, ground vibration, or subsidence from underground mining operations on greater sage-grouse behavior (personal communications, February 21, 2001, with Stan Anderson, Wyoming Cooperative Fisheries and Wildlife Research Unit, University of Wyoming; April 18, 2002, with Steve Platt, WDEQ/LQD, Lander, Wyoming; and April 18, 2002, with Bill Hogg, WDEQ/LQD, Cheyenne, Wyoming). Therefore, the extent, if any, of potential displacement of greater sage-grouse due to the Proposed Action within the TMRT is unknown. However, since only a limited portion of the TMRT may experience subsidence at any one time, it is likely that any greater sage-grouse that might be affected by indirect impacts would temporarily relocate and utilize adjacent suitable habitats (e.g., leks,

nesting areas, etc.) (Remington and Braun 1991; Phillips et al. 1985). It is also possible that impacted greater sage-grouse would be temporarily displaced from traditional important habitats and would not breed during those seasons that the habitats would be unsuitable. If displacement occurs, greater sage-grouse would be expected to eventually recolonize any suitable habitats that might have been temporarily abandoned. Therefore, the Proposed Action would not have any permanent long-term impacts on greater sage-grouse.

In addition, BCC would continue to monitor all greater sage-grouse leks within the TMRT and a 2-mi buffer. Annual monitoring of greater sage-grouse leks would document direct impacts due to physical disturbance and indirect impacts due to noise, ground vibration, and/or subsidence. Results of this monitoring would be reported annually to WDEQ/LQD, WGFD, and BLM.

Mourning dove populations would likely not be impacted by the Proposed Action because of their inherent mobility and the availability of other suitable habitats on undisturbed lands adjacent to the TMRT area.

4.18.1.5 Other Birds

Other birds may be adversely affected by increased human activity under the Proposed Action. The primary impacts would probably occur in direct proportion to the amount of a species' habitat that would be temporarily disturbed. Some increased mortality would be likely from bird collisions as a result of increased vehicle traffic and collisions with powerline structures. Total new disturbance associated with the Proposed Action would be approximately 87 acres, and measures already described above to mitigate surface disturbances and project-related activities would minimize impacts to other bird species as well. Impacts to waterfowl and shorebirds would be minimal because few wetland areas of suitable habitat would be affected and because these birds would temporarily move to adjacent habitats undisturbed by project-related activities. Songbirds would also likely move to other suitable adjacent habitats. As described in the Proposed Action, the associated powerline would be designed, constructed, operated, and maintained in conformance with the *National Electrical Safety Code* and other applicable codes

and standards, as well as *Suggested Practices for Raptor Protection on Powerlines: The State of the Art in 1996* (APLIC 1996) and *Mitigating Bird Collisions with Powerlines: The State of the Art in 1994* (APLIC 1994). Implementation of these standards would reduce the risk of bird electrocutions and collisions with powerline structures.

4.18.1.6 Amphibians, Reptiles, and Fish

Few if any amphibians or reptiles are found within the TMRT or associated ROW areas, and no fish are found within these areas. Potential adverse impacts to amphibians, reptiles, and fish (if they even occur in the area) as a result of the Proposed Action include direct mortality as a result of surface disturbance, loss of suitable habitat, and displacement of individuals from the area. Impacts to amphibians and reptiles due to the Proposed Action likely would occur in direct proportion to the amount of suitable habitat disturbed. No impacts to fish would be expected due to the implementation of the Proposed Action. Mitigation measures described in the Proposed Action to minimize surface disturbance and to ensure timely reclamation and stabilization would minimize project-related impacts to amphibians and reptiles.

4.18.2 No Action Alternative

Under the No Action Alternative, the coal lease sale would not occur, no underground mining operations would be conducted within the TMRT, there would be no additional development in the proposed project area (beyond the existing mining and other industrial development), and impacts on wildlife populations would continue at present levels, with fluctuations due primarily to weather, disease, and other natural causes.

4.18.3 Residual Impacts

The Proposed Action would result in the temporary loss of approximately 87 acres of vegetation and wildlife habitat. Some species such as big game, large mammals, upland game birds, and raptors would be temporarily displaced and some individual wildlife species (e.g., small

mammals, small birds, amphibian or reptile species) may be destroyed by construction and reclamation operations, especially those that may take refuge in burrows. However, once mining operations are completed, reclamation efforts would re-establish the vegetative habitat and would mitigate any long-term impacts to all wildlife populations. There would also be a potential increase in mortality of wildlife from vehicle/animal collisions.

Two greater sage-grouse leks located within the TMRT may be directly and/or indirectly impacted by the Proposed Action. However, implementation of appropriate BLM and WDEQ/LQD monitoring and mitigation measures would document and reduce potential impacts to greater sage-grouse populations.

While the BCC has committed to constructing powerline structures in accordance with applicable raptor protection design standards, it is possible but unlikely that individual raptors or other birds that utilize the project area may be killed or injured as a result of electrocution or collision with powerline structures.

4.18.4 Cumulative Impacts

Pronghorn Antelope. Approximately 32,983 acres (or 1.52%) of the entire CIAA for pronghorn antelope is currently disturbed (refer to Table 4.1). Of that total, approximately 14,101 acres (or 5.17%) of crucial winter/yearlong range for pronghorn antelope within the CIAA is currently disturbed by roads, major industrial facilities, minor industrial facilities, wells, and associated facilities. Total proposed disturbance due to the Proposed Action would account for an additional 87 acres (0.004% of the total CIAA), and reasonably foreseeable future actions would account for an additional 809 acres (0.04% of the total CIAA). Approximately 630 acres of disturbance would be associated with wells and related facilities, and 179 acres would be associated with minor industrial facilities. Approximately 30 acres of the disturbance associated with the Proposed Action would occur with crucial winter/yearlong range for pronghorn antelope. This represents 0.01% of the entire crucial winter/yearlong range within the CIAA.

Table 4.1 Acres of Disturbance by CIAA for Big Game Species.

	Total Existing Disturbance (acres) (% of unit)	Disturbance Due to Proposed Action (acres) (% of unit)	Disturbance Due to Reasonably Foreseeable Future Actions (acres) (% of unit)	Total Existing, Proposed Action, and Reasonably Foreseeable Future Actions (acres) (% of unit)
Pronghorn Antelope				
CIAA (2,167,479 acres)	32,983 (1.52%)	87 (0.004%)	809 (0.04%)	33,879 (1.56%)
Crucial winter/ yearlong (272,512 acres)	14,101 (5.17%)	30 (0.01%)	176 (0.06%)	14,307 (5.25%)
Mule Deer				
CIAA (2,553,133 acres)	44,168 (1.73%)	87 (0.003%)	2,365 (0.09%)	46,620 (1.83%)
Crucial winter/ yearlong (205,242 acres)	3,503 (1.71%)	0 (0.00%)	25 (0.01%)	3,528 (1.72%)
Elk				
CIAA (2,649,306 acres)	43,356 (1.64%)	87 (0.003%)	2,372 (0.09%)	45,815 (1.73%)
Crucial winter/yearlong (279,791 acres)	1,873 (0.67%)	15 (0.005%)	98 (0.035%)	1,986 (0.71%)

An additional 176 acres of reasonably foreseeable future actions would occur in crucial winter/yearlong range for pronghorn antelope. This represents 0.06% of the entire crucial winter/yearlong range within the CIAA.

Total existing, Proposed Action, and reasonably foreseeable future actions disturbance within the CIAA would be approximately 33,879 acres (or 1.56% of the total CIAA). Approximately 14,307 acres of existing, Proposed Action, and reasonably foreseeable future actions disturbance would occur within pronghorn antelope crucial winter/yearlong range. This represents 5.25% of the total pronghorn crucial winter/yearlong range in the CIAA.

Under the Proposed Action, approximately 87 acres would be disturbed by mine facilities and reclamation operations from the repair of surface cracks due to subsidence. Once reclamation operations have been completed, disturbed lands would eventually be capable of supporting predisturbance levels of wildlife uses. In addition, the 5-year (1997-2001) average population for the pronghorn antelope population in the CIAA is approximately 93% of the herd unit

objectives (WGFD 2003). Despite these values, fawn production has been below production objectives and is most likely a result of drought conditions. Based on this information, human-related activities and the condition of important range types within the CIAA does not appear to be having a limiting affect or adverse impact on the population of pronghorn antelope within the CIAA.

Disturbance from the Jim Bridger Power Plant, Jim Bridger Mine, Leucite Hills Mine, roads, and wells and associated facilities are part of the long-term economic development within the CIAA and would not be available for wildlife habitat until the specific facility is removed and the land revegetated. None of the current land uses within the CIAA appear to limit the area's ability to support pronghorn antelope populations. Therefore, cumulative impacts to pronghorn antelope would not be important because there are no past, present, or reasonably foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

Mule Deer. Approximately 44,168 acres (or 1.73%) of the entire CIAA for mule deer is currently disturbed (refer to Table 4.1). Of that total, approximately 3,503 acres (or 1.71%) of crucial winter/yearlong range for mule deer within the CIAA is currently disturbed by roads, major industrial facilities, minor industrial facilities, wells, and associated facilities. Total proposed disturbance due to the Proposed Action would account for an additional 87 acres (0.003% of the total CIAA), and reasonably foreseeable future actions would account for an additional 2,365 acres (0.09% of the total CIAA). Approximately 1,875 acres of disturbance would be associated with wells and related facilities, 490 acres would be associated with minor industrial facilities. None of the disturbance associated with the Proposed Action would occur with crucial winter/yearlong range for mule deer. An additional 25 acres of disturbance due to reasonably foreseeable future actions would occur in crucial winter/yearlong range for mule deer. This represents 0.01% of the entire crucial winter/yearlong range within the CIAA.

Total existing, Proposed Action, and reasonably foreseeable future actions disturbance within the CIAA would be approximately 46,620 acres (or 1.83% of the total CIAA). Approximately

3,528 acres of existing, Proposed Action, and reasonably foreseeable future actions disturbance would occur within mule deer crucial winter/yearlong range. This represents 1.72% of the total mule deer crucial winter/yearlong range in the CIAA.

Under the Proposed Action, approximately 87 acres would be disturbed by mine facilities and reclamation operations from the repair of surface cracks due to subsidence. Once reclamation operations have been completed, disturbed lands would eventually be capable of supporting predisturbance levels of wildlife uses. The 5-year (1997-2001) average population for the mule deer population in the CIAA is approximately 78% of the herd unit objectives. According to the WGFD, the herd unit area primarily contains marginal desert habitat for mule deer; however, the herd unit population has grown slowly but steadily since 1993. In 2002, the mule deer population declined over 10% presumably due to drought-induced mortality to fawns (WGFD 2003). Based on this information, human-related activities and the disturbance of crucial winter/yearlong range within the CIAA does not appear to be having a limiting or adverse impact on the population of mule deer within the CIAA.

Disturbance from the Jim Bridger Power Plant, Jim Bridger Mine, Leucite Hills Mine, roads, and wells and associated facilities are part of the long-term economic development within the CIAA and would not be available for wildlife habitat until the specific facility is removed and the land revegetated. None of the current land uses within the CIAA appear to limit the area's ability to support mule deer populations. Therefore, cumulative impacts to pronghorn antelope would not be important because there are no past, present, or reasonably foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

Elk. Approximately 43,356 acres (or 1.64%) of the entire CIAA for elk is currently disturbed (refer to Table 4.1). Of that total, approximately 1,873 acres (or 0.67%) of crucial winter/yearlong range for elk within the CIAA is currently disturbed by roads, major industrial

facilities, minor industrial facilities, wells and associated facilities. Total disturbance due to the Proposed Action would account for an additional 87 acres (0.003% of the total CIAA) and reasonably foreseeable future actions would account for an additional 2,372 acres (0.09% of the total CIAA). Approximately 1,880 acres of disturbance would be associated with wells and related facilities, and 492 acres would be associated with minor industrial facilities. Approximately 15 acres of the disturbance associated with the Proposed Action would occur with crucial winter/yearlong range for elk. This represents 0.005% of the entire crucial winter/yearlong range within the CIAA. An additional 98 acres of reasonably foreseeable future actions would occur in crucial winter/yearlong range for elk. This represents 0.035% of the entire crucial winter/yearlong range within the CIAA.

Total existing, Proposed Action, and reasonably foreseeable future actions disturbance within the CIAA would be approximately 45,815 acres (or 1.73% of the total CIAA). Approximately 1,986 acres of existing, Proposed Action, and reasonably foreseeable future actions disturbance would occur within elk crucial winter/yearlong range. This represents 0.71% of the total elk crucial winter/yearlong range in the CIAA.

Under the Proposed Action, approximately 87 acres would be disturbed by mine facilities and reclamation operations from the repair of surface cracks due to subsidence. Once reclamation operations have been completed, disturbed lands would eventually be capable of supporting predisturbance levels of wildlife uses. In addition, the 5-year (1997-2001) average population for the elk population in the CIAA is approximately 138% of the herd unit objectives (WGFD 2003). Based on this information, human-related activities and the condition of important range types within the CIAA does not appear to be having a limiting affect or adverse impact on the population of elk within the CIAA.

Disturbance from the Jim Bridger Power Plant, Jim Bridger Mine, Leucite Hills Mine, roads, and wells and associated facilities are part of the long-term economic development within the CIAA and would not be available for wildlife habitat until the specific facility is removed and the land revegetated. None of the current land uses within the CIAA appears to limit the area's ability to

support elk populations. Therefore, cumulative impacts to elk would not be important because there are no past, present, or reasonably foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

Other Mammals. Within the CIAA, approximately 3,537 acres (11.65% of the CIAA) are currently disturbed by major facilities, minor industrial facilities, and roads. Total existing, Proposed Action, and reasonably foreseeable future actions disturbance in the CIAA is estimated at 3,646 acres (12.01% of the CIAA). Disturbance from the major industrial facilities, minor industrial facilities, and roads are part of the long-term economic development within the CIAA. None of the current land uses within the CIAA limits the area's ability to support various mammal populations. As described above, the cumulative impacts of the Proposed Action would be similar to the potential impacts of the Proposed Action and would result in limited impacts to populations of other mammal species. Therefore, cumulative impacts to other mammals would not be important because there are no past, present, or reasonably foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

Raptors. The CIAA contains 31 known raptor nests. Approximately 3,536 acres (11.65% of the CIAA) is currently disturbed by major industrial facilities, minor industrial facilities, and roads within the CIAA. Total existing, Proposed Action, and reasonably foreseeable future actions disturbance in the CIAA is estimated at 3,646 acres (12.01% of the CIAA). Prior to the initiation of any federal action (including the Proposed Action and reasonably foreseeable future actions), the company undertaking the action would be required to document and assess potential impacts to raptors that are nesting within 1-mi of the proposed project area and to undertake mitigation measures to protect all nesting raptors. In addition, mitigation measures would include requirements to minimize disturbance to raptor nesting habitat (i.e., rock outcrops, bluffs, etc.). These raptor mitigation measures would protect all nesting raptor species from unauthorized disturbance or other activities that may adversely affect individual raptors.

Disturbance from the major industrial facilities, minor industrial facilities, and roads are part of the long-term economic development within the CIAA. None of the current land uses within the CIAA limits the area's ability to support various nesting raptors. In addition, mitigation measures would minimize potential impacts to nesting raptors. Therefore, cumulative impacts to raptors would not be important because there are no past, present, or reasonably foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

Upland Game Birds. The CIAA contains 43 known greater sage-grouse leks (WGFD 2003). However, only 36 were monitored in 2003 and of those only 16 (44% of the monitored leks) contained birds in 2003 (WGFD Green River District n.d.). Within the CIAA, approximately 20,899 acres (2.21% of the CIAA) is currently disturbed by major industrial facilities, minor industrial facilities, roads, and wells and associated facilities. Total existing, Proposed Action, and reasonably foreseeable future actions disturbance in the CIAA is estimated at 21,151 acres (2.23% of the CIAA), an increase of 252 acres. The Proposed Action would account for 87 acres, wells and associated facilities would account for 115 acres, and other minor industrial facilities would account for an additional 50 acres of proposed disturbance. Prior to the initiation of any federal action (including the Proposed Action and reasonably foreseeable future actions), the company undertaking the action would be required to document and assess potential impacts to greater sage-grouse leks that are located within 2 mi of the proposed project area and to undertake mitigation measures to protect breeding greater sage-grouse. These mitigation measures would protect all breeding greater sage-grouse from unauthorized disturbance or other activities that may adversely affect individual greater sage-grouse.

Disturbance from the major industrial facilities, minor industrial facilities, and roads are part of the long-term economic development within the CIAA. None of the current land uses within the CIAA limits the area's ability to support various upland game bird species. In addition, mitigation measures would minimize potential impacts to nesting raptors. Therefore, cumulative impacts to raptors would not be important because there are no past, present, or reasonably foreseeable future actions that, when combined with the Proposed Action, would result in

impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

Other Birds. Within the CIAA, approximately 6,308 acres (8.07% of the CIAA) is currently disturbed by major facilities, minor industrial facilities, and roads. Total existing, Proposed Action, and reasonably foreseeable future actions disturbance in the CIAA is estimated at 6,417 acres (8.21% of the CIAA). Disturbance from the major industrial facilities, minor industrial facilities, and roads are part of the long-term economic development within the CIAA. None of the current land uses within the CIAA limits the area's ability to support various other bird species. As described above, the cumulative impacts of the Proposed Action would be similar to the potential impacts of the Proposed Action and would result in limited impacts to populations of other birds. Therefore, cumulative impacts to other birds would not be important because there are no past, present, or reasonably foreseeable future actions that, when combined with the Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

Amphibians, Reptiles, and Fish. Within the CIAA, approximately 6,308 acres (8.07% of the CIAA) of existing disturbances occur as major industrial facilities, minor industrial facilities, and roads. Total existing, Proposed Action, and reasonably foreseeable future actions disturbance in the CIAA is estimated at 6,417 acres (8.21% of the CIAA). Under the Proposed Action, approximately 87 acres would be disturbed by mine facilities and reclamation operations from the repair of surface cracks due to subsidence. Once reclamation operations have been completed, disturbed surface-mined lands would eventually be capable of supporting predisturbance levels of wildlife uses. Disturbance from the Jim Bridger Power Plant, Jim Bridger Mine, Leucite Hills Mine, and roads are part of the long-term economic development within the CIAA and would no longer be available for wildlife habitat. None of the current land uses within the CIAA limits the area's ability to support various wildlife populations.

Therefore, cumulative impacts to amphibians, reptiles, or fish would not be important because there are no past, present, or reasonable foreseeable future actions that, when combined with the

Proposed Action, would result in impacts beyond those that already exist or have already been identified and discussed in Chapter 4.0 of this EA.

4.19 MITIGATION MEASURES

Mitigation measures identified in this section have been summarized from materials presented in Chapter 2 and Appendix A. Mitigation measures were developed by BCC during the project planning process and NEPA scoping process. Mitigation measures describe how project-related activities would be implemented to ensure compliance with federal, state, and local laws and regulations and resource management goals and objectives for the project area. Under the Proposed Action, BCC (if the successful bidder) would implement all of the mitigation measures identified in this section.

Permitting and other Administrative Requirements. Under the Proposed Action, BCC (if the successful bidder) would collect and analyze very detailed baseline environmental information for the TMRT and associated ROW areas. The mine permit amendment application would be prepared in accordance with WDEQ/LQD rules, regulations, and guidelines. The application would also include site-specific mitigation measures, as well as detailed calculations for the reclamation performance bond. The amount of the reclamation performance bond would be reviewed and, if appropriate, approved by WDEQ/LQD to ensure that the mine operator (i.e., BCC) complies with all the requirements of the *Wyoming Environmental Quality Act* and the WDEQ/LQD permit and that reclamation requirements would be met.

Under WDEQ/LQD permitting regulations, the public would be provided with several opportunities to comment on the mine and reclamation permit amendment application prior to a final decision on the permit application by WDEQ/LQD.

BCC (if the successful bidder) would also prepare all necessary information and would apply for any required permits/approvals/plans including but not limited to those presented in Table 1.1. Mining operations would not begin within the TMRT until all required permits/approvals are

obtained from the appropriate regulatory agencies. All subsequent construction, mining, and reclamation operations and activities would be conducted in accordance with the applicable permits, approvals, plans, laws, regulations, stipulations, and guidelines.

BCC (if the successful bidder) would also prepare a detailed R2P2 for BLM. The R2P2 would describe how the proposed operation would meet MLA requirements for due diligent development, production, resource recovery and protection (i.e., efficient recovery of the federal coal reserves), continued operation, maximum economic recovery, and the rules promulgated in Title 43 C.F.R. Part 3480 for the LOM. MLA requires that, before conducting any federal coal development or mining operations on federal coal lease, the operator must submit an R2P2 within 3 years of the effective date of the lease. The lessee is obligated to mine the lease according to the approved R2P2, respective lease terms, and appropriate rules and regulations.

Air Quality and Noise. BCC (if the successful bidder) would conduct mining operations and use and maintain all equipment according to manufacturers recommendations to minimize air quality emissions and limit noise. This would include, for example, appropriate use of water or dust suppressant spray and use of equipment covers, shields, or mufflers. In addition, all unpaved roads utilized by BCC would be properly maintained and treated with water or other suitable dust suppressant chemical to minimize particulate emissions.

Cultural Resources. In order to protect and mitigate potential impacts to NRHP-eligible sites (including the Point of Rocks to South Pass wagon road) within the TMRT area, BCC would enter into a cultural resource programmatic agreement with BLM, OSMRE, WDEQ/LQD, and Wyoming State Historic Preservation Officer. This agreement would identify specific survey, testing, protection, and mitigation measures that would be implemented by BCC to address and protect NRHP-eligible historic and prehistoric sites within the TMRT area. The programmatic agreement would demonstrate compliance with all applicable cultural resource laws and regulations.

Under the Proposed Action, BLM Class III surveys would be conducted on those areas that are located outside of the TMRT, have not been previously surveyed, and would be physically disturbed by the construction activities. All historic and prehistoric resources that are potentially eligible for the NHRP that could be adversely affected by the Proposed Action would be protected from disturbance or would be appropriately mitigated if the site could not be avoided. Where necessary and appropriate, site-specific mitigation measures would be developed and implemented in accordance with the current cultural resource protection plan contained in BCC's approved WDEQ/LQD permit. The site-specific mitigation measures would also be developed and implemented with the concurrence of the BLM, OSM, WDEQ/LDQ, and the Wyoming State Historic Preservation Officer.

The Proposed Action, among other things, includes a commitment that if any cultural resources are discovered during construction or reclamation operations, work in the area of the discovery would be halted and the appropriate regulatory agency would be notified and appropriate treatment plans implemented. BCC employees would also be instructed that they would be working on both private and public land and not to search for, scavenge, or remove any cultural resources found while working on the project.

Geology and Geologic Hazards. BCC would be responsible for repairing and revegetating all areas affected by disturbance related to the repair of surface cracks due to subsidence within the TMRT.

Health and Safety (Transportation). Mine entrance signs would be posted on all major roads leading on to the TMRT area, and mine employees would be instructed to watch for unauthorized personnel and to notify mine management if unauthorized personnel are observed within the TMRT. In addition, BCC would also maintain appropriate speed limit signs and instruct all employees to not exceed posted speed limits.

Land Resource and Use. No additional mitigation measures would be necessary.

Minerals (Solid and Fluid). BCC (if the successful bidder) would negotiate in good faith with other mineral lessees to resolve any development conflicts and achieve the three principal management goals specified in BLM Instruction Memorandum No. 2000-081.

Native American Religious Concerns. If sites or localities of native American religious concern are identified, they would be taken into consideration by BLM and would be addressed in accordance with applicable rules, regulations, and policies.

Rangeland and Livestock Grazing. To mitigate potential impacts to livestock grazing, BCC would ensure the timely repair and revegetation of all areas directly affected by construction activities and subsidence-related disturbance within the project area.

Recreation. To mitigate potential impacts to the individuals using the TMRT areas, BCC (as directed by WDEQ/LQD) would ensure the timely repair of all major subsidence-related disturbance.

Socioeconomics. No additional mitigation measures would be necessary.

Soil Resources. To mitigate impacts to soils resources, BCC (if the successful bidder) would ensure the proper construction of topsoil stockpiles (including installation of toe ditches and temporary reclamation), and implementation of alternate sediment control measures. In addition, BCC would ensure the successful implementation of the reclamation plan for the facility construction areas and subsidence repair areas within the project area.

Threatened, Endangered, Candidate, Proposed, and Sensitive Species. To mitigate impacts to bald eagles and all raptor species, BCC (if the successful bidder) would ensure that all the powerlines would be designed, constructed, operated, and maintained in conformance with the *National Electrical Safety Code* and other applicable codes and standards, as well as *Suggested Practices for Raptor Protection on Powerlines: The State of the Art in 1996* (APLIC 1996) and *Mitigating Bird Collisions with Powerlines: The State of the Art in 1994* (APLIC 1994). BCC

would also ensure timely the repair and revegetation of all areas directly affected by construction activities and subsidence-related disturbance within the project area.

Vegetation (including Invasive Species). To mitigate potential impacts to vegetation, BCC would be responsible for reclaiming and revegetating all area affected by construction activities and subsidence-related disturbance within the project area in accordance with the WDEQ/LQD-approved permit and applicable rules and regulations.

Wastes (Hazarous and Solid). BCC (if the successful bidder) would be responsible for ensuring that all hazardous substances that are released (leaks, spills, etc.) that may no longer be used for its original purpose, would be treated as a hazardous waste in accordance with state and federal regulations. Any release of hazardous substances in excess of reportable quantities, established in Title 40 C.F.R. Part 117, would be reported as required by CERCLA, as amended. If a release of a reportable quantity of any hazardous substances occurs, a report would be furnished to WDEQ and all other appropriate federal and state agencies. Prior to construction of any facilities associated with the Proposed Action, inventories of hazardous chemical categories pursuant to Section 312 of the SARA, as amended, would be updated. All nonhazardous solid wastes would also be disposed of in accordance with appropriate local, state, and federal regulations. BCC would also comply with all applicable planning and emergency procedures regarding spill prevention, reporting, and cleanup required by local, state, and federal laws and regulations should an accident occur.

Water Resources. Mitigation of short-term impacts to surface water runoff would be accomplished by implementation of alternate sediment control measures required by the WDEQ/LQD and described in the mine plan portion of the Proposed Action. In addition, mitigation of long-term impacts to surface water runoff would be accomplished by successful implementation of the reclamation plan described in the Proposed Action. Reclamation and revegetation procedures would be designed to reduce the susceptibility of disturbed areas to soil erosion in both the short-term and for the life of the project. In addition, excess mine water not needed for dust suppression would be pumped into an existing WDEQ/LQD- and WDEQ/WQD-

approved holding pond where the water would be monitored and discharged into the Deadman Wash drainage channel after it meets NPDES discharge standards. This activity would be conducted as part of ongoing mine dewatering operations conducted at the Jim Bridger Mine and in accordance with BCC's existing NPDES discharge permit issued by WDEQ/WQD. BCC would also implement all necessary and appropriate wetland reclamation measures for this area as directed by WDEQ/LQD and the U.S. Army Corps of Engineers.

Wild Horses. To mitigate potential impacts to wild horses, BCC would be responsible for reclaiming and revegetating all area affected by construction activities and subsidence-related disturbance within the project area in accordance with the WDEQ/LQD-approved permit and applicable rules and regulations.

Wildlife. To mitigate potential impacts to wildlife, BCC would be responsible for reclaiming and revegetating all area affected by construction activities and subsidence-related disturbance within the project area in accordance with the WDEQ/LQD-approved permit and applicable rules and regulations. BCC (as directed by the BLM) would also implement appropriate seasonal construction restriction for wintering pronghorn antelope (i.e., within crucial winter range), nesting raptors, and breeding greater sage-grouse.

4.20 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

An irreversible and irretrievable commitment of resources is defined as a permanent reduction or loss of a resource that, once lost, cannot be regained. The primary irreversible and irretrievable commitment of resources due to the Proposed Action would be the removal and use of the coal reserves within the Deadman coal zone of the TMRT, groundwater used during mining, and the energy used to extract the coal. Other irreversible and irretrievable commitments of resources would also include soil lost through wind and water erosion; inadvertent or accidental destruction of cultural resources; loss of animals due to mortality during topsoil salvage operations or by collisions with vehicles; and labor and materials expended during the mining and reclamation activities associated with the Proposed Action.

4.21 SHORT-TERM USE OF THE ENVIRONMENT VERSUS LONG-TERM PRODUCTIVITY

For purposes of this EA, short-term use of the environment is that use during the life of the project, whereas long-term productivity refers to the period of time after the project has been completed and the area is completely revegetated to premining conditions. Short-term use of environment would not affect the long-term productivity of the proposed project area. Only approximately 1.5% of the proposed TMRT area and ROW areas would be physically disturbed by the Proposed Action. After the Proposed Action is completed and all disturbed areas have been reclaimed, the same resources that were present prior to the project would be available, and reclamation efforts would re-establish the vegetation habitat and would mitigate any long-term impacts to the environment, except for the underground coal that would be removed. However, it may take 10-20 years after the reclamation and revegetation efforts have been completed for the disturbed reclaimed areas to have vegetation conditions and biodiversity comparable to premining conditions and much longer for groundwater aquifers to become re-established. However, reclamation would provide conditions to support pre-mining wildlife, livestock, and recreation resources. It may also take more than 100 years for groundwater resources in fully recharge the aquifer zone within the Deadman Wash coal zone. The use of the TMRT area and associated ROW areas during the life of the project would not preclude some ongoing uses of the area (e.g., livestock grazing, fluid mineral development, etc.) and the subsequent long-term use of the area for any purpose for which it was suitable prior to the project.
