

expected, although either alternative would have significant overall impacts, as SEA indicated in the Draft EIS.

3.2.7 WATER RESOURCES

The proposed project would affect a variety of water resources, including surface waters (streams, rivers, lakes, ponds), groundwater, and wetlands. The following sections summarize the impacts to each of these resources as presented in the Draft EIS, the comments received concerning these resources, and the results of additional analysis SEA conducted to address these comments.

3.2.7.1 Surface Water

SEA discussed in the Draft EIS the potential impacts to surface waters, including increased sedimentation, disturbance to stream corridors, stream channel modifications, and loss or degradation of riparian areas. SEA measured the degree of impact from each alternative by determining the number of river and stream crossings for each Extension Alternative. SEA also received comments during scoping that the Cheyenne River was a sensitive and important resource in the project area. Therefore, SEA determined the length of each alternative that would be within 500 feet of the Cheyenne River or its tributaries as a measure of the potential for construction to affect the Cheyenne River.

In the Draft EIS, SEA indicated that Alternative B would cross 20 perennial streams, 14 in South Dakota (including three crossings of the Cheyenne River) and six in Wyoming. Alternative B would also cross 623 intermittent streams, 208 in South Dakota and 415 in Wyoming. Approximately 21.9 miles of Alternative B would be within 500 feet of the Cheyenne River or its tributaries.

Additionally, SEA indicated that Alternative C would cross 14 perennial streams, 10 in South Dakota (including 3 crossings of the Cheyenne River) and four in Wyoming. Alternative C would also cross 520 intermittent streams, 230 in South Dakota and 290 in Wyoming. Approximately 20.9 miles of Alternative C would be within 500 feet of the Cheyenne River or its tributaries.

As with nearly all the resources SEA analyzed in the Draft EIS, SEA received comments expressing concern that the proposed project would have significant impacts on surface waters. Of particular concern were impacts to the Cheyenne River. Commenters noted that SEA indicated that Alternative C would have less impact to the Cheyenne River than Alternative B.

However, Alternative B would be within 500 feet of the Cheyenne River for only approximately 1.0 mile more than Alternative C. Commenters suggested that this minimal difference did not justify SEA's conclusion that Alternative B would have a greater impact to the Cheyenne River and the subsequent selection of Alternative C as the least impacting alternative to the Cheyenne River.

In response to these comments, SEA reevaluated the potential impacts of the Extension Alternatives to the Cheyenne River. As noted in the Draft EIS, Alternative C was developed partly in response to concerns about the potential impacts of the project to the Cheyenne River and the riparian areas adjacent to the river. SEA agreed that based on the numbers presented in the Draft EIS, there appears to be little difference in the alternatives' potential to impact the Cheyenne River. SEA, however, questioned this because in looking at the location of the alignments, Alternative C appeared further from the Cheyenne River for much more of its distance than Alternative B.

In reviewing the information presented in the Draft EIS, SEA noted that some commenters had misunderstood the mileage figures contained in the Draft EIS. These mileage figures did not only include the portion of each alternative within 500 feet of the Cheyenne River, as interpreted by the commenters, but also included the length of the alternative within 500 feet of any perennial tributary to the Cheyenne River, such as Battle Creek or Sand Creek. SEA acknowledges that this data was confusing.

SEA now clarifies that Alternative B would cross the Cheyenne River twice, both of which would be new crossings. One crossing would be south of Wasta, South Dakota and another at Edgemont, South Dakota. Alternative B would be within 500 feet of the Cheyenne River for 9.11 miles. Along this length, Alternative B would have eight points where the topography adjacent to the river would likely require that the alignment be constructed on a steep sideslope immediately adjacent to the river. These locations, referred to as pinch-points, would likely require extensive stream bank stabilization, channel modifications, and, potentially, placement of fill in the river itself, resulting in some relocation of the stream channel.

Alternative C, after further analysis, would also cross the Cheyenne River twice. Alternative C would be within 500 feet of the Cheyenne River for 4.98 miles. No pinch-points appear to occur along Alternative C.

SEA's additional analysis confirms that Alternative B would have greater potential impacts on the Cheyenne River than Alternative C. Alternative B would be within 500 feet of the Cheyenne River for 4.13 miles more than Alternative C. This additional mileage in proximity to

the river would result in greater loss of riparian habitat and increased potential for adverse effects from erosion and sedimentation from Alternative B. Direct impacts on the river would be likely at some, if not all, the pinch points along Alternative B. Because Alternative C appears to have no pinch points, no such impacts would occur from Alternative C. Therefore, because Alternative C would avoid more of the actual Cheyenne River valley, minimizing impacts on the river and important riparian areas adjacent to the river, SEA believes that Alternative C would have less impact than Alternative B on the Cheyenne River. In addition, it appears that with proper mitigation to control erosion and acceptable mitigation for loss of riparian habitat, the impacts of Alternative C, while substantial, may be reduced to levels below significant. Such a reduction would likely not be possible with Alternative B because of the amount of riparian habitat affected and the direct impact on the river from the pinch-points in the alignment.

SEA also received comments indicating that the project could potentially impact surface waters identified, under the Clean Water Act, Section 303(d), for development of Total Maximum Daily Load (TMDL) levels, also known as impaired waters. A TMDL is the amount of a pollutant that can be introduced into a water body without endangering the water quality necessary for its beneficial use. SEA had not previously identified these waters in the Draft EIS, or assessed the project alternatives' potential impacts on them. In response to these comments, SEA has included a discussion of the potential impacts on impaired waters below.

States classify the surface waters within the state according to the beneficial use of the particular water body. Beneficial uses are generally the best and highest level the water source should be capable of supporting, based on the quality of the water. Beneficial use classifications, from lowest water quality use to best water quality use include industrial, agriculture, wildlife and livestock, non-contact recreation, contact recreation, warm water fishery, cold water fishery, and domestic water supply.

Section 303(d) of the Clean Water Act requires a state to:

- (1) identify waters of the state which are impaired, that is they contain pollutants at sufficient levels to adversely affect their designated beneficial use,
- (2) prioritize impaired waters for development of TMDL for those pollutants determined to be the cause of reduced water quality, and
- (3) establish and adopt TMDLs for all identified impaired water bodies.

States must develop and update their lists of impaired waters every two years.

Both South Dakota and Wyoming have developed lists of impaired waters under Section 303(d). After reviewing the state lists, SEA identified two impaired water bodies in South Dakota that would be crossed by the Extension Alternatives. No impaired waters in Wyoming would be crossed. Those impaired waters potentially affected by the Extension Alternatives are listed in Table 3-4. Also included are the pollutants which are the reason for impairment and SEA’s determination as to whether construction and operation of an Extension Alternative would have an adverse effect on the “impaired” classification.

Water Body	State	Location	Priority	Pollutant(s)	Extension Alternative	Adversely Impacted by Proposed Project
Cheyenne River	SD	Edgemont	2 (Medium)	TSS, TDS, fecal coliform, conductivity	B and C	Potential Temporary
Cheyenne River	SD	Wasta	2 (Medium)	TSS, fecal coliform	B and C	Potential Temporary

As shown in Table 3-4, the Cheyenne River crossings at Wasta and Edgemont by either of the Extension Alternatives would cross portions of the Cheyenne River classified as impaired. Both of these would be new crossings of the Cheyenne River for both alternatives. During construction of these crossings, disturbance to the river bank and in-stream work have the potential to increase total suspended solids (TSS) and total dissolved solids (TDS) in the river, as discussed in detail in the Draft EIS (Chapter 4, Section 4.4.7). These increases in TSS could further exacerbate existing problems with TSS identified in the Cheyenne River at these locations, resulting in greater levels of impairment.

However, appropriate erosion and sedimentation control measures, as recommended in Chapter 12 of this Final EIS, would minimize the additional sediment, and subsequent TSS levels entering the river. Additionally, river crossing construction would be temporary, lasting only for the period of time required to construct the crossing, anticipated to be one to two years in total. Following completion of crossing construction and restoration of the river bank and rail line right-of-way as recommended in Chapter 12, any additional TSS levels from construction should be eliminated, resulting in no further effects on the impaired status of the Cheyenne River. Thus, no significant impacts on impaired waters are anticipated as a result of this project.

3.2.7.2 Groundwater

As part of the proposed project, DM&E would require water for dust control, rail bed construction, and to meet the domestic needs of construction workers in mancamps. As discussed in the Draft EIS, DM&E has indicated it would likely obtain some of its water needs from local wells, subject to agreements with landowners. Increased demand from these wells could result in temporary declines in well yield as groundwater surrounding the well is depleted. Yields, however, would be expected to return to normal once pumping demands returned to previous levels, as discussed in the Draft EIS (Chapter 4, Section 4.4.7.3).

Several commenters questioned SEA's conclusions about project impacts to groundwater. Commenters were concerned that the increased use of water for the proposed project could permanently deplete local aquifers, leading to lower well yields insufficient to supply local needs.

SEA conducted further investigation into this issue. As discussed in Draft EIS, Section 4.1.5.4, groundwater is abundant in the project area. Numerous aquifers at various depths are available to supply the livestock and domestic needs for water in the area. Currently, these aquifers are subject to limited withdrawal, and are primarily tapped for domestic use by the few rural residences in the area.

During project construction, DM&E would likely utilize several sources of water, including different wells in different aquifers along the alignment. The amount of water needed, while greater in the short term, is not expected to be significantly greater than the annual use by rural residents. Larger withdrawals may be required during the period of construction; however, this would only be for six to eight months out of the year. Additionally, water use from any one well would be limited to the period of time that construction would occur in proximity to the well. Any declines in well yield would generally result from water being pumped out faster than it can flow in from the surrounding aquifer. However, due to the yields of water provided by these aquifers, any decline would be temporary, likely lasting for only a few hours. Additionally, water withdrawals would be periodic, not continuous. Thus, groundwater from adjacent areas of the aquifer would have time to flow into areas that may be depleted by pumping. Demand for groundwater would also be reduced by the use of surface water DM&E would obtain, subject to landowner agreement and local water rights, from local ponds and waterways. As noted in the Draft EIS, no long-term or significant short-term impacts to groundwater supply are anticipated.

3.2.7.3 Wetlands

In its evaluation of the potential wetland impacts of the Extension Alternatives, SEA used National Wetland Inventory (NWI) maps to estimate the amount of wetlands converted to rail line right-of-way for each alternative. SEA recognizes that NWI maps may not indicate all wetlands present, may indicate wetlands where they do not actually exist, and are not based on the criteria of the Army Corps of Engineers (COE) for classification of an area as a wetland under COE jurisdiction. However, NWI maps provide a useful means of comparing the potential impacts of alternatives. As discussed previously under Cultural Resources, to undertake a full wetlands delineation of all the project alternatives in this case would be prohibitively expensive and unnecessary because NWI maps permit an adequate comparison of each alternative's impact to wetlands. SEA determined that Alternative B would convert 62.1 acres of wetlands to rail line right-of-way, 38.8 acres in South Dakota and 23.3 acres in Wyoming. Alternative C would convert 62.2 acres to rail line right-of-way, including 48.5 acres in South Dakota and 13.7 acres in Wyoming.

As part of the Clean Water Act, Section 404 permit process, the COE requires a detailed delineation of all the potential wetlands affected by a project. Because this project would require such a permit from the COE, DM&E is required to submit an application for a Section 404 permit to the COE, along with a delineation of wetlands potentially affected by the project. The COE generally only requires a delineation of the alternative the Applicant intends to construct, not all the alternatives evaluated. In order to facilitate a timely decision on the Section 404 permit, DM&E proceeded with the necessary delineation of wetlands along Alternative C. As discussed previously under Cultural Resources, DM&E conducted this delineation knowing that no decision had been made on the project and its work could be for nothing should the project be denied or another route approved. DM&E completed the delineation of Alternative C and submitted it, along with its application to the COE for a Section 404 permit, concurrent with the issuance of the Draft EIS. As required by COE regulations, the delineation and Section 404 application submitted by DM&E were made available for agency and public review and comment.

SEA received many comments regarding inconsistencies between the area of wetlands listed as potentially impacted in the Draft EIS and the Section 404 permit. EPA noted in its comments that the area of wetlands identified as potentially impacted by the Extension Alternatives, in particular Alternative C, was much less than that actually delineated within the proposed rail line right-of-way. EPA expressed concern with the validity of using NWI maps to determine and compare potential wetland impacts. In particular, EPA was concerned that the inaccuracy of NWI maps may be such that it would be difficult to determine which Extension Alternative would have the least impact on wetlands, as required as part of the Clean Water Act,

Section 404 permitting process. If NWI maps were so unreliable, EPA reasoned, they may not be valid for determining and comparing the potential impacts of the Extension Alternatives. Thus, some other method for estimating the wetlands potentially impacted by the alternatives may need to be explored.

In response to EPA's and others comments regarding the inconsistencies between the Draft EIS and the Section 404 permit, SEA conducted additional investigation into the discrepancy. Neither SEA nor the COE had participated in the wetland delineation. While the COE had provided guidance on the methodology to be used, the delineation was the responsibility of DM&E. Therefore, SEA contacted DM&E to obtain detailed information on how it had delineated wetlands along Alternative C.

Based on the information provided by DM&E, SEA determined several reasons for differences between the Draft EIS and Section 404 permit delineation. First, the wetland delineation for South Dakota was organized geographically, with wetland impacts reported for eastern South Dakota (the area from Pierre east) and western South Dakota (the area from Pierre west, including both existing rail line and Alternative C). This organization of the delineation apparently led to confusion as commenters interpreted western South Dakota to include only Alternative C. About 183 acres of wetlands were potentially impacted for western South Dakota, of which only approximately 79.95 acres were along Alternative C.

Additionally, SEA determined that the wetland delineations had identified a narrow band of wetlands, approximately 10-20 feet wide, along many of the intermittent streams in South Dakota. Intermittent streams are designated as a dashed line on NWI maps, and they generally do not have wetlands occurring adjacent to them outlined due to their small size. Therefore, while SEA counted the number of intermittent streams crossed by the Extension Alternatives, it did not assign any wetland quantity to them. Thus, the delineations included wetlands associated with intermittent streams, but the Draft EIS did not include them.

When considering wetlands associated with intermittent streams in South Dakota, SEA used an average width of 15 feet. Considering an average rail line right-of-way width of 400 feet, SEA calculated the additional wetlands that would potentially be impacted by the Extension Alternatives. SEA determined that Alternative B would impact 38.8 acres of wetlands in South Dakota, plus an additional 28.7 acres associated with the 208 intermittent stream crossings, for a total of 67.5 acres. Alternative C would impact 48.5 acres of wetlands in South Dakota, plus an additional 31.7 acres associated with the 230 intermittent stream crossings, for a total of 80.2 acres. The acreage of wetlands for Alternative C in South Dakota (80.2 acres) under this analysis is now comparable to the acreage presented in the delineation (79.95 acres). Additionally, the

acres of wetlands in Wyoming in the Draft EIS for Alternative C (13.7 acres) is comparable to the acres included in the delineation (17.0 acres).

SEA presented its additional investigation and these results to EPA and the COE. Both agencies agreed that inclusion of wetlands associated with intermittent streams allowed for a more complete evaluation of the potential wetlands impacts of the alternatives (See Letter to EPA in Appendix C).

After conducting additional analysis, SEA has determined, as it did in the Draft EIS, that Alternative B would have less impact on wetlands than Alternative C. Under the COE permitting process, the COE must permit the alternative that has the least impact on wetlands. However, Section 404 (b)(1) provides the COE some flexibility to select an alternative other than the one having the least wetlands impact. Specifically, Section 404 (b)(1) states:

Except as provided under § 404 (b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.²⁷

Based on this guidance, and considering that the COE is a cooperating agency for this EIS, SEA considered which Extension Alternative would be preferable based on potential impact on aquatic and other environmental resources. SEA discusses the impacts of the Extension Alternatives in other sections of this chapter. However, in this section on water resources SEA has determined that Alternative B would have potentially significant impact on the Cheyenne River due to this alternative's proximity to the river and the numerous pinch-points along the alignment. SEA also determined that Alternative C, with appropriate mitigation, would likely not have significant impacts on the Cheyenne River or the riparian resources adjacent to the river. Although Alternative C would impact approximately 12.7 more acres of wetlands than Alternative B, SEA considers Alternative C to be the preferred alternative for the overall protection of aquatic resources, should the proposed project be approved.

3.2.8 RECREATION

Each of the proposed project alternatives has the potential to impact recreation in the project area. As discussed in the Draft EIS, conversion of recreational lands, particularly public lands, would eliminate use of these lands for recreation. The visual contrast and noise created by

²⁷ 40 CFR 230.10(a)

the project could detract from the recreational experience, particularly of those seeking quiet and solitude. Additionally, the presence of an operating rail line could eliminate an area's eligibility for designation as a wilderness area or as a wild and scenic river.

Alternative B would cross 67.7 miles of public land, cross two RARE II areas, one Inventoried Roadless area, be within 200 feet of another Inventoried Roadless area, across the Cheyenne River from another Rare II area, be within 3,700 feet of Badlands National Park, and be located along a portion of the Cheyenne River considered eligible for designation as Wild and Scenic. Alternative C would cross 55.5 miles of public land and be within 500 feet of two RARE II areas and a Roadless area.

SEA also acknowledged that recreation occurs throughout the project area on private land. This recreation is primarily hunting, but also includes camping, hiking, horseback riding, and other outdoor activities. Recreation on private land is limited to the landowners and their guests. Because of the sparse population of the area and the numerous large ranches and farms, recreationists in the area are widely dispersed.

SEA concluded in the Draft EIS that any of the proposed alternatives would have adverse impacts upon recreation. This would largely be due to the noise created by passing trains detracting from the quiet of the area. SEA determined that Alternative B would have a greater impact on recreation as it would cross more public lands, directly affect RARE II areas, affect the eligibility of the Cheyenne River for designation as Wild and Scenic, and be closer to Badlands National Park. SEA acknowledged recreation on private land would also be affected. However, because of limited use and abundant opportunities, these impacts would not be significant.

Overall, the comments on the Draft EIS supported SEA's conclusion that recreation would be affected by the proposed project. Generally, no alternative was noted as having a greater impact than another. Most commenters expressed the concern that SEA should consider impacts to recreation as having greater significance than expressed in the Draft. However, as SEA explained in the Draft EIS, recreational opportunities are abundant throughout the project area, including thousands of acres of public lands. While localized impacts to favored spots may occur, other areas are available, both for private and public use. SEA determined no additional analysis of project-related impacts to recreation was warranted in this Final EIS.

SEA also received comments from Tribes concerning the proposed Crazy Horse Scenic Byway. SEA had not previously been provided any information on this proposal. Therefore, SEA conducted additional investigation as to the status of the proposal.

The Oglala Sioux Tribe has submitted an application to the State of South Dakota for the designation of a route through portions of the Pine Ridge Reservation as a Scenic Byway, to be named for the Sioux Chief, Crazy Horse. The byway would begin at Exit 131 on Interstate 90. It would follow State Highway 240 south to Interior, South Dakota, then to Scenic, South Dakota along State Highway 44. At Scenic, the byway would turn south on BIA Route 27 and onto the Pine Ridge Reservation. The byway would turn west on BIA Route 2 at the Badlands National Park, White River Visitors Center. It would follow BIA Route 2 west to BIA Route 41, turning north along the western boundary of Badlands National Park. At Red Shirt, South Dakota, the byway would continue across the Cheyenne River on State Highway 40, continuing westward through Hermosa, South Dakota to eventually connect with the Norbeck Scenic Byway in the Black Hills.

Currently, the application for the Crazy Horse Scenic Byway is still pending and no scenic byway has been designated. The State has indicated the proposal meets the criteria for a scenic byway with two exceptions, an open landfill south of Red Shirt and BIA Route 41 being unpaved. SEA's contacts with personnel at Badlands National Park indicated that the landfill has likely been recently closed. Additionally, the State has some of the necessary funds for paving BIA Route 41 but is seeking the additional funds for 2002. Paving of BIA Route 41 could commence in 2003.

Scenic byways in South Dakota are determined through review by a Scenic Byway Review Committee. This committee considers the byway application based on the safety of the motoring public and the unique and unusual scenic, cultural, geologic, wildlife and habitat, and aesthetic features of the route. The review committee makes a recommendation to the State Transportation Commission who then makes the final decision on the designation of the route.

SEA's preliminary contacts with the State of South Dakota indicate that construction of a new rail line could affect the eligibility of a route for designation as a scenic byway. However, it would be up to the discretion of the review committee.

Alternative B

The alignment of Alternative B would cross the portion of the Crazy Horse Scenic Byway that includes State Highway 40. Alternative B would cross Highway 40 just west of the Cheyenne River. This portion of the Cheyenne River is considered eligible as a wild and scenic river. It is likely construction of a rail line at this location would adversely affect the eligibility of this portion of the Cheyenne River for future designation as a wild and scenic river. Additionally, the alteration to the landscape caused by construction of the rail line along the Cheyenne River could also result in this stretch of roadway being considered ineligible as a scenic byway.

Alternative C

The alignment of Alternative C would also cross the portion of the Crazy Horse Scenic Byway that includes State Highway 40. Alternative C would cross Highway 40 approximately 12 miles southeast of Hermosa, South Dakota. This crossing would be within approximately 0.5 mile of where a high voltage transmission line on steel lattice towers currently crosses the highway. The rail line crossing is proposed by DM&E to be a grade separation due to the topography of the site. While the rail line crossing would pose no safety hazard to motorists, it is unclear whether the construction of the rail line would impact the eligibility of the route for designation as a scenic byway, particularly since other portions of the route follow and cross abandoned rail bed and the proposed route is crossed by the existing DM&E rail line in Hermosa.

3.2.9 BIOLOGICAL RESOURCES

SEA evaluated potential Extension Alternative impacts to a variety of biological resources, including vegetation, wildlife, and threatened and endangered species. SEA received a number of comments regarding impacts to biological resources. For the most part, commenters concurred with SEA's conclusions in the Draft EIS regarding the project's potential impacts. Many of the commenters requested mitigation measures to protect these resources. SEA reviewed these suggestions and has included mitigation recommendations, as appropriate, in Chapter 12. A few specific commenters raised issues that resulted in SEA conducting additional analysis. These issues included big game migration and inclusion of prairie dogs, which some noted may be added as a candidate for listing as a threatened or endangered species. SEA's additional investigation concerning these issues is discussed below.

3.2.9.1 Wildlife

SEA determined that any of the proposed Extension Alternatives would have similar types of impacts to big game, including mortality, loss of habitat, disturbance, and impedance of migration movements. SEA determined the types and amounts of big game ranges that would be converted to rail line right-of-way. As presented in the Draft EIS, Table 4.4-39, SEA determined that impacts to big game would differ between the Extension Alternatives. Alternative B would generally affect more elk habitat in Wyoming, although Alternative C would affect more crucial winter range. Alternative B would also affect more deer habitat than Alternative C in both South Dakota and Wyoming. Alternative C would affect more pronghorn habitat in South Dakota, but Alternative B would affect more in Wyoming. The Draft EIS concluded that no significant impacts to big game would occur as a result of construction and operation of any of the proposed Extension Alternatives due to the abundant big game habitat throughout the area, the ability of

these species to adapt and acclimate, their mobility allowing them to seek out areas away from the rail line if desired, and the limited mortality expected from train/wildlife collisions.

Commenters on the Draft EIS, including the Wyoming Game and Fish Department, South Dakota Department of Game, Fish and Parks, and Native American Tribes, indicated concern SEA had not adequately considered the impact of the potential rail line as a barrier to big game migration. Commenters expressed concern that a rail line in eastern Wyoming oriented east-west would cross migration corridors for pronghorn. During migration periods, large numbers of pronghorn could accumulate along the rail line and be hit by a passing train. Wyoming Game and Fish Department acknowledged that it had little data on pronghorn migration in this area of Wyoming but indicated large numbers of pronghorn were known to winter in areas south of the alignments for the Extension Alternatives. Thus, with funding provided by DM&E, Wyoming Game and Fish Department conducted surveys along the proposed Extension Alternatives in Wyoming to obtain data on potential big game migration routes.

SEA was unaware of these studies and was not provided copies of the results prior to issuance of the Draft EIS. In response to comments that big game surveys had been conducted, SEA obtained and reviewed the reports prepared as part of these surveys. Wyoming Game and Fish Department conducted flights between February and May, 1999, and between January and March, 2000. The results of these flights indicated large numbers of antelope dispersed throughout the proposed rail alignment area. It appears likely that an east-west rail line across eastern Wyoming would be crossed by large numbers of antelope moving north-south between summer and winter areas.

Additionally, commenters noted that the Cheyenne River provided important habitat for big game, and that constructing a rail line along the river would provide an obstacle to big game moving to and from the river valley, increasing their susceptibility to being hit by a train. While no big game migration corridors are mapped in southwestern South Dakota, Native American Tribal traditions discuss movement of big game from the Black Hills into the foothills and plains and from the plains to the foothills in winter. These patterns would require large numbers of big game to cross a rail line located along the Cheyenne River because it would lie between the plains and the foothills.

Wyoming Game and Fish Department has expressed particular concern for the project-related impacts to pronghorn. This is largely due to the characteristics of pronghorn which make them more susceptible to being struck by a passing train. Pronghorn are not anticipated to use culvert-type underpasses due to the relatively closed nature of these structures. Thus, they would cross over the rail line. Unlike deer which generally have no problem jumping over a fence,

pronghorn are not prone to jump, preferring to crawl under a fence. Additionally, pronghorn are built for speed and when threatened, will run from the threat. While it may be a simple task to jump over or crawl under a fence along the rail line, pronghorn, attempting to run from the train would actually be confined by the fence, increasing the likelihood they would run in front of the train and be struck.

SEA has reviewed the comments concerning big game migration routes received on the Draft EIS and the additional information prepared by Wyoming Game and Fish Department. Based on its additional analysis, SEA reaffirms its position in the Draft EIS that the proposed Extension Alternatives would lead to big game mortality as a result of individuals within the right-of-way being struck by a passing train. SEA has included recommended mitigation measures, including fencing design, intended to facilitate movement of pronghorn across the rail line. Also, SEA recognizes that, in comparing the Extension Alternatives, Alternative B would likely have a greater potential impact on big game because Alternative B accesses the mines by branching from the main line, resulting in several rail lines running east-west. This configuration would create several rail lines for pronghorn to cross when moving north-south as opposed to Alternative C which would enter the PRB, then split north-south with only short spurs being necessary to access the individual mines. As a result, SEA believes Alternative B would have greater impact on big game than Alternative C, although mitigation could prevent these impacts from being significant.

3.2.9.2 Threatened and Endangered Species

For preparation of the Draft EIS, SEA contacted the U.S. Fish and Wildlife Service (USFWS) for information on the Federally threatened or endangered species potentially affected by the proposed project. The USFWS provided a list of species potentially affected by the Extension Alternatives, including the black-footed ferret, piping plover, interior least tern, mountain plover, swift fox, bald eagle, pallid sturgeon, Ute Ladies'-tresses orchid, American burying beetle, and the sturgeon chub. During preparation of the Draft EIS, SEA and the cooperating agencies learned that the black-tailed prairie dog had been submitted for protection under the Endangered Species Act and that the USFWS was considering the information submitted. However, it did not appear that any decision on the listing would occur before release of the Draft EIS. SEA decided to include the black-tailed prairie dog in the Draft EIS analysis.

SEA determined that each of the Extension Alternatives has the potential to adversely affect Federally threatened and endangered species, including the black-tailed prairie dog, which has not yet been formally listed, and the swift fox, which has recently been removed from Federal listing. SEA determined that only Alternative B would have significant impact on threatened and

endangered species as it would cross a black-footed ferret reintroduction area, thus likely making the site unsuitable for ferret reintroduction and jeopardizing reestablishment of the species.

SEA received comments regarding Federally threatened and endangered species, with most of the emphasis on the black-tailed prairie dog. Commenters indicated that SEA should consider project impacts to this species. SEA notes that the Draft EIS (Chapter 4, Sections 4.1.8.4 and 4.4.10.4.10) discusses the potential impacts of the Extension Alternatives to black-tailed prairie dogs. Although not yet listed, and likely not to be listed in the foreseeable future, this species is included in the analysis at the same level as other Federally listed species. SEA determined the potential impact to prairie dogs by determining the amount of habitat each of the Extension Alternatives would convert to rail line right-of-way, approximately 552.7 acres for Alternative B and 819.4 acres for Alternative C. As discussed in the Biological Assessment prepared for the project, contained in the Draft EIS (Appendix K) and the Final EIS (Appendix H), SEA anticipates some mortality to prairie dogs during construction of the rail line. However, the high reproductive rate of prairie dogs is expected to easily replace any losses. Additionally, SEA observed numerous prairie dog towns along other existing rail lines in the project area, suggesting this species is capable of adapting to rail lines and utilizing the habitat they provide. Therefore, SEA continues to conclude that the proposed project would have no significant impacts on black-tailed prairie dog populations.

3.2.10 NOISE AND VIBRATION

SEA conducted extensive analysis of the potential project-related impacts to noise sensitive and vibration receptors, as presented in the Draft EIS (Chapter 4, Section 4.4.9). SEA determined that several noise sensitive receptors along both Extension Alternatives would be adversely affected by project-related increases in train noise. For both Extension Alternatives, most of the noise sensitive receptors affected would be located in Fall River County, South Dakota. Due to its proximity to the community of Edgemont, South Dakota, Alternative B would adversely affect a greater number of noise sensitive receptors than Alternative C.

SEA received comments on the Draft EIS indicating that the rail line would result in increased noise and adverse impacts along the proposed Extension Alternatives. These comments support SEA's analysis in the Draft EIS. No commenters raised issues requiring additional analysis of project-related impacts to noise sensitive receptors. SEA has concluded the analysis contained in the Draft EIS is appropriate.

SEA also conducted extensive analysis of the potential impacts to structures from project-related increases in vibration. In the Draft EIS, SEA indicated that structures within 100 feet of a new rail line of the type contemplated as part of this project could experience some damage by project-related vibration. SEA determined that operation of Alternative C could result in damage to two structures. No structures would be potentially damaged by Alternative B.

Based on SEA's further review, SEA has determined that structures would likely need to be within 50 feet of the rail line to potentially be damaged by rail vibration. Because DM&E's proposed right-of-way would include approximately 100 feet on either side of the rail line, no structures would be located near enough to be damaged by project-related vibration. Although structures in proximity to the Extension Alternatives, including the two structures within 100 feet of Alternative C, could still experience rail-induced vibration, it would not likely be sufficient to cause structural damage. Therefore, SEA has determined that neither of the Extension Alternatives would cause significant vibration problems.

3.2.11 AIR QUALITY

SEA received numerous comments from agencies and the public during scoping concerning potential environmental impacts of coal dust blowing from rail cars (fugitive coal dust) and the potential impacts of the project to air quality at Class I airsheds. These concerns included impacts to human health, wildlife, vegetation and crops along the rail line, visibility, and quality of life factors such as the need to keep windows closed, inability to hang laundry outside, and the need to wash coal dust from vehicles and homes. The following summarizes SEA's analysis of fugitive coal dust as presented in the Draft EIS (Sections 3.2.8, 4.3.8, and 4.4.8), and the results of SEA's additional analysis of this issue for this Final EIS.

SEA concluded in the Draft EIS that fugitive coal dust would not present a significant environmental concern, based on the high moisture content of PRB coal, which produces less dust than other types, and a high clay content, so that a crust tends to form over exposed coal. Both of these characteristics of PRB coal reduce the potential for a significant fugitive dust problem. SEA provided anecdotal evidence to support this conclusion, including its observations of loaded rail cars leaving the PRB with no signs of fugitive dust, lack of coal dust accumulating on or along

the existing rail lines,²⁸ and lack of public complaints concerning coal dust, even in states through which large amounts of PRB coal are transported.²⁹

In preparing the Final EIS, SEA conducted further investigation into whether characteristics of PRB coal influence its potential for producing fugitive dust capable of causing an environmental impact. In the Draft EIS, SEA found no detailed studies on the amount of coal dust lost from rail transportation, nor did subsequent investigation identify detailed studies on fugitive coal dust from transport of PRB coal. However, SEA did find a general analysis of the fugitive coal dust issue and analysis of fugitive dust generated by a specific type of eastern coal. These studies are summarized below.

In 1996, Simpson Weather Associates of Charlottesville, Virginia, in cooperation with and with funding from Norfolk Southern Corporation, conducted an evaluation of fugitive coal dust losses along a rail corridor in Virginia with heavy coal traffic.³⁰ This study was conducted along an approximately 500-mile rail corridor with known fugitive coal dust complaints, and evaluated the loss of metallurgical coal³¹ under a variety of meteorological and physical conditions. It concluded that while fugitive coal dust emissions did not appear to violate ambient air quality standards and that no remedial action was necessary, up to 0.6 tons (1,200 pounds) of coal could be lost per rail car over the 500-mile trip. Typical losses were reported to be 0.2 to 0.4 tons per rail car (400 to 800 pounds).

In an additional study, Simpson Weather Associates discussed concerns about fugitive coal dust from the time the coal is mined until it is shipped abroad.³² This study expanded on the initial one, indicating that the transported coal traveled on trains reaching a speed of 50 miles per

²⁸ SEA received comments identifying specific locations of large amounts of coal along the existing rail lines serving the PRB. Based on the description of these locations and its own investigation, the coal present was likely the result of a rail car spill or derailment, since it was present in large amounts and in localized areas.

²⁹ States contacted included Minnesota, South Dakota, North Dakota, Nebraska, Wyoming, Colorado, and Missouri.

³⁰ Edward M. Calvin, G.D. Emmitt, and Jerome E. Williams. 1996. "A Rail Emission Study: Fugitive Coal Dust Assessment and Mitigation," *Environment Virginia*, 1996.

³¹ Coal used in metal production, forging, or smelting industries is generally of high heat value per ton and thus capable of generating the high and sustained temperatures needed for the metal industries.

³² George D. Emmitt. 1999. "Fugitive Coal Dust: An Old Problem Demanding New Solutions," *Port Technology International*, No. 9, pp. 125-128.

hour, and that the metallurgical coal was crushed and dried prior to transport. It also indicated that fugitive coal dust is related to the size of the coal transported, its clay and moisture content, and seasonal considerations. Moisture content is most significant, since low moisture content resulted in dust problems during the coal's entire transportation route.

SEA also identified an additional study prepared by the Pennsylvania State University (Penn State) Department of Energy, Environmental, and Mineral Economics,³³ that discussed public perceptions of the fugitive coal dust issue in light of the scientific evidence. It noted that changes in coal use to supply domestic energy needs has increased interest in fugitive coal dust related to potential economic losses as well as psychological impacts on residences and businesses resulting from fugitive dust. Since coal users are attempting to reduce ash and sulphur to comply with the Clean Air Act Amendments of 1990, coal is crushed into smaller pieces to separate more non-combustible ash and slag-forming components from the coal. Additionally, recent use of longwall mining, a process of grinding or pulverizing the coal in a seam to extract it, has resulted in larger amounts of coal of smaller particle size being shipped.

According to the Penn State study, fugitive coal dust is classified as a nuisance pollutant, but there is no evidence that it presents any danger to the environment or human health. Coal dust larger than 10 µm has not been linked to either human health, environmental, or agricultural problems. Respirable coal dust in the range of 7-10 µm has been linked to an emphysemic condition, black lung. However, this condition is generally confined to individuals working in underground mining conditions. The amount of respirable coal dust, even with repeated exposure to high dusting events, is too small to pose any threat to the health of individuals living along the rail line.³⁴ Additional studies by both Environment Canada and EPA showed no effect on biological systems. EPA determined that coal dust had no effect on agricultural production or soils, and that concentrations of heavy metals were generally higher in soils than in the coal dust. In addition, EPA found no evidence of coal dust accumulating in adjacent soils nor of negative effects to ecosystems from coal dust.³⁵

³³ Jeffrey K. Lazo and Katherine T. McCain. 1996. "Community Perceptions, Environmental Impacts, and Energy Policy - Rail Shipment of Coal," *Energy Policy*, Vol. 24 (6), pp. 531-540.

³⁴ R. Hogg, Department of Mineral Engineering, Pennsylvania State University, Personal Interview - 18 July, 1994. Cited in Jeffrey K. Lazo, and Katherine T. McCain, "Community Perceptions, Environmental Impacts, and Energy Policy - Rail Shipment of Coal," *Energy Policy*, Vol. 24 (6), pp. 531-540.

³⁵ D. Emmit, Simpson Weather Associates, Inc. Personal communication - 27 October, 1994. Cited in Jeffrey K. Lazo and Katherine T. McCain, "Community Perceptions, Environmental Impacts, and Energy Policy - Rail Shipment of Coal," *Energy Policy*, Vol. 24 (6), pp. 531-540.

In evaluating the results of the Simpson Weather Associates studies, SEA found several significant differences between the eastern coal evaluated there and PRB coal. The studies evaluated coal transport along a rail corridor known to experience fugitive coal dust complaints. SEA contacted Minnesota, North and South Dakota, Nebraska, Wyoming, Colorado, and Missouri and found no records of complaints related to fugitive coal dust. Following release of the Draft EIS, SEA made additional contacts with communities along rail lines transporting a high volume of PRB and eastern coals (Table 3-5). None along the PRB coal rail lines were aware of any complaints of fugitive coal dust (some were unaware that coal was transported through the community at all), while the eastern communities had heard of the problem. While anecdotal, this evidence is consistent with SEA's conclusion in the Draft EIS that fugitive coal dust is not a problem with PRB coal.

**Table 3-5
Communities Contacted Regarding Fugitive Coal Dust**

Community	Agency	Railroad
Gillette, WY	Office of Environmental Services	BNSF
Aberdeen, SD	City Health Department	BNSF
Jamestown, ND	Health Department	BNSF
St. Cloud, MN	Department of Environmental Health	BNSF
Osceola, IA	Clark County Office of Environment	BNSF
Ames, IA	Office of Public Relations	UP
Scottsbluff, NB	Health Department	BNSF and UP
Richmond, VA	Virginia Mines, Minerals, and Energy Department	NS ³⁶ and CSXT ³⁷
Harrisburg, PA	Air Quality Control Bureau	CR*
Charleston, WV	West Virginia Bureau of Air Quality	CSXT and CR*
* Formerly Consolidated Railway Corporation (Conrail) assets acquired by NS and CSXT, Finance Docket No. 33388.		

³⁶ Norfolk Southern Corporation

³⁷ CSX Transportation Corporation

Many eastern coals are used as metallurgical coal, which is generally dustier than steam coal, but PRB coal is not. Railroads throughout the eastern United States periodically, if not regularly, transport metallurgical coal, likely giving rise to incidents of fugitive coal dusting and complaints from local citizens. As a steam coal, however, PRB coal is less dusty and less likely to contribute fugitive dust from passing rail cars. Moreover, moisture content of the studies' metallurgical coal ranged from 2.8 percent to 11.4 percent. In contrast, PRB coal averages 30 percent moisture, resulting in smaller particles of coal sticking together, which reduces fugitive dust.

The studies indicate that the greatest losses occurred in the summer months, under hot, dry conditions and at the highest average wind and train speeds. But during much of the year the temperatures in the PRB and along DM&E's existing rail line are moderate to below freezing. Only during a few months each year could high temperatures and winds form fugitive dust. During site visits, SEA has observed UP and BNSF trains operating in the PRB at speeds greater than the 45 miles per hour contemplated for loaded coal trains for this project during hot, dry summer conditions and noticed no fugitive dust from the rail cars.

According to the studies, fugitive dust was increased by tunnels, trestles, trains passing in the opposite direction, and close hills or cuts through hills for the rail line. As a general rule, DM&E's existing rail line across South Dakota and Minnesota traverses open, flat terrain. Although no tunnels, large trestles, or significant hill-cuts occur along the existing line, several hill-cuts would likely be created by the proposed project. However, these would occur primarily in sparsely populated areas where fugitive dust would have little, if any, impact on local residents and would be similar to dust created by wind erosion and vehicles on local gravel roads. Because coal dust is relatively inert and not a hazard to human health or biological resources, any fugitive dust in these areas would have no significant impact on the environment. Fugitive dust could be generated when a loaded train passes another train at one of the many passing sidings necessary for project operation. However, none of these sidings would be in towns or communities, only in rural areas with scattered residents, where fugitive dust created would likely be similar to that created through agricultural operations, wind erosion, and vehicles on gravel roads.

The available studies emphasize that smaller sizes of coal, such as those produced by underground and longwall mining techniques, result in fugitive dust. In contrast, PRB coal is mined in open pits using explosives, large mechanical shovels, bulldozers, and trucks. This process results in coal particles much larger than in other mining techniques. Although PRB coal is processed to a more uniform size for transport, particle size is generally one to two inches. Final crushing of PRB coal for use by the utility is generally done at the generating station immediately prior to introduction of the coal into the boiler combustion chamber. This delayed

crushing is done both to accommodate the specific particle size requirements for the individual combustion chambers and to make the coal easier to handle and reduce dust generated from coal-handling at the generating station. The larger particle size of PRB coal makes it unlikely to produce significant amounts of fugitive dust.

Some comments on the Draft EIS questioned why fugitive coal dust was not considered as a potential source of visibility impairment, particularly at Class I airsheds such as Badlands National Park, contributing to regional haze. Others indicated that fugitive coal dust emissions should have been quantified and included in the air modeling study conducted for the project alternatives, just as were locomotive emissions, including the associated particulate emissions. SEA does not believe it would be appropriate to include fugitive coal dust emissions as part of the air quality visibility analysis. Previous air quality studies in the region have considered locomotive emissions, as did SEA in this case. PRB coal data indicate that it is a highly unlikely source for fugitive coal dust, and studies on eastern coal with very different characteristics from PRB coal are not valid surrogates for potential PRB coal-dust emissions.

It has also been determined that most fugitive coal dust is larger than 10 μm . Dust particles of this size would be expected to fall out of the air in a relatively short distance and not be carried high into the atmosphere or for long distances as would be necessary to contribute to regional haze concerns. Additionally, particulate emissions from locomotives, while being smaller in size (less than 10 μm), are also carried aloft in a plume of hot air. This hot air rises into the atmosphere where wind and other atmospheric conditions have greater influence on smaller particles, keeping them aloft for extended periods of time and transporting them great distances. Fugitive coal dust would not be acted on by such forces. Any fugitive dust would be expected to settle out of the air without contributing to local or regional visibility concerns.

Therefore, based on its additional analysis and the studies discussed above, SEA concludes that fugitive coal dust would not result from the transport of PRB coal along the DM&E rail line, except on an infrequent and very localized basis. As discussed in the Draft EIS, fugitive coal dust could require periodic washing of adjacent residences, businesses, or vehicles if normal rainfall is insufficient. But, since fugitive coal dust should be an infrequent event and any dust produced would not pose a threat to human health or the environment, SEA has determined that fugitive coal dust is not a significant concern for this project.

In the Draft EIS, SEA recommended a condition (Condition 67) requiring DM&E to comply with the final recommendations of the Air Quality Working Group, which was established for this project and consists of agencies, including the National Park Service, with appropriate technical expertise. SEA understands that DM&E and the Working Group have been meeting

periodically over the last several months, and that various versions of a draft Memorandum of Agreement have been circulated. The negotiations reached an impasse, however, when the parties could not reach agreement on one issue: train caps or emission caps.

Specifically, the Working Group wanted DM&E to limit the number of trains or the amount of emissions generated once train traffic or emissions approached levels that would be high enough to affect Class I airsheds, such as the Badlands National Park in South Dakota.³⁸ DM&E responded that it could not agree to train or emission caps because to do so would violate its so-called “common carrier obligation” to provide service upon reasonable request to the shippers to which it holds out service (See 49 U.S.C. 11101(a)).

DM&E’s assertions are correct. As the Board has frequently stated, railroads must have the flexibility to adjust the level of train traffic over particular line segments in response to changes in shipper demands and other market conditions.³⁹ Any caps — whether to trains or emission levels — would be inappropriate, in violation of the railroad’s common carrier obligation, and beyond the Board’s jurisdiction to impose.⁴⁰

Notwithstanding the impasse, SEA believes that the Working Group has been productive, and is hopeful that a mutually satisfactory agreement may be reached following issuance of this Final EIS clarifying the limits of the Board’s jurisdiction.⁴¹ Therefore, SEA is retaining its Working Group condition but modifying it to require mediation (half of which would be funded by DM&E) if the Working Group and DM&E cannot agree on terms within one year of the date

³⁸ See Chapter 4 of the Draft EIS for a discussion of the regional haze issue and SEA’s conclusions about the tonnage levels at which visual impairment to Class I airsheds would occur.

³⁹ See Major Rail Consolidation Procedures, STB Ex Parte No. 582 (Sub-No. 1) (STB served June 11, 2001), slip op. at 39-40.

⁴⁰ In one railroad merger, the Board imposed a temporary traffic cap in one community (Reno, Nevada) to permit completion of an ongoing environmental mitigation study. No permanent traffic cap has ever been imposed by the Board.

⁴¹ Adverse impacts to Class I airsheds are not anticipated until DM&E were to transport 40 million tons of coal annually. Accordingly, there would be time for the parties to seek to resolve the impasse, assuming that the Board gives final approval to the PRB Expansion Project.

of a Board decision giving final approval to the project.⁴² (See SEA's recommended mitigation in Chapter 12).

SEA recognizes, however, that there are technological and other limitations to the mitigation options available to the Working Group to minimize project-related impacts of regional haze. For example, it does not appear feasible to require DM&E to accelerate compliance with EPA's locomotive emissions standards, as the technology needed to retrofit locomotives is not currently available. Moreover, DM&E is exploring the possibility of using a special type of fuel to reduce emissions, but is concerned that it could be placed at a competitive disadvantage if other railroads operating in the PRB did not have to operate under the same conditions.

It may be that no good options prove to be available to address the impacts of regional haze in Class I airsheds that would result from the locomotive emissions of DM&E coal trains. In the event that the Working Group cannot agree on reasonable measures to assure that project-related impacts would be effectively mitigated, regional haze could constitute an unavoidable adverse impact to Class I airsheds.

3.2.12 HAZARDOUS MATERIALS

In the Draft EIS (Chapter 4, Section 4.4.13), SEA explained that the purpose of the proposed new rail line construction is to transport coal and that no shippers or receivers of hazardous materials are located along the proposed alignments of any of the Extension Alternatives. Therefore, SEA indicated that no hazardous material are anticipated to be transported over the new rail line as a result of this project.⁴³

Specifically, SEA stated that the proposed PRB Expansion Project is intended to facilitate the transport of coal between coal mines in the PRB and coal-burning electrical generating facilities east of the PRB. The coal cars of other railroads currently serving the mines are transported empty to the coal mines and loaded with coal. The loaded cars then are transported to the specific utility plant, unloaded, and shipped empty back to the mines for reloading. The

⁴² Under SEA's recommended condition, the parties jointly could ask for more time to continue their negotiations without a mediator if they believe that would be more productive. The parties also could mutually decide to disband the Working Group if it becomes clear that further meetings would not be fruitful.

⁴³ DM&E currently transports small amounts of a variety of hazardous materials, including liquefied petroleum gas (LPG), anhydrous ammonia, phosphoric acid, ferric chloride, fuel oil, and ethylene acetyl (a flammable gas used in welding, among other things).

pricing structure for transport of coal accounts for the cars to return empty to the mine. Therefore, railroads can afford to operate in this manner by charging more for coal transport.

SEA received comments concerning hazardous materials. These comments primarily expressed concerns that DM&E would use empty coal cars to haul waste material, including trash and hazardous wastes, from the east to disposal facilities in the west if this project is approved and implemented. Commenters urged that DM&E be prohibited from hauling hazardous materials or waste over the new rail line (or additional hazardous materials over the portion of its existing system connecting to the proposed new rail line).

However, a variety of practical reasons exist which make it unlikely that DM&E would haul trash or hazardous materials in empty coal cars. First, rail cars are designed to perform specific functions and transport specific types of commodities. Coal cars are no exception. They are designed to transport coal. While they potentially could be used to transport other bulk commodities (such as rock or gravel), they would be inappropriate for the transport of trash and any type of hazardous material or waste. Transport of material other than coal in these cars would require that they be thoroughly cleaned prior to being loaded with coal to prevent contamination of the coal, which would affect its combustion properties and the operation of the generating station. Such requirements would be uneconomical and impractical for a unit train in excess of 100 cars.

Coal cars also come in two types, bottom (or hopper) bumpers and rotary dumpers. Bottom dumpers have hoppers which open on the bottom of the car to allow the coal to fall out the bottom of the car, generally into a conveyor system which receives the coal below the rail line (below ground level). The rail car is pulled over an open chute, the hoppers opened and the coal dropped into the chute. The second type of coal car is a rotary dumper. These cars are unloaded by the car being secured to the track and the track rotated, containing one or two rail cars at a time. The cars are rotated to the upside down position, dumping the coal into a receiving chute. When empty, the track is rotated back to the upright position and new cars pulled on to the rotary section of the track. Thus, individual generating stations are designed to handle one or both types of coal cars. In order to use coal cars to transport other commodities, the receiving locations would have to be able to accommodate the type of car delivering the material.

Furthermore, for railroads serving the PRB, many of the coal cars they move are owned by the individual utilities, not by the railroads. These cars are either leased back to the railroad under agreement that they be used to provide coal to the utility's facilities or the railroad simply provides the locomotive power to transport the cars from the generating facility to the mine and back. The railroad is not able to use the cars for other means. Coal cars are therefore typically

not available for the railroad to take from the mine to another location to, for example, pick up a load of trash, deliver the trash to another location, and then return to the mine. Any attempt to do something like this would likely result in delays to the train returning to the mine, being loaded, and coal delivered to the generating station, as the utility only has enough cars to meet its needs based on a certain to-mine-and-back turn around time. Such operations would not be permitted by the utility. Use of utility coal cars for other purposes also would increase the wear and tear on the cars and result in increased maintenance costs.

Last, while various commenters noted that there have been attempts to open facilities in western South Dakota and eastern Wyoming for receipt of trash and hazardous materials, SEA is not aware of any current plans to open or operate any such facilities along the existing DM&E rail line or any of the proposed Extension Alternatives. No such facilities currently exist along the existing DM&E rail line. Thus, there is no destination for any trash or hazardous materials. Should DM&E be requested to transport such materials, it would have to interchange them with another rail carrier for delivery to a disposal facility, reducing any economic advantage that would be gained by back-hauling such goods.

It is possible that DM&E could transport trash or other hazardous materials over the Extension Alternatives using rail cars appropriate for such goods. DM&E, as a common carrier, is legally bound to provide rail service to anyone, for the transport of anything, including hazardous materials, upon request to do so.⁴⁴ The Board cannot preclude a common carrier from hauling or not hauling particular commodities, but any transport of hazardous materials would have to be in strict compliance with U.S. Department of Transportation regulations. Moreover, SEA is unaware of any facilities along the Extension Alternatives that would require transport of hazardous materials. Thus, SEA does not anticipate that DM&E would be asked to operate trains transporting trash or hazardous materials over the proposed Extension Alternatives for the foreseeable future. Therefore, SEA does not anticipate any impacts from the transport of hazardous materials.

⁴⁴ See 49 U.S.C. 11101(a) (“A rail carrier providing transportation or service subject to the jurisdiction of the Board under this part shall provide the transportation or service on reasonable request”); see also Ethan Allen v. Maine Cent. R.R. Co., 431 F. Supp. 740 (D. Vt. 1977) (stating that common carriers have a duty to provide adequate transportation to shippers if the shippers’ requests are reasonable (citing Pennsylvania R.R. v. Sonman Shaft Coal Co., 242 U.S. 120 (1916); Chicago, R.I. & P. Ry. v. Hardwick Farmers Elevator Company, 226 U.S. 426 (1913); Johnson v. Chicago, M., St.P & P. R.R., 400 F.2d 968 (9th Cir. 1968)), Overbrook Farmers Union Coop. Ass’n, 5 I.C.C. 2d 316 (1989) (railroad violated duties under 49 U.S.C. 11101(a) by failing to provide service to shippers after flood damage prompted railroad to impose an embargo on the line).

3.2.13 GEOLOGY AND SOILS

SEA conducted an extensive analysis of the geology and soils along the Extension Alternatives in the Draft EIS (Chapter 4, Section 4.4.5). SEA determined that the geology of the project area consisted of extensive areas of Pierre shale and Fort Union formations, which are susceptible to landslides and slumping. Because of the long stretches of these formations that would be crossed by the Extension Alternatives, approximately 150.6 miles by Alternative B and 135.0 miles by Alternative C, SEA concluded in the Draft EIS that there was the potential for significant impacts from crossing these formations. However, SEA stated that engineering and design solutions are available to address concerns regarding areas susceptible to slumping and landslides.

Commenters expressed concern that SEA had understated the potential problems associated with construction and operation of a new rail line across Pierre shale formations. Commenters suggested that rail line construction across these formations would be difficult, if not impossible, and that even if the proposed rail line could be constructed, the susceptibility of the formations to shrinking, swelling, and slumping (landslides) would pose an ongoing threat to rail bed stability and the safety of rail operations.

SEA had relied in the Draft EIS on the fact that, in order to construct a safe and reliable project, it would be necessary for DM&E to both identify potential geologic hazards prior to construction and implement measures during construction to address any problem areas identified. In order to respond to the issues raised by commenters, SEA conducted additional investigation into the characteristics of the Pierre shale formation and ways, if any, to avoid problems with crossing it. A detailed discussion of Pierre shale is included in Appendix M and summarized below.

SEA's analysis indicates that Pierre shale's susceptibility to landslides and slumping, and the difficulty it poses for construction are due to high shrink/swell potential and moderate to high content of clay in the formation. Shrink/swell potential refers to the tendency of the soil or rock layers to expand and contract. The Pierre shale formation has a high shrink/swell potential because it contains layers of bentonite and other expandable materials. Much like a sponge, when water comes in contact with these materials, they absorb the water and expand or swell, causing the ground to rise, or heave, as can occur when water in soil freezes and the expansion of the ice causes the soil to expand (frost heave). Absorption of water can cause the formation to expand to many times its dehydrated size. As water drains from the formation, it shrinks as the layers of expandable material dry out and become compressed. Generally, such formations will achieve a relatively stable condition in a particular area. However, during periods of drought, excessive

shrinking can occur. Additionally, periods of high precipitation can result in excessive swelling. However, over time, even minor shrinking and swelling can cause fracturing of material, resulting in slope instability, potentially leading to slumps or landslides.

In addition to a high shrink/swell potential, the Pierre shale formation has a moderate to high clay content. Clay material, when exposed to moisture, can act as a lubricant, causing the layers of rock to slide on each other. Under such conditions, rock material on slopes can lose its stability and slide along lower layers of rock, resulting in slope instability and landslides.

For issues of shrink/swell potential and clay content, moisture is the primary concern. A constant and minimal moisture level needs to be maintained to minimize the potential for rock and soil materials to shrink or swell. Moisture needs to be kept away from high clay content areas to prevent sliding of the rock layers within which they occur. Accordingly, in areas where there are Pierre shale formations, it is more critical that there be good drainage along the rail alignment.

After examining the issue in more detail and identifying the underlying causes of the potential problems associated with crossing the Pierre shale, SEA continues to believe that DM&E should be able, through the extensive geotechnical investigation of the alignment which would be required prior to final design and construction, to identify those areas of Pierre shale along the Extension Alternatives which would potentially pose a problem for rail line construction and operation. Once these areas are identified, measures (over-excavation of material beneath the rail bed, flattening of sideslopes to reduce their steepness,⁴⁵ larger drainage ditches adjacent to the railbed, and other techniques to remove the expandable material from the rail bed and or keep the water off of it) could be utilized to maintain the stability of the rail bed. It is not unusual for construction projects to proceed in terrain with a variety of geologic challenges. Indeed, existing rail lines and roadways occur throughout the project area, many of them built across Pierre shale. Accordingly, SEA is confident that construction of a safe rail line is feasible in this area, provided appropriate engineering and design measures are implemented. SEA has recommended appropriate geology mitigation in Chapter 12.

In assessing the potential project-related impacts to soils in the Draft EIS, SEA determined the length of each Extension Alternative that would cross soils with a high erosion hazard, approximately 221.3 miles for Alternative B and 208.2 miles for Alternative C. The

⁴⁵ Flatter sideslopes require more horizontal area per vertical rise of slope. Therefore, SEA considered the need for extra excavation to stabilize sideslopes in the Draft EIS, using an average right-of-way width of 400 feet rather than the minimum 200 feet required to account for extra right-of-way requirements to establish stable sideslopes and rail bed.

proposed rail line would cross soils with high erosion hazards including soils that raised concerns due to water, wind, or steepness. As particular soils may have more than one of these hazards, SEA noted that the totals presented in the Draft EIS likely overestimated the total amount of these soils. However, SEA presented these totals as a way to compare the sensitivity of the soils crossed by each Extension Alternative to erosion.

Because several commenters complained about the manner in which SEA totaled the amount of erodible soils in the Draft EIS, SEA refined its approach and has included the miles of soils for each alternative with specific erosion hazards, as presented in Appendix L of the Draft EIS. Alternative B would cross approximately 112.0 miles of soil with a high water erosion hazard, 19.2 miles of soil with a high wind erosion hazard, and 103.8 miles of soil with a high erosion hazard due to steep slopes. Alternative C would cross approximately 95.4 miles of soil with a high water erosion hazard, 19.2 miles of soil with a high wind erosion hazard, and 91.1 miles of soil with a high erosion hazard due to steep slopes. As both Extension Alternatives would affect similar amounts of erodible soils, albeit Alternative C would affect less, and both would result in significant soil disturbance during construction, SEA reaffirms its conclusion in the Draft EIS that Alternatives B and C both would have significant impacts on soils. However, with appropriate mitigation, as outlined in Chapter 12, SEA believes these impacts can be minimized.

3.2.14 ENVIRONMENTAL JUSTICE

SEA's Original Analysis. SEA conducted an extensive analysis to determine the potential for disproportionate adverse impacts on minority or low-income communities, collectively referred to as environmental justice communities, as discussed in detail in Appendix D of the Draft EIS. SEA used data from the U.S. Bureau of Census for the census block group (the smallest geographic unit for which both race and income information is managed) to determine if environmental justice communities potentially were located along the Extension Alternatives. SEA's criteria for classification of a census block group as having environmental justice status were the same as it had used in the prior cases:

- at least one-half of the census block group is of minority status
- at least one-half of the census block group is of low-income status
- the percentage of minority status for the census block group is at least 10 percentage points higher than for the entire county in which the census block group is located
- the percentage of low-income status for the census block group is at least 10 percentage points higher than for the entire county in which the census block group is located.

Applying these criteria, SEA determined that three environmental justice communities would be crossed by the two remaining Extension Alternatives.⁴⁶ One environmental justice community was identified in each of the counties of Custer, South Dakota, and Weston and Niobrara, Wyoming. One additional environmental justice community in Shannon County would not be crossed by the proposed Extension Alternatives, although it could be indirectly affected. SEA determined that none of these communities would be disproportionately impacted by construction and operation of either Alternative B or C.

The Commenters' Concerns. SEA received comments from EPA and others involving the methodology SEA had employed in its environmental justice analysis in the Draft EIS. Additionally, commenters questioned why SEA used 1990 census data instead of more recent 2000 census data, and contended that ranchers and farmers should be considered low-income populations. Some commenters indicated that various communities along the rail line, including Rochester, had more recent census data for the particular communities.

Early in the preparation of the Draft EIS, SEA consulted with EPA concerning the methodology SEA intended to use to identify potential environmental justice communities. In this case, two EPA administrative regions are involved, Region 5 for Minnesota and Region 8 for South Dakota and Wyoming. SEA determined that each region uses different criteria for classification of a community as low-income. Region 8 considers individuals at or below the national poverty level as low-income. Region 5 uses 1.5 times the poverty level as the determinant for low-income status because individuals can be above the poverty level but still be struggling financially. SEA requested guidance from EPA on a uniform standard to be used for this project. However, EPA provided no indication of what criteria SEA should use. Therefore, because SEA has used the poverty level standard in the past and because Region 8, which covers the majority of the project area, also uses the poverty level, SEA decided to use the poverty level as the indicator of low-income status in the Draft EIS.

In its comments on the Draft EIS, EPA acknowledged the different criteria applied by Region 5 and Region 8 to identify environmental justice communities. EPA also concurred that one approach should be used to identify low-income populations. But because Region 5's criteria would be more inclusive and thus provide a more conservative analysis, EPA recommended that SEA consider income levels at and below 1.5 times the poverty level as low-income in this case.

⁴⁶ SEA identified a total of 14 environmental justice census block groups in the Draft EIS; however, 10 of these in Pennington County, South Dakota would be crossed by only Alternative D, which has been determined infeasible and dropped from evaluation in this Final EIS.

SEA has conducted additional analysis, as discussed later in this section, using Region 5's low-income criteria for this Final EIS.

Additionally, EPA recommended in its comments that SEA use state percentages for minority and low-income populations rather than the county percentages. EPA indicated that because counties are much smaller areas they may present a relatively homogeneous population, which may not be characteristic of the state as a whole. Additionally, EPA recommended that SEA compare the census block group percentages for minority and low-income populations to 1.5 times the state percentages for these groups. Classification of a census block group as either minority or low-income would be based on the census block group's percentages for these areas being equal to or greater than 1.5 times the applicable state percentage. SEA has conducted additional environmental justice analysis based on EPA's recommendations, as discussed in detail in Appendix N. The results of SEA's analysis pertaining to the Extension Alternatives are discussed later in this section.

In response to comments questioning SEA's use of 1990 census data, SEA notes that it released the Draft EIS in September, 2000, at which time the 2000 census was still in-progress. During printing and distribution of the Draft EIS, the Bureau of Census began to make available preliminary results from the 2000 census. However, these data were generally at the state or county level. SEA's environmental justice analysis requires data at the census block group level, the smallest geographic unit for which both race and income data is obtained. SEA has consulted with the Bureau of Census to determine when census block group data for the 2000 census would be available, and learned that this level of census data would not be available until the summer of 2002 or later.

SEA recognizes that some counties and cities have developed their own estimates or projections of census-type data. However, in order for SEA to conduct a valid environmental justice analysis, the methodology used to develop data for all the affected census block groups, counties, and states must be consistent. Moreover, all data must be for the same sample period. It would not be appropriate for SEA to compare census data estimated or projected for the year 1999 with similar type data projected for the year 1995. The only consistent data set available for the project area in this case is the 1990 census. While SEA recognizes that this data may be somewhat dated, it does provide a useful means of comparison between project alternatives. Therefore, SEA has conducted its additional environmental justice analysis using 1990 census data.

SEA does not believe it would have been appropriate to identify low-income populations by occupation (*i.e.*, ranchers and farmers). Some ranchers and farmers prosper even in difficult economic times for agriculture. Thus, identifying low-income populations by annual income level, as recommended by EPA, is preferable.

SEA's Additional Analysis For This Final EIS. SEA first sought to obtain census data to determine the percentage of persons considered to be low-income (income at or below 1.5 times the national poverty level) for South Dakota, Wyoming, and each census block group crossed by the Extension Alternatives. SEA learned that, in contrast to the number of individuals within each census block considered to be living in poverty, insufficient income data was available to determine the number of individuals living at or below the low-income level. This was due to data on income not being available on an individual basis at the census block group level. However, income data at the census block group level were available at the household level. SEA consulted with EPA and determined that, given the lack of better data, it was appropriate to determine potential low-income census block groups based on the percentage of households at or below the low-income level. Therefore, SEA calculated the percentage of households for each state and census block group that would be considered low-income.

After calculating the percentage of households considered low-income for each census block group and the states, SEA multiplied the state percentage by 1.5 to obtain the percentage level above which EPA recommended that census block groups have environmental justice status. South Dakota was found to have a low-income household percentage of 38.4; Wyoming's was 36.0 percent. Increasing these percentages by 50 percent resulted in percentages of 57.6 and 54.0, respectively. Therefore, a census block group in Wyoming would need to have a percentage of low-income households of 54 percent or greater to be considered environmental justice under EPA's recommendation. Similarly, a census block group in South Dakota would need to have a percentage of low-income households of 57.6 percent or greater to be considered environmental justice under EPA's recommendation. Because these criteria percentages are greater than 50 percent (the criteria SEA applied in the Draft EIS), despite EPA's recommendation, SEA remained consistent with the 50 percent or more criteria applied in the Draft EIS. Moreover, SEA's approach is more conservative for South Dakota and Wyoming than EPA's recommendation. Based on this analysis, SEA determined four census block groups would meet the criteria for classification as environmental justice. These census blocks, one each found in Fall River and Custer counties, South Dakota and Converse and Weston counties, Wyoming, would be crossed by either of the remaining Extension Alternatives.

SEA next calculated the minority population percentage for each state, multiplied by 1.5, and compared it to the minority percentage for each census block group (calculated for the Draft

EIS). Based on this comparison, SEA determined that no census block groups meet the criteria for environmental justice classification due to minority populations.

Following identification of the potential environmental justice communities, SEA conducted additional analysis to determine if these census block groups would be disproportionately affected by the proposed project. This analysis was done according to the methodology discussed in the Draft EIS, Appendix D. Based on this analysis, SEA determined that none of the environmental justice communities crossed by the Extension Alternatives would be disproportionately affected by the proposed project.

While SEA determined that no disproportionate impacts would occur to census block groups identified as environmental justice, SEA concluded that disproportionate impacts could occur to Native American populations, particularly the various Sioux Tribes in South Dakota. In conducting additional analysis on the potential impacts of the proposed project, SEA determined that significant impacts would occur to cultural resources and Traditional Cultural Properties. These impacts would occur mainly to archaeological resources associated with Native American Tribes. Therefore, significant impact to these sites, which are an important cultural and spiritual part of Native American tradition, would result in a significant impact to Native Americans, a minority population.

Throughout the EIS process, SEA has recognized the potential significance of archaeological resources to Native American Tribes. SEA has initiated consultation with over 30 Native American Tribes, and, with the cooperating agencies, has worked with representatives of the Tribes to develop a Programmatic Agreement (PA) and Identification Plan (ID Plan) to address archaeological resources and provide for participation of the Tribes throughout the process of identifying and, if necessary, mitigating, potential impacts to cultural resources.

Additionally, at the suggestion of the Tribes, SEA and the cooperating agencies have worked with the Tribal representatives to develop a Memorandum of Agreement (MOA) intended to ensure that all the issues of importance to the Tribes are addressed. The MOA provides for continual participation by the Tribes in the EIS process, and affords them the opportunity to work with DM&E during project construction and operation to further address Tribal issues and concerns.

In light of the potentially significant impacts to important Tribal resources, SEA has included recommended mitigation conditions requiring compliance with the MOA and PA and that no specific environmental justice mitigation is required due to these measures providing the

interested Tribes continued involvement and input as to the potential impacts and mitigation associated with cultural resources and traditional cultural properties.

3.3 SEA'S FINAL RECOMMENDATIONS

In developing its final recommendations, SEA has taken into consideration the entire range of impacts associated with the Extension Alternatives and the No-Action Alternative. This has presented a complex and complicated task due to the expansive nature of the project, including two states with differing physical characteristics (such as types of wildlife, vegetation, land use, among others), and the variety of resources potentially significantly impacted.

SEA received hundreds of comments on the potential environmental impacts and SEA's conclusions presented in the Draft EIS. Generally, these comments apply to a particular part of the project, for instance the portion in Wyoming or South Dakota. Additionally, many comments, particularly those from state and local agencies, targeted specific resources for which these agencies have management or regulatory responsibility. Ultimately, however, it is SEA's responsibility to evaluate, review, and consider **all** of the impacts to **all** the resources along **all** of the alternatives and develop a **single** recommended alternative.

In this case, each Extension Alternative would have impacts on the environment. Additionally, no one alternative would have the least impact on all the resources evaluated. Also, impacts within a resource category may differ for each alternative. For example, one alternative may have greater impacts on big game but lesser impacts on sage grouse leks, both impacts to wildlife and both important considerations. Such a situation requires SEA to weigh the degree of the environmental impact of each Alternative, viewed as a whole, and the extent to which the impacts are capable of being effectively mitigated.

After careful and thorough consideration of all the available information on alternatives, SEA has developed recommendations for the proposed project. These recommendations address each of the components associated with extending DM&E's existing rail line into the PRB, including:

- overall rail line extension - Alternatives B or C versus the no-action alternative (Alternative A)⁴⁷

⁴⁷ SEA also analyzed an existing transportation corridor alternative (Alternative D) in the Draft EIS. However, as discussed above, Alternative D (and a Modified D Alternative) have since been determined unreasonable and have been eliminated from further consideration.