

CHAPTER 2 – AVOIDANCE, MINIMIZATION, MITIGATION AND MONITORING PLAN

2.1 GENERAL

Through the planning process for the ALP Project efforts were made to avoid impacts where possible. This avoidance concept has been carried through the design process and where possible elements and procedures have been incorporated to minimize environmental impacts to the extent practicable. It will be the responsibility of Reclamation, the construction contractor, the operators of the completed project, and other ALP Project beneficiaries as well as third party entities which include Colorado and New Mexico state agencies, local governments, and private developers to minimize the impacts from project construction and operation. Some commitments, such as monitoring or additional studies, will continue beyond completion of construction of structural facilities.

The non-structural component of the ALP Project (i.e. the \$40 million Resource Fund¹) will be administered by Interior through the Bureau of Indian Affairs. In the event that the Colorado Ute Tribes elect to fund alternative activities, other than that what was assumed in the 2000 FSEIS with the Resource Fund or were to apply for water rights transfer, it would be the responsibility of the Resource Fund's administering agency to determine appropriate environmental protection measures.

The use of ALP Project water by either the Colorado Ute Tribes or other ALP Project beneficiaries, including third-party developers of the non-binding end uses, may result in environmental impacts that would require implementation of avoidance design specifications and mitigation measures. To the extent that Reclamation can require developers of ALP Project water end uses to implement environmental protection elements into design, Reclamation commits to requiring certain measures as discussed in Section 2.2 be implemented. However, all compliance responsibilities and costs associated with end uses development will be the responsibility of the third-party developer.

2.1.1 Project Avoidance/Minimization Measures

The environmental commitments for the project require that certain features be designed to minimize or eliminate impacts and require coordination with the Fish and Wildlife Service (Service) and the Colorado Division of Wildlife (CDOW) for these designs. Also, Reclamation will require the construction contractor(s) to implement management and avoidance/minimization measures to minimize impacts as much as practicable. Many of the

¹ Although described in the FSEIS as an "Water Acquisition Fund", the Colorado Ute Settlement Act Amendments of 2000 (P.L. 106-554) labels it the "Resource Fund".

measures are required in order to comply with federal, state and local laws and regulations, regardless of whether they are specifically identified in the 2000 FSEIS.

2.1.2 Project Compensatory Mitigation

The Project compensatory mitigation program is designed to implement mitigation measures that will compensate for or reduce the level of the unavoidable impacts to the extent practicable as required by laws, regulations and policies. As stated above compensatory mitigation includes development, restoration and enhancement as well as preservation and protection measures.

2.1.3 Project Monitoring

Project monitoring will be used to evaluate the effects of the Project, with an emphasis in verifying the impact analyses disclosed in the 2000 FSEIS. Monitoring will distinguish between construction-related and operation-related effects. Reclamation may adjust its mitigation commitments based on the results of Project monitoring. Therefore, distinguishing Project effects from pre-existing or non-Project effects is essential for the monitoring program. The environmental commitments in Chapter 5 of the 2000 FSEIS (with additional detail supplied in Chapter 3) describe the types of monitoring that will be conducted for the ALP Project.

The primary purpose of the monitoring program is to:

1. Evaluate impacts resulting from the construction and operation of the ALP Project, with an emphasis to verify level of significance as disclosed in the 2000 FSEIS.
2. To gather additional data and to refine existing databases.
3. Evaluate the effectiveness of mitigation measures after they are implemented.

The monitoring program for the ALP Project will include baseline monitoring, effectiveness monitoring, trend monitoring and compliance monitoring.

Baseline monitoring will be used to characterize existing, pre-Project environmental conditions as they pertain to each potentially affected resource. Baseline information will be assimilated from existing data and reports completed for the Project, as well as from other studies conducted in the area that are applicable to the Project. Additional field data may be needed to provide the necessary baseline information for certain disciplines. Establishing an accurate baseline database will be necessary to evaluate Project effects, refine conceptual mitigation into detailed site-specific plans, and to evaluate long-term response to Project operation and mitigation efforts.

Effectiveness monitoring will be used to evaluate whether specific mitigation measures have been implemented correctly and are having the desired results. Specific mitigation criteria will be established to quantitatively determine whether a specific mitigation measure has achieved its desired effect.

Trend monitoring will be used to evaluate the long-term trends of the resources. Trend monitoring is important component for a holistic, ecosystem-based monitoring program, because ecosystems are dynamic and inherently variable in space and time, and because there may be a lag-time in measurable changes due to a particular effect.

Compliance monitoring will be implemented through the administration of the Project's construction contracts. Contractors and subcontractors will be required to comply with all applicable federal, state, and local laws, orders and regulations, concerning water quality, air quality, noise, lighting and hazardous wastes, and comply with all terms and conditions of applicable permits. If there is a conflict between federal, state and local laws, regulations, and requirements, the most stringent shall apply.

The monitoring program is an essential part of the Project. Monitoring provides managers the opportunity to evaluate Project impacts and to identify unanticipated effects before they become problematic to resources. Thus, monitoring is an important tool in adaptive management, in that it provides data on resource response by which to make informed decisions about continued and future operations. Monitoring also provide managers with information on the effectiveness of mitigation measures and the basis to change or modify these measures to achieve the desired results. The monitoring program will maintain the flexibility to adapt to unexpected conditions that may require modifying sampling designs or parameter measurements.

2.2 IMPLEMENTATION OF THE AVOIDANCE/ MINIMIZATION, COMPENSATORY MITIGATION AND MONITORING COMMITMENTS

Specific impacts that may and/or will occur as a result of the construction, development and operation of the Animas-La Plata Project were identified and discussed in Chapter 3 of the 2000 FSEIS. Following is a listing of the significant and potentially significant impacts as identified in Chapter 3, a listing of the minimization and avoidance measures that will be used during project construction and operation to minimize impacts, compensatory mitigation measures that will be implemented for unavoidable impacts, and environmental monitoring measures that will be used during project construction and operation. Attachment A contains a summary of all the environmental commitment, where the commitments can be found in the ALP Project NEPA compliance documents and the status of each commitment as of December 31, 2003. Additional mitigation and monitoring other than what is listed may be added as the project proceeds through construction and into operation.

- 1) **Water Resources/Hydrology** - Construction and operation of the ALP Project will result in an average annual depletion of 57,100 acre-feet (af) from the San Juan River system. Water will be diverted from the Animas River at the Durango Pumping Plant. Pumping rates will vary from 0 to 280 cubic feet per second (cfs), depending on user demand and season of the year. Attachment F in Volume 2 of the 2000 FSEIS shows the affect of project operation on the Animas River. The average annual impact to flow in the Animas River is a reduction in

flow of about 78,100 af per year with some of the return flows returning back to the San Juan River system at locations other than the Animas River equaling out to an average annual depletion of 57,100 af to the San Juan River system. Impacts to existing flow are anticipated in the San Juan River as a result of project operation that would reduce water supply for future Indian trust water uses. Project return flow from non-binding uses could increase flows in the La Plata River in New Mexico in an area that is now water short. Unless these return flows are protected or the depletion of them replaced, downstream depletions would increase above the 57,100 acre-feet per year with subsequent impact to endangered fish flows.

a) Avoidance/Minimization:

i) By Design:

(1) Ridges Basin Reservoir:

(a) Ridges Basin Reservoir will be designed with a minimum (inactive) pool of 30,000 af.

ii) By Operation:

(1) Durango Pumping Plant:

(a) Changes in pumping rates of the pumping plant would be limited and minimum flows would be honored. See **5) Aquatic Resources** below for additional information.

(b) An operation plan will be put in place for the Durango Pumping Plant that will schedule pumping water from the Animas River in a manner to limit impacts to non-Colorado Ute entities ability to obtain water from the San Juan River. Operations will be dependent upon yearly project water demand, type of water year, and flows needed for the endangered fish recovery program in the San Juan River.

(c) For project operation a stream flow gauging station will be constructed on the Animas River a short distance below the intake to the Durango Pumping Plant. The purpose of the gauging station will be to measure the flows in the Animas River below the pumping plant for project operation and to insure bypass commitments are being adhered to.

iii) Other:

(1) When and if Animas La Plata Project water is transported to the La Plata River Basin for municipal and industrial (M&I) purposes, Reclamation will work with state and federal agencies to pursue a method of protecting project water return flow in the La Plata River drainage as a water supply for endangered fish.

2) Water Quality - The water quality of Animas River has been affected by historic mining activities in the headwaters, naturally occurring trace elements, M&I water development and discharges, oil and gas development, agricultural uses, and non-point source return flows. Heavy metal problems continue to persist from early-century mining activities. There is the potential that activities associated with construction of the project could impact the Animas River. Construction of Project facilities could result in temporary increases in suspended sediments loads in Basin Creek and the Animas and San Juan Rivers. Once operation of the project begins, the river could be impacted by having less water in the river for dilution. The

Project will have minimal effects to the water quality of the Animas River. Concentrations of trace elements in the river are predicted to increase by 2 to 3 percent. There is the potential for product spill if one of the gas pipelines in Ridges Basin is converted to a petroleum products pipelines.

a) Avoidance/Minimization:

i) By Design:

(1) Durango Pumping Plant:

- (a) The pumping plant will be designed to allow for the continued unrestricted movement of groundwater on the site. Groundwater levels and quality will be monitored at a series of wells on the site as agreed with the Department of Energy and the State of Colorado in conjunction with Reclamations restricted use plan for the site.
- (b) The pumping plant will be designed to minimize the disturbance of contaminated materials. See **13) Hazardous Materials** for additional information.

ii) General Construction:

(1) All Project Facilities:

- (a) During construction of project facilities a program will be put in place using requirements in permits and best management practices (BMP) to reduce, minimize or eliminate temporary, short term sediment loading to water bodies.
- (b) Stockpiles of fill materials will be placed above ordinary high water marks and protected to prevent erosion of those materials into the waters of the United States.
- (c) Silt screens or other appropriate methods will be used to confine suspended particulates and turbidity to small areas where settling or removal can occur.
- (d) Contractor and subcontractors shall comply with all applicable Federal, State, and local laws, orders, regulations, concerning water quality and comply with all terms and conditions of applicable permits. If there is a conflict between Federal, State and local laws, regulations, and requirements, the most stringent shall apply.

(2) County Road 211 (CR 211):

- (a) Road drainage would be maintained as necessary to keep drainage facilities functional and to prevent unacceptable environmental damage (i.e., rill and sheet erosion and mass failure).

(3) Durango Pumping Plant:

- (a) Measures will be implemented to time construction activities of features in the river to periods of low flow and measures to capture sediment will be employed.
- (b) The duration of placement of fill materials in the river will be minimized to as short a period of time as practicable to reduce the duration of turbidity.
- (c) Temporary cofferdams/berms will be used to contain fine materials and placement of fill materials.

- b) Monitoring: There are three main objectives for monitoring water quality: 1) to evaluate changes in the physical, chemical, and biological characteristics of water that will occur as a result of Project operation, 2) to evaluate the effectiveness of mitigation measures to offset water quality impacts that will result from Project operation and 3) to ensure water quality avoidance and minimization measures for erosion control and stormwater management are employed through the administration of the Project's construction contracts and the measures are being effective.
- i) Animas River: Specific water quality monitoring objectives for the Animas River will be to 1) characterize and evaluate effects to water quality resulting from activities associated with construction of the project, 2) characterize and evaluate effects to water quality resulting from Project pumping at the Durango Pumping Plant, 3) characterize and evaluate effects to water quality resulting from Ridges Basin Reservoir releases via Basin Creek, and 4) provide water quality information for other resource specialists.
 - (1) Sampling in the Animas River has been completed in the past to obtain baseline data. Sampling will continue during the construction of project facilities to evaluate the affect of construction activities and to continue to obtain baseline data. Quarterly water sampling will continue at two sites on the Animas River (32nd Street Bridge on the north side of Durango and at Farmington, New Mexico) for major cations and anions and trace metals. Also two to four suspended sediment samples will be taken during runoff to capture any flush of metals in surface waters from the upper Animas River.
 - (2) Reclamation will develop, with the Southern Ute Indian Tribe and the States of Colorado and New Mexico, and implement a program to monitor water quality in the Animas River from the Durango Pumping Plant to the confluence with the San Juan River for five years after the Durango Pumping Plant begins operation. The program will be developed to monitor compliance with Tribal and state water quality standards and criteria.
 - ii) Durango Pumping Plant Site:
 - (1) Because the site is a former Uranium Mill Tailings Remedial Action Site, regular monitoring of the water removed during dewatering operations will be required. The contractor will be required to prepare and implement, if necessary, a contingency plan for treating the water removed during excavation in the event that groundwater contamination levels exceed anticipated limits.
 - (2) Near the construction site of the Durango Pumping Plant, surface water samples will be taken from the Animas River at three locations (upstream of pumping plant at bridge by U. S. Highway 160/550 intersection, at the pumping plant site, and downstream of the pumping plant site (BMX track) and analyzed for major cations and anions, trace metals, and radiometrics on a monthly basis through the period that the Durango Pumping Plant is being constructed.
 - (3) At the Durango Pumping Plant site observation holes DH-110, -112, -114, -115, -116, and DOE 892 (6 wells) will be sampled quarterly and analyzed for major cations and anions, trace metals, and radiometrics through the period that the Durango Pumping Plant is being constructed. Also, at the Durango Pumping Plant site, the groundwater in the excavation will be sampled for major cations

and anions, trace metals, and radiometrics at 4 locations biweekly or monthly if the groundwater is found to have an electrical conductivity of 1000 micromohes per centimeter or greater.

iii) Ridges Basin Reservoir:

- (1) If a gas pipeline in Ridges Basin is converted to carry petroleum products then a petroleum product monitoring element will be incorporated into the water quality monitoring program for Ridges Basin Reservoir. Refer to **13) Hazardous Materials** (13.a.i.2) for more information on pipeline conversion. See **5) Aquatic Resources** (5.d.i.1) for more detail on the water quality monitoring program in Ridges Basin Reservoir

iv) UMTRA Water Quality Issues:

- (1) Permit requirements and environmental compliance adequacy will be monitored by Reclamation construction inspectors and contractor compliance technicians.
- (2) There is concern that hazardous material located in the Bodo Canyon UMTRA Disposal Site could get into Ridges Basin Reservoir. Refer to **13) Hazardous Materials** (13.b.ii.2) for more detail. To verify if this is or is not happening Reclamation will sample and monitor on a quarterly basis DH-228 and DH-229 (two ground water monitoring well located south of the UMTRA Disposal Site) for indicators parameters including but not limited to molybdenum, selenium, and uranium.

3) Vegetation Resources – Construction of project facilities will impact approximately 1,645 acres of upland vegetation. The construction of Ridges Basin Dam and Reservoir will also impact a total of approximately 121 acres of wetland/riparian and aquatic habitats. This total includes irrigated wet meadow within Ridges Basin as well as wetland/riparian and aquatic habitats associated with Basin Creek, which is an intermittent stream. In addition, approximately 13 acres of wetland/riparian and aquatic habitats will be impacted below the dam site. Construction of facilities such as the inlet conduit and the Navajo Nation Municipal Pipeline (NNMP) and relocation of gas pipelines and transmission lines will temporarily impact additional acreage. Also, the construction of non-binding water end uses and conveyance systems has the potential to impact both wetland/riparian and upland areas. Within the Animas River corridor, construction of the ALP Project will have limited impacts to wetland/riparian habitat. Operation of the Project may have minor effects to wetland/riparian habitat within the Animas River's zone-of-influence.

a) Avoidance/Minimization:

i) By Design:

- (1) The Durango Pumping Plant will be located at an upland location, which will avoid impacts to wetland/riparian habitat areas along the Animas River.

ii) General Construction:

- (1) Wherever practicable, all project facilities will be constructed to avoid or minimize adverse impacts to wetland/riparian habitats.
- (2) Reclamation will insure that construction contractors limit ground disturbance to the smallest feasible area.
- (3) Reclamation will ensure that the construction contractors implement BMPs.

- (a) Reclamation will ensure that the planting of native plants or seeding disturbed areas with native plant seed occurs to assist in the re-establishment of native vegetation.
- (b) Impacts to wetland/riparian habitats that could occur as a result of construction-related sedimentation will be avoided/minimized by the implementation and maintenance of appropriate erosion control measures (i.e., siltation fence, hay bale check dams, temporary settling basins, etc.).
- (4) Unavoidable impacts to wetland/riparian habitat due to the constructing of pipeline crossings for water conveyance will be minimized by burying the structures underground and immediately recontouring and revegetating impacted areas to their pre-crossing condition.
- (5) Wherever practicable, directional boring will be used to avoid disturbance to stream channels. It is anticipated that these temporary impacts to vegetation will be fully reclaimed within two growing seasons.
- (6) Navajo Nation Municipal Pipeline
 - (a) Where feasible, directional boring will be used for river pipeline crossings.
 - (b) Cropland topsoil will be stock piled during construction and replaced back on the croplands after construction is completed. Land will be regraded to original contour.
 - (c) As much as possible, construction to occur during periods when crops are not being cultivated.

b) Compensatory Mitigation:

- i) Uplands - Reclamation will compensate for the loss of approximately 1,645 acres of upland vegetation resulting from the construction of ALP Project features through acquisition, enhancement, and preservation of upland habitat. Acquisition, enhancement, and management plans will be coordinated with the Service, CDOW, and the Colorado Ute Tribes. Wildlife mitigation land will be acquired prior to award of the contract for the construction of Ridges Basin Dam and development will occur concurrently with construction of the dam. Enhancement measures could include, but will not be limited to:
 - (1) Control of Colorado listed noxious weeds as part of an overall integrated vegetation management plan that will also include the wetland/riparian mitigation area.
 - (2) The 120 acres of feed plots in uplands mitigation area (Tract I), formerly grown to attract wildlife, will be maintained for 5 years, and be partially phased out to native grasses each year until 2007, when the plots will have been converted to all native grass cover and will no longer be maintained as feed plots, but rather as natural forage 'clearings'.
 - (3) Fencing out livestock will be completed in 2005. Such fences will be wildlife friendly according to CDOW specifications and will be maintained for the life of the project to ensure forage and cover is maintained for wildlife.
 - (4) Wells in Tract I developed for wildlife purposes will be maintained and repaired as needed on an annual basis to provide water for big game as well as other

wildlife species and shall have such measures as bird and small rodent escape ladders to prevent drowning of these animals in the water structures.

- (5) Access by the public to the uplands mitigation area will be limited to non-motorized traffic only.
- ii) Wetlands - The 134 acres of wetland/riparian habitat that will be lost at Ridges Basin Dam and Reservoir and lower Basin Creek will be mitigated by protection, enhancement and restoration of (approximately) 200+ acres of wetland/riparian habitat which is located within the La Plata River drainage. A detailed description of the wetland/riparian mitigation and monitoring plan including the reporting requirements are provided in Attachment B.
 - (1) La Plata River Mitigation Area:
 - (a) Protection of riparian reaches currently bordered by riparian vegetation dominated by tree and shrub communities that support diverse fish and wildlife habitat will entail the preservation of existing habitat values. In comparison, restoration and enhancement areas will require much greater management in order to achieve the habitat values presently supported by the preservation reaches.
 - (b) Enhancement mitigation actions will occur along river reaches where the stream channel and floodplain will not require reconstruction. Typically, these reaches have stream channels and wetland/riparian vegetation that have been degraded by various land management practices, but have the potential to be rehabilitated without the need of extensive earthmoving. Enhancement measures in this areas will consist of:
 - (i) The removal of livestock grazing from the wetland/riparian habitat along the La Plata River.
 - (ii) The control and management of noxious weeds.
 - (iii)The introduction of desirable vegetation by replanting native and desirable woody and herbaceous species in both restoration and weed control areas.
 - (iv)The control of erosion of denuded streambanks, which will serve to restore riparian functions related to stream energy dissipation, sediment deposition and water quality.
 - (c) Restoration will entail a holistic ecosystem approach to rehabilitate river reaches that are in a straightened or braided condition. Typically, the river channels within these disturbed reaches have very little streambank vegetation and are predominantly riffles with few pools. This restoration will require floodplain and stream channel reconstruction within the river's zone-of-influence at a specific reach.
 - (i) Reconstructed stream channels will have the proper profile, dimension, and pattern to fit the geomorphology of a given section of river valley.
 - (ii) Typically, channel reconstruction will entail the re-establishment of a meandering, self-sustaining stream channel that supports an improved ratio of pools and riffles.
 - (iii)The channel will be integrated into a floodplain that will be naturally flooded on a relatively frequent basis (approximately every 1.5 years).

- (iv) The re-established flood regime will provide the environmental conditions necessary for the recruitment of certain riparian plant species such as cottonwoods and willows.
 - (v) The net result will be the holistic restoration of a dynamic, self-sustaining wetland/riparian ecosystem.
 - (d) Reclamation will ensure the protection of the existing and newly established riparian functions and values for the life of the ALP Project by controlling access, monitoring and applying restrictions to use of the mitigation area and other measures as deemed necessary.
- c) Monitoring: In order to establish a baseline Reclamation has inventoried and mapped wetland/riparian communities within a 1-mile wide corridor along the Animas and La Plata Rivers. Also, Reclamation completed an analysis for the wetland/riparian communities located within the construction limits of Ridges Basin Dam and Reservoir and along Basin Creek.
- i) Animas River:
 - (1) Within the Animas River corridor, construction of the Project will have limited impacts to wetland/riparian habitat. Most impacts will be temporary, resulting from the construction of buried water conveyance structures. The effectiveness of the avoidance/minimization measures, to protect wetland/riparian habitat from construction-related erosion and sedimentation and to revegetate temporarily disturbed wetland/riparian habitat, will be monitored through the administration of Project's construction contracts stipulation and permit requirements.
 - (2) Operation of the Project may have minor effects to wetland/riparian habitat within the river's zone-of-influence including reduced cottonwood recruitment. Reclamation will monitor the Animas River riparian corridor to help determine any affect of the pumping regime on these downstream resources. The objectives of the monitoring will be to evaluate whether flow reductions affect the hydrological conditions supporting wetland/riparian habitat and/or the fluvial geomorphic processes necessary for the recruitment and persistence of wetland/riparian plant communities within the river's zone-of-influence. Before Project pumping begins more up-to-date baseline information will need to be obtained. Sampling stations will be placed within the zone-of-influence within delineated river segments. Wherever possible, monitoring areas will overlap with those for other resources. Once Project operation begins, sampling will be conducted on a three to five year interval until trends in the vegetation can be established.
 - ii) Upland Habitat:
 - (1) Monitoring of this area will take place to determine if enhancement measures (to increase carrying capacity) on the mitigation property are being successful and to evaluate uplands mitigation success. Annual visual assessments will be made along roads, trails, fence lines and at wells to evaluate functionality of each feature and ensure to that weed control is effective and native vegetation establishment is still viable. Reclamation will prepare an annual summary progress report for the uplands habitat enhancement work. Once enhancement

measures are complete Reclamation will prepare a summary report that describes the condition of the uplands habitat mitigation and the relative success achieved by the enhancement measures.

iii) La Plata River Wetlands/Riparian Area:

- (1) The wetlands/riparian mitigation area monitoring started in 2002 and monitoring will continue on a yearly basis through the time when Ridges Basin Reservoir is being filled and for a 5-year period after reservoir filling to monitor progress of the wetland/riparian mitigation program and to ensure the continued success of the wetlands/riparian mitigation area. The purpose of the monitoring started in 2002 was to obtain baseline conditions before restoration and enhancement measures are initiated and future monitoring will be to track the effectiveness of the mitigation measures. Chapter 4 of the Animas-La Plata Project Wetlands/Riparian Mitigation and Monitoring Plan (Attachment B) contains additional information on the monitoring plan, success criteria, and reporting requirements for the Wetlands/Riparian mitigation for the ALP Project. Refer to this reference for details on the specific objectives, monitoring criteria and variables, monitoring area, and monitoring period for the La Plata River wetlands/riparian area. Reclamation will prepare an annual summary progress report for the wetland/riparian work. Upon the completion of the subsequent 5-year monitoring period (five years after reservoir filling) Reclamation shall prepare a summary monitoring report that describes the condition of the wetland/riparian mitigation area relative to the mitigation success criteria.

- 4) **Wildlife Resources** – Construction of Ridges Basin Dam and the inundation of Ridges Basin and other direct and indirect losses will result in the loss of approximately 2,700-2,900 acres of wildlife habitat. The 2,700-2,900 acres include the approximately 1,645 acres of upland vegetation as reported under Vegetation Resources. Also, the construction of the gas pipeline relocation corridor, relocation of County Road 211, relocation of transmission lines and recreation development will have a temporary adverse impact to wildlife. Once constructed, County Road 211 and the recreation areas (if constructed) will reduce the use of the area by wildlife and the increased use of the areas around the reservoir by humans will disrupt deer and elk habitat utilization and behavior. Construction of project facilities including possible recreational facilities and the relocation of gas pipelines, County Road 211 and transmission lines could impact nesting of golden eagles on Carbon Mountain. Also, development of Ridges Basin Reservoir and associated recreation area will increase use of the general area and could disturb nesting of golden eagles on Carbon Mountain. Construction of non-binding end uses and water conveyance pipelines could result in the loss of 20 to 300 acres of wetland and wildlife habitat. Construction activities, including noise and human intrusion, could result in short-term disturbance to wildlife security.

a) Avoidance/Minimization:

i) By Design:

- (1) CR211 and Recreational Facilities:

- (a) Reclamation will ensure that recreational facilities and the new alignment of CR 211 are sited in such a way to minimize the disruption of deer and elk habitat utilization and behavior.
 - (2) Power Transmission Facilities:
 - (a) All over head power transmission will be designed and constructed raptor proof.
- ii) General Construction:
 - (1) All construction activities will be scheduled and coordinated logistically to avoid or minimize wildlife impacts wherever practicable. For example, an approximate one-quarter-mile buffer zone will be established around existing golden eagle nest sites from winter through mid-summer (December 1 through July 15) to avoid or minimize disturbance during the nesting period where possible.
 - (2) Additional measures to avoid/minimize impacts to golden eagles and other raptors will be coordinated with specialists from the Service and the CDOW.
 - (3) Reclamation will avoid impacting migratory bird to the extent possible by conducting land clearing in the non-breeding season (August 1st through April 1st). If vegetation clearing must take place between April 1st and August 1st and there is the possibility of migratory birds “of Conservation Concern” nesting/occupying the site needing to be cleared, surveys will be conducted. If nesting birds are found, procedures will be put in place to avoid the nesting birds as much as practicable.
 - (4) Construction specifications will include noise, traffic, and human use restriction to minimize disturbance to wildlife near the construction zones.
- b) Compensatory Mitigation:
 - i) To mitigate the loss and indirect loss of wildlife habitat Reclamation will mitigate the loss through the purchase, enhancement and management of approximately 2,700 -2,900 acres of suitable land. The actual amount of land to be purchased will depend upon the potential wildlife value of the lands acquired. The wildlife mitigation lands will be managed for wildlife and other uses will not be allowed if it is determined that they will interfere with the wildlife habitat benefits. See **3) Vegetation Resources** (3.b.i) for more information on the enhancement measures that will be completed.
- c) Monitoring:
 - i) Monitoring of the wildlife habitat area will take place to determine if enhancement measures (to increase carrying capacity) on the mitigation property are being successful and to evaluate uplands mitigation success. See **3) Vegetation Resources** (3.c.ii) for more information on monitoring that will be conducted on the wildlife mitigation land.
 - ii) Golden Eagles in Ridges Basin - There are three known golden eagle nests on the face of Carbon Mountain in Ridges Basin. These nests are probably associated with a single pair of nesting eagles. Golden eagle mating and nesting begins in the winter and ends in mid-summer when young eagles have fledged. Mating and

nesting eagles are known to be sensitive to human disturbance. The relocation of natural gas pipelines in Ridges Basin, as well as other construction activities, will be in close proximity to the nest sites and could potentially affect nesting success. Buffer zone and seasonal restrictions are included in construction specifications. The effectiveness of measures to avoid/minimize construction-related disturbances to golden eagle nest sites will be monitored. The objective of golden eagle monitoring will be to: 1) evaluate affect of construction activities on golden eagle nesting activities and 2) evaluate the effects of post-construction recreational use in Ridges Basin on nesting golden eagles. During the monitoring periods, weekly monitoring reports will be transmitted to the Service and the CDOW.

- (1) Monitoring variables will include those requirements as set out in the golden eagle monitoring plan as agreed to with the Service. Other variables will be identified, as needed, to evaluate the long-term effects of recreation within Ridges Basin to nesting golden eagles. These variables may include eagle presence or absence, mating activity, nest condition and use, fledgling success, etc. The monitoring area will encompass the three known golden eagle nest sites on Carbon Mountain. Golden eagle monitoring will be completed during the mating and nesting period, which begins in winter and ends in mid-summer when young eagles have fledged.

5) Aquatic Resources – Decrease in aquatic habitat due to chronic flow depletions in the Animas River due to Project Pumping could adversely affect the carrying capacity for trout. Also, reductions in flow in the Animas River would reduce physical habitat affecting the carrying capacity of the river to support native fish. The introduction of trace elements into Ridges Basin Reservoir from the Animas River could lead to the bioaccumulation of these elements into the food chain. Operation of Ridges Basin Reservoir is not expected to result in levels of trace elements harmful to aquatic life. However, because of bioaccumulation in the aquatic food web, mercury levels in the reservoir could represent a hazard to bald eagles. Stocked fingerling trout and native fish fry and fingerlings could be entrained or impinged on intake screens at the Durango Pumping Plant. Stocked fingerling trout and native fish fry and fingerlings could be stranded downstream of the Durango Pumping Plant if pumping rates are not staged. Populations of native fish in the Animas and San Juan Rivers and endangered fish in the San Juan River could be reduced by competitive interaction with non-native fish species escaping from Ridges Basin Reservoir.

a) Avoidance/Minimization:

i) By Design:

(1) Durango Pumping Plant:

- (a) Reclamation will review and adopt established guidelines for screening facilities to minimize fish entrainment and impingement at the Durango Pumping Plant. Best available technology will be adopted at the time of construction. Screening facilities will be installed at the Durango Pumping Plant to minimize fish entrainment and impingement.

- (b) A fish bypass pipeline will be placed at the end of the fish screens to convey fish back to the Animas River below the intake to the Durango Pumping Plant.
- (2) Ridges Basin Reservoir:
 - (a) Ridges Basin Reservoir will be design with a minimum operating pool of 30,000 af to conserve populations of stocked trout in the reservoir.
 - (b) Ridges Basin Dam outlet facilities will be designed and constructed to prevent escapement of nonnative fish that might compete with native fish in the Animas and San Juan Rivers and other area waterways. From the Biological Opinion – *Reclamation will implement all actions necessary to prevent escapement of nonnative fishes from Ridges Basin Reservoir in any water leaving the reservoir. Reclamation will consider the escapement of eggs and larvae in the design of an escapement devise or method.*
- ii) General Construction:
 - (1) Ridges Basin Dam:
 - (a) As part of construction, vegetation in Ridges Basin Reservoir basin will be largely cleared to reduce the magnitude of productivity and reduction potential (methylated mercury) once the reservoir is filled. If significant bioaccumulation effects are determined, Reclamation will work with the appropriate local, state and federal agencies to either minimize the impact or otherwise offer protection to potentially impacted fish and wildlife species and to possibly post human consumption advisories. Trout will be the only fish stocked in Ridges Basin Dam.
- iii) By Operation:
 - (1) Durango Pumping Plant:
 - (a) Changes in pumping rates of the pumping plant are not to exceed 50 cfs per hour increase and 100 cfs per hour decrease when flows in the Animas River are above 500 cfs. When river flows are below 500 cfs increases in pumping rates will not exceed 25 cfs per hour and decreases in pumping will not exceed 50 cfs per hour.
 - (b) Reclamation will honor minimum bypass flows for the Animas River, as measured immediately downstream of the Durango Pumping Plant. The purpose of the bypass flows will be to avoid/minimize flow-related impacts to aquatic (including trout and native species) and wetland/riparian habitat resources. Bypass flows will vary according to season of year, and will remain in effect throughout the life of the Project. The minimum bypass flows for the Animas River will be:
 - (i) 225 cfs from April 1 to September 30,
 - (ii) 160 cfs from October 1 to November 30,
 - (iii) 125 cfs from December 1 to March 31.
 - (c) There will be no flow augmentation provided by the Project other than Project return flows and Project releases down Basin Creek for Project water users downstream.
 - (d) If it is concluded that operation of the Project is having significant adverse impacts to the downstream aquatic ecosystem, Reclamation will make every

reasonable effort to modify Project operations to either reduce or eliminate the impacts.

(2) Ridges Basin Reservoir:

- (a) Only Trout will be stocked in Ridges Basin Reservoir

b) Enhancement:

i) Ridges Basin Reservoir:

- (1) Reclamation will fund the stocking of trout in Ridges Basin Reservoir to enhance recreational opportunities at the reservoir.

c) Compensatory Mitigation:

i) Animas River:

- (1) In 2000, investigations were initiated to determine whether or not fish barriers exist, whether small fish /young of the year are lost through entrainment in canals, and whether effects to trout fishery may occur. A recommendation for mitigation on possible effects to native fish will be made by 2005. Once the recommendation is approved by Service, CDOW, NMG&F, and possibly the Southern Ute Indian Tribe (SUIT), its implementation will begin immediately.
- (2) Reclamation will fund the acquisition and stocking of wild trout strains within the boundaries of the Southern Ute Indian Reservation to compensate for fish loss due to the reduction in usable trout habitat. A detailed monitoring plan to assess the success of stocking efforts will be developed in cooperation with the Service, CDOW, New Mexico Department of Game and Fish (NMDGF), and the SUIT. The relative success of this effort will be assessed after four years. If it is deemed a success--that is, if the trout biomass within the stocked reaches of the river is elevated to a point of supporting a recreational fishery-- the stocking program will continue. For the acquisition of trout stock, Reclamation will investigate obtaining trout stock from existing hatcheries and/or consider the development of a new hatchery in cooperation with the Southern Ute Indian Tribe and others. The same hatchery could also be utilized for providing the fish for Ridges Basin Reservoir.
- (3) Reclamation will acquire at least two new public access points (expend up to \$500,000) on the Animas River for fishing and other recreation use. Refer to **10 Recreation** (10.b) for more information on access points.

d) Monitoring - Within the Project area, rivers support several species of native fishes, including flannelmouth sucker (*Catostomus latipinnis*), bluehead sucker (*Catostomus discobolus*), roundtail chub (*Gila robusta*), speckled dace (*Rhinichthys osculus*), and mottled sculpin (*Cottus bairdi*). These species are reduced in numbers and distribution throughout the Colorado River Basin. Within the Project area, the Animas River also supports a recreational fishery of stocked rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), and Snake River cutthroat trout (*O. clarki*).

i) Ridges Basin Reservoir:

- (1) There is a concern that the introduction of trace elements into Ridges Basin Reservoir from the Animas River could lead to the bioaccumulation of this

elements into the food chain. Once Ridges Basin Reservoir is filled there is the potential of bioaccumulation of trace elements in fish in reservoir. Reclamation will develop and implement a monitoring program at Ridges Basin Reservoir to determine the extent of bioaccumulation of trace elements in fish within the reservoir. The program will last four consecutive years and be initiated two years after the reservoir is filled. Reservoir water quality variables to be monitored include but not limited to:

- (a) dissolved oxygen, temperature, pH, conductivity, salinity, etc.
- (b) nutrients and trace elements in water at various reservoir depths
- (c) trace elements in sediments
- (d) trace elements in bald eagle food items

- (2) Fish tissue will be taken periodically during the four years from various species and analyzed for trace elements to assess the potential for bioaccumulation. Tissues will be taken from fish collected from various locations in the reservoir, but inflow areas may be targeted, depending on suspected sources of trace elements. These analyses will also be compared to standards for human consumption.
- (3) Reclamation will monitor water leaving Ridges Basin Reservoir through the dam outlet facilities to determine if escapement of nonnative fishes is occurring. If escapement is occurring, Reclamation will develop and implement a plan to stop escapement. The plan will need to be approved by the Service prior to its implementation. If it is determined that escapement is not occurring monitoring will be discontinued.

ii) Animas River:

- (1) The Durango Pumping Plant will divert water from the Animas River and possibly entrain young fish at the plant's intake structure. Flow reductions will result in a concurrent reduction in river stage that could dewater shallow nursery areas used by young fish and reduce available habitat of adults. This may result in long-term impacts on fish population numbers and age structure. The Durango Pumping Plant intake structure will be monitored to quantify numbers of young fish potentially entrained by the operation of the pumping plant.
- (2) Monitoring studies of project-affected waters on the Animas River will be implemented prior to and continue for at least four years after project operations begin. The purpose of these studies will be to better define the native fishery, to obtain a better understanding of native sucker recruitment, and to monitor the trout populations.
 - (a) Downstream areas will be monitored to assess changes to shallow nursery habitat resulting from river stage reduction attributable to Project operation. Young fish will be concurrently sampled in these habitats to determine their presence and relative abundance.
 - (b) The potential effect of reduced nursery habitat will be determined for native fish populations by evaluating long-term demographic patterns (e.g., fish species abundance, length composition, age structure, etc.). Additionally, the condition and health of native fishes and stocked trout will be assessed to determine water quality effects.

- (c) The success of the trout stocking program will be determined by estimating population numbers and biomass of trout annually. Refer to section c.2 above for more information on the trout stocking program.
 - (d) The window for sampling fish in the Animas River with conventional raft electrofishing is a relatively short time period during the summer, following spring runoff and prior to the usual late-summer rainstorms. This allows sampling to be conducted when the river is navigable and when sampling techniques are effective. Other sampling, such as for young fish in nursery areas, may occur outside of this window or as needed.
- e) Other:
- i) Reclamation will fund a detailed evaluation of Ridges Basin Reservoir's expected limnological conditions to determine if water pumped to Ridges Basin Reservoir needs to be delivered at an elevation below the thermocline. This activity will be completed in coordination with the Service as part of the design data collection activities.
- 6) **Special Status Species** - Construction of project facilities could potentially affect the food base of bald eagles. Construction of the Navajo Nation Municipal Pipeline could impact southwestern will flycatcher nesting habitat at two crossings of the San Juan River. The operation of the ALP Project without offsetting measures could adversely affect the Colorado pikeminnow and razorback sucker in the San Juan River. Survival and recovery of endangered fish in the San Juan river could be jeopardized by competitive interaction with non-native fish released from Ridges Basin Reservoir to the Animas River. As stated in **5) Aquatic Resources** operation of Ridges Basin Reservoir is not expected to result in levels of trace elements harmful to aquatic life. However, because of bioaccumulation in the aquatic food web, mercury levels in the reservoir could represent a hazard to bald eagles. Many of the impacts in this section are also covered under the **4) Wildlife and 5) Aquatic Resource** sections.
- a) Avoidance/Minimization:
- i) By Design:
 - (1) Ridges Basin Dam:
 - (a) As stated under the **5) Aquatic Resource** section, because of the potential of escapement of nonnative fish from Ridges Basin Ridges Reservoir that might complete with native fish in the Animas and San Juan Rivers, the Dam outlet facilities will be designed to prevent escapement of nonnative fish.
 - (b) Wildlife and wetland/riparian areas should provide high quality protected habitat for species such as willow flycatcher and bald eagle.
 - ii) General Construction:
 - (1) Ridges Basin Dam:
 - (a) The contractor(s) shall cooperate with and abide by protection plans developed by or with appropriate state and federal entities to minimize to the extent reasonable all damage to, or disturbance of protected species. These protection plans include, but are not limited to:

- (i) Minimize noise and visual impacts to the extent practicable within the area designated for construction of the closest existing or new golden eagle nest during the period of December 1 and July 15 of any year.
 - (ii) Take all reasonable measures to preclude construction personnel activity on Carbon Mountain during the nesting period. Under no circumstances should an employee approach a nest site, an active nest, an eagle or an eaglet. Design blasts to minimize all fly rock from projecting toward the existing nests. The contractor shall limit blasting to between the hours of 12:00 p.m. to 3:00 p.m. unless otherwise approved by the Contracting Officer.
 - (iii) Preclude any construction operations to the extent practicable within an approximate 3 mile radius of the active nests during the period of eagle nesting. The exact period of this nesting is unknown. However, it is assumed this period will be between December 1 and July 15 of any year. This period will be firmly defined at the time of construction by the Contracting Officer in consultation with the Fish and Wildlife Service. Should it be determined by the Government that construction operations do not have any negative impacts or impacts that cannot be avoided, such operations will be allowed to proceed throughout this period.

- b) **Compensatory Mitigation:** Reclamation will implement the conservation measures, which include mitigation and monitoring, found in the ALP Biological Opinion issued by the Service on June 19, 2000. The measures address the Colorado pikeminnow, razorback sucker, and bald eagle. The conservation measures can be found in Attachment C.

- c) **Monitoring:**
 - i) **Outflows from Ridges Basin Reservoir:**
 - (1) Reclamation will monitor any water leaving Ridges Basin Reservoir to determine if escapement of nonnative fishes is occurring. Refer to the **5) Aquatic Resources** section for more details on the design of Ridges Basin outlet facilities and monitoring of water being released from Ridges Basin Reservoir
 - (2) The Conservation measures found in Attachment C also contains monitoring measures which Reclamation will implement.

- 7) **Geology and Soils** – Seismic events within the areas that facilities would be located would not be expected to be of a magnitude greater than the design of facilities could withstand. Rapid filling and discharges from the Ridges Basin Reservoir could cause reservoir-induced seismicity. Wave action and rapid reservoir surface elevation changes could cause sedimentation and erosion along the shorelines of Ridges Basin Reservoir. Dewatering for construction of Ridges Basin Dam and filling of the reservoir could increase the natural seepage and surface release of coal-bed methane. Ground disturbance during construction of structural and non-binding components would expose soils to potential increases in wind and water erosion and increase risk of slope instability.

- a) Avoidance/Minimization:
 - i) By Design:
 - (1) Ridges Basin Dam:
 - (a) Design specifications will require design performance of Ridges Basin Dam to withstand a maximum credible earthquake for seismic sources in the vicinity of the Ridges Basin Dam site.
 - (b) Reclamation will develop a program for filling Ridges Basin Reservoir to reduce potential for induced seismic impacts.
 - (c) Reclamation will develop an engineered process plan to limit, control and manage dam site methane gas releases during construction.
 - ii) General Construction:
 - (1) Ridges Basin Dam, Durango Pumping Plant, Inlet Conduit, Navajo Nation Municipal Pipeline:
 - (a) Construction contractors of Project facilities and end-use facilities will utilize erosion control guidelines and BMP to control soil erosion.
- b) Monitoring:
 - i) Ridges Basin Dam and Reservoir:
 - (1) General Construction:
 - (a) The construction contractor will be required to monitor methane seepage during dam construction. Refer to **17) Public Health and Safety** (17.b) for more information.
 - (2) By Operation:
 - (a) A facilities operation program will be developed for the operation of the project. That program will include a monitoring plan for the shoreline of Ridges Basin Reservoir to detect landslides and slumping. Reclamation will provide for public notification and control public access in areas where a high landslide and slumping potential exists.
 - (b) Reclamation will monitor the Ridges Basin Dam area for gas releases during project operation.
 - (c) Reclamation will develop a program to reduce erosion and sedimentation resulting from reservoir filling and drawdown rates.

8) Cultural and Paleontologic Resources - Significant Historic properties would be adversely affected. Construction activities associated with the structural components and inundation of Ridges Basin could disturb or destroy cultural resources eligible for inclusion in the National Register of Historic Places (NRHP); operation and recreation activities associated with Ridges Basin Reservoir would create potential for disturbance of cultural resources eligible for inclusion in the NRHP; and construction disturbance and other activities associated with the land acquisition, the potential end uses and conveyance systems would create potential for disturbance and increased public access to cultural resources eligible for inclusion in the NRHP. Construction activities associated with the structural components and inundation of Ridges Basin; operation and recreation activities associated with Ridges Basin Reservoir; and

construction disturbance and other activities associated with the land acquisition, the potential end uses, and conveyance systems could result in adverse impacts to exposed human remains and sacred sites. Construction activities associated with the structural components and inundation of Ridge Basin could disturb or destroy fossils of scientific significance from the Late Cretaceous and Early Cenozoic age and operation and recreation activities that would be associated with Ridges Basin Reservoir would create potential for disturbance of important paleontologic resources within Ridges Basin.

a) Avoidance/Minimization:

i) By Design:

(1) All Project Facilities:

(a) The preferred mitigation will be avoidance, and in-place stabilization.

ii) General Construction:

(1) Ridges Basin Reservoir:

(a) A paleontological survey of all properties to be disturbed will be conducted prior to construction. Area underlain by Animas, Kirtland, Fruitland, and Picture Cliff sandstone/foundation will be surveyed prior to construction. Areas underlain by Lewis Shale will be spot checked following construction and prior to filling. The project paleontologist will be notified immediately if fossils are uncovered during construction.

b) Compensatory Mitigation:

i) All Project Facilities:

(1) Mitigation measures under the National Historic Preservation Act (NHPA)

include a program to compensate for effects to archaeological sites that occur as a result of construction, operation, and recreational use of Ridges Basin Reservoir, construction of the Navajo Nation Municipal Pipeline, development of mitigation lands, activities associated with land acquisition, potential end uses, and the construction of conveyances and any other project facilities. The program would be undertaken in coordination with the Colorado and New Mexico State Historic Preservation Officers and the Advisory Council on Historic Preservation. The program consists of recovery (archaeological excavation), analysis, technical publication, cultural resource preservation plan development and implementation, and providing for storage and curation for permanent maintenance of the artifact collection and other related information. In addition to the scientific value, this program is to produce information of considerable public interest.

(2) To address adverse impacts to exposed human remains, a Native American Graves Protection and Repatriation Act (NAGPRA) Plan has been prepared and is being followed. The plan describes the procedures that would be followed in the event that human remains or cultural items are encountered during the course of project activities, and consultation with concerned Indian Tribes.

(3) Educational programs and public access to excavations will be part of mitigation plan.

- (4) Within 2 years of completion of Ridges Basin Reservoir, Reclamation will develop a Cultural Resource Management Plan (CRMP) to provide long term management of cultural and historical properties which will include:
 - (a) Provision for in-place preservation.
 - (b) Management of future recreational development.
 - (c) Operation & maintenance of facilities.
 - (d) Public interpretation and public involvement.
- c) Monitoring:
 - i) General Construction:
 - (1) Construction and development activities will be selectively monitored to ensure that in-place preservation objectives and NAGPRA and NHPA compliance is achieved
 - ii) By Operations:
 - (1) Ridges Basin Reservoir:
 - (a) The shoreline will be periodically monitored for cultural and paleontologic resources as part of facilities operations.

9) Agriculture - No significant impact were identified for agriculture, however some avoidance measures will be taken.

- a) Avoidance/Minimization:
 - i) By Design:
 - (1) Navajo Nation Municipal Pipeline (NNMP):
 - (a) The NNMP will be designed and located in such a way that it will avoid and protect agricultural lands to the maximum extent practicable. Consultation with the Navajo Nation will occur before final alignment is determined.
 - ii) General Construction:
 - (1) Navajo Nation Municipal Pipeline:
 - (a) If possible construction of the pipeline within agricultural areas will occur outside of the agricultural production time.

10) Recreation - Operation and presence of the Durango Pumping Plant would adversely affect the quality of the private boating experience for some local users of the Animas River.

- a) Avoidance/Minimization:
 - i) By Design:
 - (1) Durango Pumping Plant:
 - (a) The Durango Pumping Plant will be designed to blend into the natural land form to the extent practicable. Design elements will blend with the surrounding land forms, colors and lines occurring on the west side of the river. Revegetation will be done with native species. Blending of the pumping plant will be in cooperation with the City of Durango. Noise

reduction will be provided in the form of sound insulation within the pumping plant and vegetative screening designed as part of site landscaping.

ii) By Operation:

(1) Durango Pumping Plant:

- (a) Reclamation will pursue a pumping regime to reduce adverse effects on boating in the Animas River such as altering pumping regimes during competitive events to minimize affect of pumping on the event.

b) Compensatory Mitigation:

i) River Recreation:

- (1) Although it was determined in the 2000 FSEIS that the impact of the reduction of flows in the Animas River caused by the operation of the Durango Pumping Plant was less than significant to river rafting and boating activities, Reclamation will provide funding (not to exceed \$500,000) for the acquisition of public access at a minimum of two points on the Animas River between the High Bridge (located on U.S. Highway 550/160) and the confluence of Basin Creek as part of both the fishery and recreation mitigation program.

11) Socioeconomics - No significant impacts were identified for socioeconomics.

12) Land Use – Increased recreation within Ridges Basin could increase violations of Colorado Division of Wildlife (CDOW) restrictions within Bodo State Wildlife Area and could reduce the rural quality of the surrounding area; however, no specific environmental commitments were made for Land Use.

13) Hazardous Materials – Construction of the Durango Pumping Plant could expose contaminated materials. Hazardous materials used for the construction of the Durango Pumping Plant and Ridges Basin Dam could cause stream pollution. There is the potential for hazardous materials located in the Bodo Canyon UMTRA Disposal Site to impact Ridges Basin Reservoir. A number of the impacts stated in this section have already been discussed in the Water Quality section and some of the avoidance/minimization and mitigation measures are repeated in this section.

a) Avoidance/Minimization:

i) By Design:

(1) Durango Pumping Plant:

- (a) The pumping plant will be designed to allow for the continued unrestricted movement of groundwater on the site. See **2) Water Quality** (2.a.)
- (b) The pumping plant will be designed to minimize the disturbance of contaminated materials. Procedures will be developed for radiological monitoring of excavated soils and groundwater encountered and remedial

procedures will be planned in advance to counteract the potential for human exposure and for the prevention of contaminated groundwater releases from the construction site. The human exposure to contaminated soils and the potential for release of contaminated groundwater from the site will be mitigated by the following measures:

- (i) Review remediation reports and current monitoring data to understand existing subsurface conditions in respect to radioactive material.
 - (ii) Obtain preconstruction soil and water samples at site for lab testing.
 - (iii) Develop site safety and health management plan with radiation protection for workers and public.
 - (iv) Develop construction plan to deal with hazardous conditions of excavated soil and groundwater.
 - (v) Utilize analytical data to design treatment system for contaminated water.
 - (vi) Receive Colorado Discharge Permit for treated water.
 - (vii) Pumping plant design and construction management plan are to be approved by Environmental Protection Agency and state regulatory agencies.
- (c) The construction contractor will be required to implement a construction safety plan which will include procedures for radiological monitoring of excavated soils and groundwater encountered and that remedial procedures are planned in advance to counteract the potential for human exposure and for the prevention of contaminated groundwater release from the construction site.
- (2) Gas Pipelines Relocation:
- (a) In order to avoid adverse effects to surface waters and ground water in the project area, as well as impacts to endangered species from petroleum products spills, Reclamation will implement or have implemented the following measures that will apply to the 10-inch diameter Mid-American Pipeline Corporation (MAPCO) if it is converted to a petroleum products pipeline:
 - (i) BMPs will be used by crews to minimize spills of hazardous materials during construction that could get into water ways.
 - (ii) Spill avoidance technology will be implemented to minimize the risk of a spill in the petroleum product line.
 - (iii) Appropriate technology will be implemented to minimize the volume of a spill from the petroleum product line.
 - (iv) An Emergency Response Plan for operations will be developed that details measures to contain spills and prevent further disposal.
 - (v) A petroleum product monitoring element will be incorporated into the water quality monitoring program for potential adverse bioaccumulation of trace element in bald eagle food items in Ridges Basin Reservoir.
 - (vi) Periodic surface and/or aerial inspections will be conducted along the pipeline corridor and the Ridges Basin Reservoir shoreline to provide early detection of small leaks that go undetected by small pressure loss in the pipeline.

- ii) General Construction:
 - (1) Ridges Basin Dam and Reservoir, Inlet Conduit, Gas Pipelines Relocation, Durango Pumping Plant and CR 211 Relocation:
 - (a) Prohibit contractors from disturbing the Bodo Canyon UMTRA disposal cell.
 - (b) Requirements to follow for handling and management of hazardous materials, mixed wastes and radioactive wastes will be included in all construction specification.
 - (c) Ensure that the construction contractor(s) adhere to all federal and state requirements pertaining to the management and handling of hazardous materials, mixed waste, and radioactive waste.

b) Monitoring:

- i) Durango Pumping Plant:
 - (1) The hazardous material of greatest public concern in relation to the project is radioactive waste from historical uranium processing that may be found in soil and groundwater which could be disturbed by project construction activities. Groundwater levels and quality will be monitored at a series of wells on the site as agreed upon with the Department of Energy and the State of Colorado in conjunction with Reclamations restricted use plan for the site. Details of water quality monitoring at the Durango Pumping Plant construction site can be found in the **2) Water Quality** (2.c.ii).
- ii) All Project Facilities:
 - (1) With construction activities hazardous materials will be brought onto the construction sites. Permits requirements and environmental compliance adequacy will be monitored by Reclamation construction inspectors and contractor compliance technicians
 - (2) There is concern that hazardous material located in the Bodo Canyon UMTRA Disposal Site could get into Ridges Basin Reservoir. To verify if this is or is not happening Reclamation will sample and monitor on a quarterly basis DH-228 and DH-229 for indicators parameters including but not limited to molybdenum, selenium, and uranium.

14) Transportation – Increased delays at the intersection of west frontage road and CR 211 and the intersection of U.S. highway 550/160 could result from construction worker peak hour commute trips during the construction of the structural components of the ALP Project. Physical degradation of CR 211 could also occur as a result of construction vehicle traffic associated with construction of the structural components of the ALP Project.

a) Avoidance/minimization:

- i) General Construction:
 - (1) Ridges Basin Reservoir:
 - (a) Reclamation will a conduct a traffic survey and if determined necessary, the contractor will implement methods to reduce construction traffic impact

(methods such as busing workers from a remote location, offset time for shift changes, etc).

(2) CR 211:

- (a) During construction of the structural components of the Project, Reclamation will ensure that the construction contractor maintain CR 211 according to guidelines as laid out in the 2000 FSEIS which are:
 - (i) The traveled roadway will be maintained to provide for a moderate degree of user comfort and convenience and to protect the county's investment and resource value. Surfacing, where present, would be replaced to the depth required for blade maintenance and to prevent wear of the base course. Dust would be abated using water trucks making regular passes as needed to suppress dust. A dust and surface palliative would likely be applied and maintained.
 - (ii) Road drainage would be maintained as necessary to keep drainage facilities functional and to prevent unacceptable environmental damage (i.e., rill and sheet erosion and mass failure).
 - (iii) Roadway slides and slumps would be repaired or removed to provide passage by prudent drivers in standard passenger cars and to allow unimpeded travel by construction truck traffic.
 - (iv) Road side litter would be cleaned in accordance with road management objectives. Hazards would be abated as needed with minimal environmental damage.

(3) Recreational facilities

- (a) Any third party developer of recreational facilities in the Ridges Basin Area will be required to conduct traffic engineering impacts analysis and to mitigate facility impacts according to state and county standards. Associated costs will be the responsibility of the developing entity.

15) Air Quality - Fugitive dust and exhaust emissions from construction of the Durango Pumping Plant, Ridges Basin Inlet Conduit, Ridges Basin Dam, and the NNMP could cause or contribute to temporary exceedances of a National Ambient Air Quality Standards (NAAQS) or affect the health of nearby sensitive persons. Dust and stack emissions would occur from operation of a coal-fired power plant, coal mine, and gas-fired power plant if they are built (non-binding end uses).

a) Avoidance/minimization:

i) General Construction:

- (1) Contractor(s) will be required to implement measures to control fugitive dust and exhaust emissions from all construction activities. Methods that may be used include, but are not limited to, water spraying, and chemical stabilization. Contractors will be required to reseed areas within a certain length of time after final regrading. Personal breathing devices will be provided to workers exposed to excessive amounts of dust.

- (2) Contractor and subcontractors shall comply with all applicable federal, state, and local laws, orders and regulations, concerning water quality, air quality, noise, lighting and hazardous wastes, and comply with all terms and conditions of applicable permits. If there is a conflict between federal, state and local laws, regulations, and requirements, the most stringent shall apply.
- (3) Third party developers of end uses of project water will also be required to abide to the commitments in 1 and 2 above.

16) Noise – Noise generated during construction of the Durango Pumping Plant and Ridges Basin Inlet Conduit could disturb nearby residents and other sensitive receptors. Noise from dynamite blasting for pipeline trenching and foundation excavation could exceed local noise standards and disturb nearby residents and other sensitive receptors. Operation of the Durango Pumping Plant could generate noise levels that could exceed local standards and disturb recreationists at Santa Rita Park and on the Animas River. Noise generated by the construction of Ridges Basin Dam, the relocation of CR 211, gas pipeline relocation, and the construction of a recreational area and noise generated by recreational activities associated with public recreation in Ridges Basin Reservoir and the potential adjacent recreation area could disturb golden eagle nesting on Carbon Mountain. Construction of the end uses and conveyance systems identified under the non-binding scenario could generate noise that could disturb nearby sensitive receptors.

a) Avoidance/minimization:

i) By Design:

(1) Durango Pumping Plant:

(a) Noise reduction will be provided in the form of sound insulation within the pumping plant and vegetative screening designed as part of site landscaping. The pumping plant will be blended into the natural land to the extent practicable.

(2) Recreational Development:

(a) Third-party developers of recreational facilities at Ridges Basin will be required to incorporate into a recreational development/management plan requirements that prohibit particularly loud forms of water craft on Ridges Basin Reservoir.

ii) General Construction:

(1) All ALP Project Facilities:

(a) Specifications will include noise, traffic, and human use restriction to minimize disturbance to wildlife near the construction zone.

(b) Prior to blasting, nearby residents and commercial establishments will be notified by mail of expected blasting dates and times. Similar notification will also be posted in the surrounding area. Immediately in advance of blasting, the construction contractor(s) will be required to sound a signal announcing the blast.

(c) Contractor and subcontractors shall comply with all applicable federal, state, and local laws, orders and regulations, concerning water quality, air quality,

- noise, lighting and hazardous wastes, and comply with all terms and conditions of applicable permits. If there is a conflict between federal, state and local laws, regulations, and requirements, the most stringent shall apply.
- (d) Third-party developers of nonbinding end uses of project water will be required to abide by (a), (b), and (c) above.
- (2) Durango Pumping Plant:
 - (a) The pumping plant construction contractor will be required to adhere to Durango's noise ordinance and be restricted from operating heavy equipment during night time hours.
 - (3) Ridges Basin Reservoir:
 - (i) The contractor shall cooperate with and abide by protection plans developed by or with appropriate state and federal entities to minimize to the extent reasonable all damage to, or disturbance of protected species. These protection plans are included and discussed in the **4) Wildlife Resources** section.
 - (4) Gas Pipeline Relocation:
 - (a) A one quarter mile buffer around existing golden eagle nests will be identified and all reasonable measures should be pursued to preclude human activity on Carbon Mountain between December 1 and July 15, the nesting period of golden eagles.

17) Public Health and Safety - Public entry into construction areas could cause exposure to construction accidents. Materials and equipment transport could create hazardous to the public on local roadways and delay emergency vehicles. Construction activities associated with end uses and conveyance systems under the non-binding scenario could create potential for injury. Increased coal bed methane gas seepage that may occur as a result of developing Ridges Basin Dam and Reservoir could create increased risk of injury to workers or the public. During operation of the project, trespass onto properties containing project facilities or entrance into Basin Creek could expose the public to increased risk of injury.

- a) Avoidance/minimization:
 - i) By Design:
 - (1) Developers of recreation facilities at Ridges Basin Reservoir will be required to develop plans that promote safety and use of accident management techniques.
 - ii) General Construction:
 - (1) Ensure that public access to construction areas be controlled by signage and by fencing around construction areas where practicable.
 - (2) Ensure that the contractor configure haul routes and access roads to prevent or discourage public vehicular entry and include placement of signs warning against entry.
 - (3) Ensure that potentially affected utility companies are contacted prior to construction and that utilities be precisely located and appropriately marked in the field and on the specifications.

- (4) Developers of project water end use and delivery systems will abide by 1, 2 and 3 above.
- iii) By Operation:
 - (1) Reclamation will control public access to operational areas that could pose a threat to the public. This will be carried out by the use of signage and fencing around operational areas where practicable.
- b) Monitoring:
 - i) Ridges Basin Dam:
 - (1) Reclamation will investigate the potential of gas release due to man-made intrusions, prior to construction and will monitor excavations for coal bed methane gas. Investigations for gas emissions at abandoned exploration wells, Gates Coal Mine, foundation trench and outlet works tunnel, and along works in Basin Creek. If levels are detected that exceed safety standards, appropriate actions will be taken to protect the public and workers. The contractor will also investigate and monitor for the presence of methane gas seepage during dam construction.

18) Public Services and Utilities - No significant impact were identified for public services and utilities; however, some avoidance/minimization measures will be put in place.

- a) Avoidance/Minimization:
 - i) General Construction:
 - (1) The construction contractors will be required to adequately secure and patrol their work sites and will coordinate with city and county law enforcement agencies.
 - (2) The construction contractors will be required to mark locations of existing buried utilities and develop a notification system for coordination with the affected utilities during construction.

19) Visual Resources – The construction and the presence of the Durango Pumping Plant and Ridges Basin Inlet Conduit adjacent to the Animas River would detract from the scenic quality of the area and could be in conflict with city of Durango visual quality objectives. The construction and presence of Ridges Basin Dam and other physical components would alter the existing visual characteristics of the area and could detract from the future visual quality of the area. Development of project water end uses could detract from the scenic quality of the areas in which these facilities would be located.

- a) Avoidance/minimization
 - i) By Design:
 - (1) All ALP Project Facilities:
 - (a) Design of structure facilities will incorporate, to the extent practicable, non-intrusive design elements and all areas disturbed by construction will be revegetated as soon as possible to realize long-term vegetation success.

Reasonable methods will be used to accelerate and enhance vegetation success, especially in visually sensitive areas.

- (2) Durango Pumping Plant:
 - (a) The Durango Pumping Plant will be designed such that it will blend into the natural land forms and the site will be revegetated as soon as practicable using native plant species. The form, color, and lines of the plant will compliment natural form, colors, and lines on the west side of the Animas River. The design elements will blend with surrounding vegetation and river terrace topography, and color.
- ii) General Construction:
 - (1) All Project Construction Areas:
 - (a) Ensure that construction contractors limit ground disturbance to the smallest practicable areas, and ensure that construction contractors implement best management practices (BMPs) along with the planting and/or reseeded disturbed areas using native plants species to assist in the re-establishment of native vegetation.
 - (2) Gas Pipelines Relocation:
 - (a) To minimize the temporary, short-term loss of vegetation cover and visual impacts from pipeline construction Reclamation committed to the following measures:
 - (i) In visually sensitive areas, restoration of the construction right-of-way shall include the revegetation and establishment of small trees and shrubs, using locally native species wherever possible, to buffer the cleared right-of-way (Northwest Pipeline Corporation (NPC) and MAPCO will be responsible).
 - (ii) Noxious weeds will be identified prior to construction of the pipelines, and control measures during construction (e.g. pre-construction herbicide spraying, equipment clearing) will be implemented to reduce the potential spread of such noxious weeds within the right-of-way and into adjacent disturbed lands (NPC and MAPCO will be responsible).
 - (iii) A weed management plan will be prepared as part of the Plan to minimize the risk of weed infestations by eliminating existing weeds through scarification of the right-of-way before seeding and further weed control measures (NPC and MAPCO will be responsible).
 - (iv) To minimize the clearing of ponderosa pines, the final route alignment, construction right-of-way configuration and placement of extra work space will be planned to minimize impacts on ponderosa pine parkland.

20) Indian Trust Assets and Environmental Justice – The ALP Project as formulated in the 2000 FSEIS does not meet the terms and conditions of the Settlement Agreement for the Colorado Ute Tribes. Under present conditions, the ALP Project as formulated in the 2000 FSEIS reduces the water supply available for the Jicarilla Apache Nation water rights in the San Juan River and limits the water supply available for the development of the proposed Navajo-Gallup Project designed to deliver drinking water to portions of the Navajo Nation

which have limited or no supply. The ALP Project as formulated in the 2000 FSEIS reduces the water supply available for restoration of the Hogback Project on the San Juan River. Sections of the conveyance structures proposed under the non-binding water use scenarios could cut across Colorado Ute Tribal lands, potentially impacting the use of such lands. Relocation of natural gas pipeline(s) may also impact Tribal lands. Disturbance during the construction of NNMP may affect crop production. Residences, schools, and a cemetery along the NNMP corridor could be impacted.

a) Avoidance/Minimization:

i) By Design:

(1) Navajo Nation Municipal Pipeline:

(a) The NNMP corridor will be routed to minimize disturbance or relocations of residences. If residences are required to be relocated, the residents and the Navajo Nation will be compensated. Project planners will work to avoid disturbances to the cemetery. Consultation will take place with the Navajo Nation Historic Preservation Department and representatives from affected Navajo Chapters prior to disturbing any human remains or funerary objects. Mitigation measures will be used to minimize noise and vibration impacts. Construction activities will be scheduled during daytime hours when within 0.25 miles of a residence and would be scheduled during non-school hours when feasible.

ii) By Operation:

(1) Ridges Basin Reservoir:

(a) Operations plans will be put in place for Ridges Basin Reservoir and Navajo Reservoir that will optimize more efficient delivery of water for the flow recommendations for endangered fish in the San Juan River and limit certain project pumping to allow for making additional depletions and developable water available for other Indian Tribe's present and future water needs.

(2) Durango Pumping Plant:

(a) Reclamation will operate the Durango Pumping Plant to limit pumping during dry years, allowing more water to be available in Navajo Reservoir to meet project demands.

iii) General Construction:

(1) Non-binding Scenarios and Relocation of Natural Gas Pipelines

(a) No construction will occur on Tribal without approval of the appropriate Indian tribe. BMP will be implemented during construction. Impacts will be mitigated.

b) Compensatory Mitigation:

i) Interior will facilitate discussions between the Jicarilla Apache Tribe and other parties with interest in the San Juan River to develop options of obtaining 25,500 acre-feet-per-year depletion as authorized under the Jicarilla Apache Water Rights Settlement Act. Additional discussions will take place aimed at developing options for obtaining adequate water for the Navajo and Jicarilla Apache Nations. These actions will include working with the Nations in evaluating options of proceeding

- with the Navajo Gallup Project, the Navajo River Water Development Plan and the restoration of the Hogback Project.
- ii) Reclamation will continue its active participation in the SJRBRIP to promote the dual goals of recovery of endangered fish and proceed with water development in the San Juan Basin.
 - (1) Reclamation will provide substantial technical support in the development and refinement of a comprehensive hydrology model to allow realistic, supportable projections of future water uses within the San Juan Basin.
 - (2) Reclamation will continue to optimize the operating rules for the Navajo Dam to provide efficient fulfillment of the flow recommendations necessary for endangered species recovery in the San Juan River.
 - (3) Reclamation will implement an adaptive management program associated with the operations of Navajo Reservoir to evaluate biological responses of the endangered fish to a more natural hydrograph.
 - iii) Reclamation will work with the Jicarilla Apache Nation to facilitate their ability to independently utilize the SJRBRIP Hydrology Model.
- c) Other:
- i) Interior will support modification of the Colorado Ute Settlement Agreement to recognize the new limits placed on the use and amount of water provided to the Colorado Ute Tribes and establishment of the water acquisition fund.
 - ii) Reclamation will conduct an independent review of the SJRBRIP hydrologic model to ensure accuracy and a tool that can be used in future water planning activities.
 - iii) Through the appraisal investigation of the Navajo-Gallup Project, Reclamation will evaluate:
 - (1) An alternative project design that would take water from the San Juan River below its confluence with the Animas River which may increase the potential yield of the project while protecting flows for endangered fish.
 - (2) Modifying the Navajo-Gallup Project to reduce demands.
 - (3) Utilizing a portion of the Navajo Indian Irrigation Project allocation to meet the needs for the Navajo-Gallup Project.