United States Department of the Interior

OFFICE OF SURFACE MINING
Reclamation and Enforcement
Western Region Office
1999 Broadway, Suite 3320
Denver, CO 80202-3050

CO-0032

DATE: February 21, 2013
TO: Elk Creek Mine Permit Revision File
FROM: Dawn Pacula, Natural Resource Specialist
RE: Endangered Species Act Section 7 Determination of Effects for Oxbow Mining, LLC, Elk Creek Mine, Delta and Gunnison Counties, Colorado

The Office of Surface Mining Reclamation and Enforcement (OSM) Western Region analyzed the Elk Creek Mine permit revision proposal to determine effects on threatened and endangered species, and their critical habitat. Operator, Oxbow Mining, LLC (OMLLC) proposes to expand development under public lands via a Bureau of Land Management (BLM) mineral estate lease. This public land is located adjacent to OMLLC's currently operating coal mine (Elk Creek Mine). The proposed expansion of underground coal mining operations into the Elk Creek East Tract (ECET) would allow OMLLC to continue producing coal at or near current levels (approximately 6,000,000 tons/annually) for approximately one additional year.

This tract encompasses 785.79 acres of BLM managed surface and mineral estate located approximately 1.55 miles northeast of Somerset, Colorado. The project revision proposal is located on the following townships and ranges as follows:

Township 13 South, Range 90 West, 6th PM
Section 3: Lots 8, 9, and 16;
Section 4: Lots 5 to 16, inclusive; and
Section 5: Lots 12, 13, 20, and 24.

The above mentioned tracts of land are also shown on USGS 7.5 minute quadrangle maps of Bowie and Somerset, Colorado.

Consultation History

On May 12, 2005, the U.S. Fish and Wildlife Service (USFWS) sent a Final Biological Opinion (BO) (FWS/R6, ES, ES/GJ-6-CO-04-F-016) for the Oxbow Mining Company and Town of Somerset Water Augmentation Project (Project), Delta County Colorado to the Bureau of Reclamation, Western Colorado Area Office. The BO was based on the proposed Oxbow Mining Company (OMC) and Town of Somerset Water Augmentation Project and its effects on the endangered Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), bonytail (*Gila elegans*), and razorback sucker (*Xyrauchen texanus*) and their critical habitats.

The USFWS found the Project would adversely affect Colorado pikeminnow, razorback sucker, Bonytail, and humpback chub by reducing the amount of water by up to 242 acre feet per year (ac/yr) in the river system upon which they depend. The effects to all four species primarily result from the effects of the action upon their habitats. In general, the proposed action would adversely affect the four listed fish by reducing the amount of water available to them, increasing the likelihood of water quality issues, increasing their vulnerability to predation, and reducing their breeding opportunities by shrinking their amount of breeding habitat within their range. USFWS concluded within its BO that the water depletions associated with OMLLC operations and the Town of Somerset residential use are likely to jeopardize the continued existence of the Colorado pikeminnow, humpback chub, bonytail, and razorback sucker because the listed fish are harmed from the reduction of water in their habitats resulting from the Project in the following manner:

1. individuals using habitats diminished by the proposed water depletions could be more susceptible to predation and competition from non-native fish;
2. individuals may be unable to breed because reduced flows would impact habitat formulation and maintenance.

Also, the USFWS concluded that the water depletions associated with OMLLC operations and the Town of Somerset residential use are likely to result in adverse modification of critical habitat for the Colorado pikeminnow, humpback chub, bonytail, and razorback sucker because the Primary Constituent Elements (PCEs) and the functioning of the critical habitat units would be altered in the following manner:

1. Water, a PCE, would be affected by further reducing the flows in critical habitat that are needed for endangered fishes breeding, feeding, and sheltering. Reduction in flows as would affect water quality by reducing dilution of contaminants.
2. Physical habitat, a PCE, would be affected by reduction in flows by reducing important habitat such as spawning bars, backwaters, and inundated floodplains.
3. Biological environment, A PCE, would be affected by the increase in non-native fishes due to altered flow regimes.

The USFWS has developed a reasonable and prudent alternative to avoid the likelihood of jeopardy to the endangered fishes and destruction or adverse modification of their critical habitat. On January 21-22, 1988, the Secretary of the Department of the Interior; the Governors of Wyoming, Colorado, and Utah; and the Administrator of the Western Area Power Administration were co-signers of a cooperative Agreement to implement the "Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin". In 2001, the Recovery Program was extended until September 30, 2013. An objective of the Recovery Program was to recover the listed species while providing for new water development in the Upper Basin.

The Agreement established a framework for conducting all future section 7 consultations on depletion impacts related to new projects and all impacts associated with historic project in the Upper Basin. Procedures outlined in the Agreement are used to determine if sufficient progress is being accomplished in the recovery of the endangered fishes to enable the Recovery Program to

serve as a reasonable and prudent alternative to avoid jeopardy. The Plan was finalized on October 15, 1993, and has been reviewed and updated annually.

Based on the aforementioned Agreement specifics, the USFWS determined that because the Project's average annual depletion of 242 af is below the 2005 sufficient progress threshold of 4,500 af, and because sufficient progress is being achieved, the Recovery Program can serve as the reasonable and prudent alternative to avoid jeopardy to the Colorado pikeminnow, razorback sucker, bonytail, and humpback chub and destruction or adverse modification of critical habitat caused by the Project's depletion.

USFWS, also, included an Incidental Take Statement within their BO that states Colorado pikeminnow, razorback sucker, bonytail, and humpback chub are harmed from the reduction of water in their habitats resulting from the Project in the following manner – 1) individual using habitats diminished by the proposed water depletions could be more susceptible to predation and competition form non-native fish; 2) habitat conditions may be rendered unsuitable for breeding because reduced flows would impact habitat formation and maintenance as described in the BO. However, the implementation of the Recovery Program is intended to minimize impacts of water depletions and; therefore, the reasonable and prudent alternatives outlined in the BO will also serve as reasonable and prudent measures or minimizing the take that results from the 242 af/year water depletion. Any amount of water withdrawal above this level would exceed the anticipated level of incidental take.

The BO re-initiation notice stated formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if—1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in the opinion; 3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in the opinion; or 4) a new species is listed or critical habitat designate that may be affect by the action.

Proposed Action

OMLLC has obtained a BLM lease for the ECET. This tract encompasses 785.79 acres of BLM managed surface and mineral estate. The proposed action includes coal mining underground from the ECET in 2 or 3 panels that would extend the life of the mine by approximately 12 months. The 12 months of extended mine operations would be proceeded by approximately 6 months of underground preparation work, which would be conducted while longwall operations continue on panels within the existing lease boundaries. Coal would be mined using underground longwall techniques. Pillars would be left in place in gateroads and bleeders and full extraction of coal would occur in the longwall block. A typical belt conveyor would be used for transportation of the coal to the surface. Coal would be transported by belt from the existing surface facilities to the existing rail loadout located on private lands off highway 133, near the town of Somerset, Colorado.

Surface disturbance would be temporary and would be limited to approximately 5.63 acres for gob vent boreholes (GVBs), associated temporary drill pads and light use roads. GVBs would

ventilate potentially explosive gases from the mine to provide a safe environment for miners working underground. No measures for capture and use or conversion of the coal mine methane (CMM) have been identified as part of the Proposed Action.

Up to fifteen GVBs could be drilled from a total of nine drill pads. Drill pads for each borehole would be 80 feet x 130 feet and overall disturbance resulting from GVB pads would be approximately 2.15 acres. Each drill pad would be cleared of surface vegetation and roughly leveled with a bulldozer. GVBs would be drilled to 10 to 50 feet above the target coal seam prior to mining. All of the GVBs would be drilled at the same time over a period of a few weeks before mining of the longwall panels. While the longwall panel beneath the GVBs is being mined and for about one year after the completion of mining, the GVB pump would require weekly inspection and maintenance. Areas of the pad used for drilling and construction that would no longer be needed for operation and maintenance of the GVB would be reclaimed once the GVB pumps are in place. The operating size of each pad would be about 0.15 acre. Design features that would be applied to the GVB pad include the following:

- Reclamation would begin as soon as practical to restore the land to its previous productive use. Generally level areas would be chosen for pad locations to minimize the need for cutting and filling;
- Natural or artificial features such as topography, vegetation, or an artificial berm would be used to help screen drill pads;
- Topsoil and soil from the pad site would be stockpiled for reclamation and the topsoil would be stockpiled separately from other soil horizons;
- Pads would be partially reclaimed when drilling is completed to an operating size of approximately 0.15 acre;
- Pads would be totally re-contoured back to their original contour and rough texture, of a natural looking contour that blends with the surrounding topography;
- Topsoil that had been stockpiled would be spread over the surface of the reclamation area and any areas of compacted surface would be mechanically ripped to loosen the soil;
- Reclamation would use an approved seed mix;
- Reclamation areas would be monitored annually until they are considered successful; and
- Reclamation would be considered successful when evidence of surface erosion is no greater than in adjacent undisturbed areas and when natural, perennial plant cover has achieved a density of 75 percent of the pre-disturbance plant cover.

Access to drill pads would be provided by a combination of existing two-track ranch roads, reopened reclaimed light use roads, and new temporary light use roads. Reclaimed roads that would be reopened and new temporary light use roads would be located entirely on BLM land. Reopened roads and new roads would be minimally prepared by clearing vegetation and scratch-grading. A total of approximately 4.75 miles of light use roads on BLM land would be required to reach the drill pads. Of these 4.75 miles, 2.45 miles would follow existing roads and would be utilized that were initially constructed for exploration activities, subsequently reclaimed, and now proposed to be reopened. Finally, one segment of new road, approximately 0.25 miles long would be required. The total disturbance from road construction would be limited to the 2.05 miles of reopened reclaimed roads and the 0.25 miles of new roads, for a total of approximately 2.3 miles or 3.48 acres of disturbance. The following features apply to access roads:

- New roads and other linear facilities would be located and constructed to follow the contour of the landform or mimic lines in the vegetation (avoid straight roads and steep slopes);
- New reopened roads would be a maximum of 12.5 feet wide;
- Cutting and filling, and crowning and ditching, of temporary roads would be kept to the minimum necessary;
- After there is no longer a need for mine ventilation, both the reopened exploration roads and the new road segment would be reclaimed, re-contoured and re-vegetated according to BLM direction using an approved seed mix;
- Short-term reclamation would include partially re-vegetating roads to reduce the amount of bare ground created during construction and drilling activities. During reclamation, roads would be re-contoured back to their original contour and rough texture so to match the "texture" of the surrounding landscape; and
- Roads would be ripped to loosen compacted soil and seeded with a BLM approved seed mix.

Description of Permit Area

The topography of the region is characterized by steep canyons cut by the North Fork of the Gunnison River and its tributaries, with several remnant alluvial terraces above the valley of the North Fork. Proceeding downstream below Somerset, Colorado, the canyon widens. At Paonia, Colorado, the canyon has given way to the broad alluvial pain with interspersed remnant alluvial terraces. The coal to be mined is located in the Somerset Coal Field. The strata exposed in this coal field consist of the Mancos Shale and the coal-bearing Mesaverde Formation of Upper Cretaceous Age, and of the Ohio Creek Conglomerate, the Wasatch Formation, and the Quartz Monzonite Porphyry of Early Tertiary Age. Coal is mined from the Mesaverde Formation, a 2,500 foot thick sequence of sedimentary strata overlain by the Ohio Creek Conglomerate and underlain by the Mancos Shale. The strata in the Sanborn Creek and Elk Creek Mines permit area dip 3 to 5 degrees north-northeast within the permit area, but varies locally.

The Mesaverde Formation contains a number of coal-bearing members. The Somerset Mine mined coal from the B-2 seam of the lower coal bearing (Bowie) member of the Mesaverde Formation. The Sanborn Creek and Sanborn Creek East additions mined the B and C seams of this member. The Elk Creek mine ramps down to the D-seam and will mine that level. The Lower Coal member ranges from 260 to 350 feet thick in the Somerset Coal Field and bears three minable coal seams. This member consists of interbedded and lenticular sandstones, siltstones and coals, and is overlain by massive sandstone 25 to 225 feet thick which lies directly on the C seam and marks the bottom of the upper coal member.

Three categories of potential aquifers exist in the general area: alluvial deposits associated with the North Fork of the Gunnison River and its tributaries, the Rollins Sandstone, and lenticular discontinuous sandstones of the Upper Mesaverde Formation. The largest alluvial aquifers are associated with the North Fork of the Gunnison River. Smaller, more isolated alluvial aquifers are associated with several tributaries of the North Fork. The Rollins

Sandstone is the only known sandstone with sufficient porosity and lateral extent to be considered a regional bedrock aquifer. The only wells in the region which are completed in this aquifer are located near the Hawk's Nest Mine along the North Fork.

Localized perched bedrock aquifers exist in the discontinuous, lenticular, fine-grained sandstones of the Upper Mesaverde Formation. The amount of ground water in these sandstones is controlled by faulting and fracturing of the strata (secondary porosity) and the topography of the recharge area. No known wells are completed in the sandstones of the Upper Mesaverde Formation above the mine workings.

The valley in which the towns of Paonia and Somerset are situated is semi-arid, with annual precipitation averaging about 15 inches per year. Mean annual precipitation increases with elevation, reaching over 40 inches per year near the summit of Mt. Owen. The May to September precipitation is five inches for the lowlands and 13 inches for the mountain peaks. This indicates that snowfall patterns play an important part in determining the hydrologic conditions of the area. Temperature extremes at Paonia have ranged from -28°F in January to 100°F during July and August. The average annual temperature is approximately 49°F. Snowfall averages 58 inches per year.

The general area in which the Elk Creek/Sanborn Creek Mines are located is characterized by steeply sloping mountains covered either with tall shrub vegetation dominated by oakbrush and serviceberry, or stands of pinyon and juniper trees. Drainages in the area are lined with riparian vegetation communities along the stream banks. Some of the more level areas have been cleared and support limited livestock grazing; however, for the most part, the surrounding land is undeveloped and is used primarily as wildlife habitat. Recreational activities such as big game hunting, trapping, fishing, and off-road driving also occur in the general area.

Species-Specific Information

Office of Surface Mining Reclamation and Enforcement queried the U.S. Fish & Wildlife Service, Information, Planning, and Conservation System (IPAC) in February 2013, for a list of potential federally-endangered, threatened candidate species, species of concern, and critical habitat that may be found in Delta and Gunnison Counties, Colorado. The following species are listed: Bonytail chub (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), Greenback Cutthroat trout (*Oncorhynchus clarki ssp. stomias*), Humpback chub (*Gila cypha*), Razorback sucker (*Xyrauchen texanus*), clay-loving wild buckwheat (*Eriogonum pelinophilum*), Colorado hookless Cactus (*Sclerocactus glaucus*), Uncompahgre Fritillary butterfly (*Boloria acrocnema*), Black-Footed ferret (*Mustela nigripes*), and Canada lynx (*Lynx canadensis*). A proposed endangered species within the specified counties of Delta and Gunnison is the Gunnison sage-grouse (*Centrocercus minimus*). The North American wolverine (*Gulo gulo luteus*), Gunnison's prairie dog (*Cynomys gunnisoni*), Yellow-billed cuckoo (*Coccyzus americanus*), and the skiff milkvetch (*Astragalus microcymbus*) are candidate species.

The above USFWS listed, proposed for listing, and candidate species were compared to BLM's threatened, endangered, and sensitive species analysis within the Elk Creek East Tract Coal Lease Environmental Assessment (EA) prepared in 2011. OSM, a cooperating agency to the BLM EA, has described the species impact findings below within the determination of effects section. The one species not analyzed within the BLM EA was the North American wolverine; therefore, OSM assessed any potential mining impacts to the species using the following information:

North American wolverine (*Gulo gulo luscus*)

The North American wolverine (*Gulo gulo luscus*), is the largest terrestrial member of the family Mustelidae, with adult males weighing 26 to 40 pounds and adult females weighing 17 to 26 pounds. The North American wolverine resembles a small bear with a bushy tail. It has a round, broad head; short, rounded ears; and small eyes. There are five toes on each foot, with curved and semiretractile claws used for digging and climbing.

Wolverines do not appear to specialize on specific vegetation or geological habitat aspects, but instead select areas that are cold and receive enough winter precipitation to reliably maintain deep persistent snow late into the warm season. The requirement of cold, snowy conditions means that, in the southern portion of the species' range where ambient temperatures are warmest, wolverine distribution is restricted to high elevations, while at more northerly latitudes; wolverines are present at lower elevations and even at sea level in the far north. Deep, persistent, and reliable spring snow cover (April 15 to May 14) is the best overall predictor of wolverine occurrence in the contiguous United States. However, the USFWS stated that wolverines have been documented to follow elk and deer herds down into to lower elevations.

Determinations of Effect

Bonytail chub (*Gila elegans*) – based on USFWS 2005 BO, the Elk Creek Mine would jeopardize the continued existence of this species, however, the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin allows for reasonable and prudent alternative to avoid jeopardy to endangered fishes by depletions from the Upper Colorado River Basin.

Colorado pikeminnow (*Ptychocheilus lucius*) – based on USFWS 2005 BO, the Elk Creek Mine would jeopardize the continued existence of this species, however, the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin allows for reasonable and prudent alternative to avoid jeopardy to endangered fishes by depletions from the Upper Colorado River Basin.

Greenback Cutthroat trout (*Oncorhynchus clarki ssp. stomias*) – based on USFWS 2005 BO, the Elk Creek Mine would jeopardize the continued existence of this species, however, the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin allows for reasonable and prudent alternative to avoid jeopardy to endangered fishes by depletions from the Upper Colorado River Basin.

Humpback chub (*Gila cypha*) – based on USFWS 2005 BO, the Elk Creek Mine would jeopardize the continued existence of this species, however, the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin allows for reasonable and prudent alternative to avoid jeopardy to endangered fishes by depletions from the Upper Colorado River Basin.

Razorback sucker (*Xyrauchen texanus*) – based on USFWS 2005 BO, the Elk Creek Mine would jeopardize the continued existence of this species, however, the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin allows for reasonable and prudent alternative to avoid jeopardy to endangered fishes by depletions from the Upper Colorado River Basin.

Clay-loving wild buckwheat (*Eriogonum pelinophilum*) – based on the 2011 BLM EA, the Elk Creek Mine would have no effect on this species due to no species presence and the lack of suitable habitat.

Colorado hookless Cactus (*Sclerocactus glaucus*) – based on the 2011 BLM EA, the Elk Creek Mine would have no effect on this species due to no species presence and the lack of suitable habitat.

Uncompahgre Fritillary butterfly (*Boloria acrocnema*) – based on the 2011 BLM EA, the Elk Creek Mine would have no effect on this species due to no species presence and the lack of suitable habitat.

Black-Footed ferret (*Mustela nigripes*) – based on the 2011 BLM EA, the Elk Creek Mine would have no effect on this species due to no species presence and the lack of suitable habitat.

Canada lynx (*Lynx canadensis*) – based on the 2011 BLM EA, the Elk Creek Mine would have no effect on this species due to no reports of species settings and the lack of suitable habitat.

Gunnison sage-grouse (*Centrocercus minimus*) – based on the 2011 BLM EA, the Elk Creek Mine is not likely to jeopardize the proposed species due to no species presence and the lack of suitable habitat.

North American wolverine (*Gulo gulo luteus*) – based on OSM's species assessment, the Elk Creek Mine is not likely to jeopardized the proposed species due to no species presence and the lack of suitable habitat.

Gunnison's prairie dog (*Cynomys gunnisoni*) – based on the 2011 BLM EA, the Elk Creek Mine is not likely to jeopardized the proposed species due to the lack of suitable habitat.

Yellow-billed cuckoo (*Coccyzus americanus*) – based on the 2011 BLM EA, the Elk Creek Mine is not likely to jeopardize the proposed species due to no species presence and the lack of suitable habitat.

Skiff milkvetch (*Astragalus microcymbus*) – based on the 2011 BLM EA, the Elk Creek Mine is not likely to jeopardized the proposed species due to the lack of suitable habitat.

Attachments