

Section 6.0 Cumulative Impacts

6.1 INTRODUCTION

NRC Environmental Review Guidance for Licensing Actions Associated with NMSS Programs (NUREG-1748) requires the evaluation of any past, present or reasonably foreseeable future actions that could result in cumulative impacts when combined with the proposed action (NRC, 2003). NRC guidance does not specify an appropriate geographic scope over which to evaluate cumulative impacts. Guidance issued by the Council on Environmental Quality (CEQ) states that, “It is not practical to analyze the cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful.” To be meaningful, “cumulative effects analysis should be conducted on the scale of human communities, watersheds or airsheds using the concept of project impact zone” (CEQ, 1997). In other words, the cumulative impact analysis should address the area that might be affected by the Proposed Action.

Consistent with NRC and CEQ Guidance, the cumulative impact analysis considers the effects of past, present, and reasonably foreseeable actions along with the Proposed Action within a project impact zone (Cumulative Impact Area). The Cumulative Impact Area is identified as being bounded to the north by the Gateway community in Mesa County, to the south by U.S. Highway 491 in Dolores County, to the east by the Uncompahgre Plateau, and to the west by U.S. Highway 191 in San Juan County, Utah. This region contains the airsheds, watersheds, and transportation routes that would be most affected by the Proposed Action. The resources that could be affected by existing and future activities within this vicinity are discussed in the sections below.

6.2 PAST ACTIONS IN THE VICINITY OF THE PIÑON RIDGE MILL SITE

The Site and Cumulative Impact Area are centered in a zone of uranium and vanadium deposits known as the Uravan Mineral Belt. This mineralized zone contains a substantial portion of the nation’s known reserves of uranium ore, and is the oldest uranium mining region in the United States (DOE, 2007). Historically, almost 1,200 mines were located within the Uravan Mineral Belt, which produced over 63 million pounds of uranium and 330 million pounds of vanadium between 1948 and 1978 (CDNR, 2009b). The Cumulative Impact Area also includes the La Sal and Big Indian Mining Districts in southeastern Utah. Due to falling uranium prices, uranium production fell dramatically across the area in the mid-1980s, and ultimately came to a halt throughout the Cumulative Impact Area. The uranium mines in the Cumulative Impact Area either went on standby or were reclaimed. As discussed in Section 1.0, with the exception of the White Mesa Mill in Blanding, Utah, mills in the area were closed and reclaimed. Improving market conditions in the early 2000s resulted in the resumption of limited mining operations, the reopening of some reclaimed mines (e.g., the Whirlwind Mine) and extensive exploration activity throughout the area (CDNR, 2009a).

According to the CDNR, as of September 2009 there were 33 actively permitted uranium mining projects, including four producing mines, in Colorado’s Uravan Mineral Belt. The four producing mines – Sunday, West Sunday, St. Jude, and Topaz mines– are in San Miguel County and are operated by Denison (CDNR, 2009a). These mines ship their ore to Denison’s White Mesa Mill.

Denison also operates another three mines within the Cumulative Impact Area – Beaver, Pandora, and Rim mines—in the La Sal region of San Juan County that also ship ore to the White Mesa Mill. Not all of Denison’s mines are operating at this time, as they are currently milling alternate feeds and stockpiling ore for resumption of ore milling operations in early 2010. Several smaller mines in both Colorado and Utah have also shipped ore to the White Mesa Mill during the past several years, but are currently inactive because current uranium spot prices (upon which Denison bases its purchasing schedules) are relatively low. Energy Fuels placed its Whirlwind Mine near Gateway on standby in November 2008 after failing to secure a contract with Denison. Energy Fuels continues to move forward with the rehabilitation of the Energy Queen Mine near La Sal, Utah. Uranium exploration activity, although still occurring throughout the region, has cooled significantly over the past two years in response to lower uranium prices.

In addition to uranium mining, mineral development within the vicinity of the Site has included oil and natural gas development. To date, most of this activity has been in San Miguel County, Colorado and San Juan County, Utah. The pace of oil and natural gas development is also highly dependent on market conditions. Periods of active drilling occurred in the mid-1970s to early- 1980s and most recently in the early- to mid- 2000s. The pace of drilling fell dramatically in 2008 due to falling oil and gas prices and the downturn in national economic activity.

Ranching activity has remained stable within the Cumulative Impact Area, although some loss of farm and ranch land has occurred over the past two decades. As discussed in Section 3.0, with the exception of the Gateway Canyons Resort in Gateway, recreation activity in the area is not intensive and only supports a small portion of the population on a seasonal basis. The economy within the Cumulative Impact Area, as represented by Nucla, Naturita, and other small rural towns, was depressed economically prior to the current recession and remains in that state.

6.3 PRESENT AND REASONABLY FORESEEABLE ACTIONS

To evaluate present and reasonably foreseeable actions that may occur within the Cumulative Impact Area that, when combined with the impacts of the Proposed Action, could potentially contribute to cumulate effects, a review of the BLM National Environmental Policy Act (NEPA) registers for the Grand Junction and Uncompahgre field offices in Colorado and for the Utah State Office was completed. Mining applications under review by the Colorado Division of Reclamation, Mining and Safety (DRMS) and Utah Division of Oil, Gas and Mining (DOG M) were also reviewed. Finally, the Montrose Economic Development Corporation (EDC) and towns of Naturita and Nucla were contacted to determine if there were any economic development projects underway.

Based on the review of NEPA registers and mining applications, it was determined that 18 uranium exploration projects, three oil and gas projects, and one building construction project (an interpretive site at the Hanging Flume Overlook Historic Site in the Unaweep Canyon) were within the vicinity of the Proposed Action and could potentially cause future impacts that might be additive or cumulative with those associated with the Proposed Action. According to the Montrose EDC, there are no anticipated new industrial or commercial projects in Montrose County (Head, 2009). A restaurant (steakhouse) in Nucla is the only anticipated new business in either Naturita or Nucla (Lear, 2009 and Smith, 2009b). The projects that could contribute to cumulative impacts when combined with the Proposed Action are shown in Table 6.3-1 and on Figure 6.3-1.

**Table 6.3-1
Potential Projects in the Vicinity of the Site**

Site Name and Operator	County	Project Type
Uranium/Vanadium Exploration Projects		
Antler Claims – Vern Shumway ¹	San Juan, UT	Uranium Exploration
Black Ridge Mine – Mitch Shumway ¹	San Juan, UT	Uranium/Vanadium Exploration
Bridger Jack Mine – South American Minerals ¹	San Juan, UT	Uranium/Vanadium Exploration
Copper Mineral Claim – John Rud ¹	San Juan, UT	Uranium/Vanadium Exploration
Daneros Mine – Utah Energy Corp. ²	San Juan, UT	Uranium/Vanadium Mine
Fry 120 Drilling Program – John Rud ¹	San Juan, UT	Uranium/Vanadium Exploration
Hilltop Mine – South American Minerals ¹	San Juan, UT	Uranium/Vanadium Exploration
Hop Creek Exploration Drilling – CO Plateau Partners ¹	San Juan, UT	Uranium/Vanadium Exploration
Lake Canyon Project – Uranium Energy Corp ¹	San Juan, UT	Uranium/Vanadium Exploration
Lark Royal Claims – Utah Energy Corp. ¹	San Juan, UT	Uranium/Vanadium Exploration
Last Chance #3 & #4 Mines – Nuvemco LLC ¹	Montrose, CO	Uranium/Vanadium Exploration
Midway Mine – Uranium One Exploration ¹	San Juan, UT	Uranium/Vanadium Exploration
Nash Mineral Claim – John Rud ¹	San Juan, UT	Uranium/Vanadium Exploration
Round Mountain Project – Global Uranium Corp ¹	San Juan, UT	Uranium Exploration
RS Claims – John Rud ¹	San Juan, UT	Uranium/Vanadium Exploration
Shroud Mine – Uranium One Exploration ¹	San Juan, UT	Uranium/Vanadium Exploration
South Beaver Mine – Uranium One Exploration ¹	San Juan, UT	Uranium/Vanadium Exploration
Stump Mine – Uranium One Exploration ¹	San Juan, UT	Uranium/Vanadium Exploration
Oil and Natural Gas Development Projects		
Middle Mesa Gas Wells (15 wells) – EnCana ⁴	San Juan, UT	Natural Gas Wells
South Nucla Unit Field Development (20 gas wells) – Redwine Resources ⁴	Montrose, CO	Natural Gas Wells
Wray Mesa Natural Gas Well Pad – EnCana ⁴	Montrose, CO	Natural Gas Well
Other projects		
Hanging Flume Overlook Interpretive Site	Montrose, CO	Historic Center Interpretive Center
¹ Source: UDNR-DOGM, 2009.		
² Source: BLM, 2009c.		
³ Source: Colorado DRMS, 2009.		
⁴ Source: BLM, 2009d.		

Ultimately, the cumulative impacts associated with the Proposed Action are dependant on the future price of uranium. Most forecasters predict a gradual rise in the price of uranium, based on the increasing development of nuclear power plants throughout the world and the 2013 expiration of the Russian disarmament program that has, to date, created a substantial quantity of low enriched uranium for nuclear fuel in the United States and abroad. The following reasonably foreseeable actions are based on this scenario. If uranium prices were to remain at their current levels, impacts associated with the Proposed Action would be lower. If uranium prices increased dramatically, exploration activities would also be likely to increase; however, a dramatic increase in uranium mining within the Cumulative Impact Area is unlikely due to constraints in present and reasonably foreseeable mill capacity as discussed in Section 6.4.

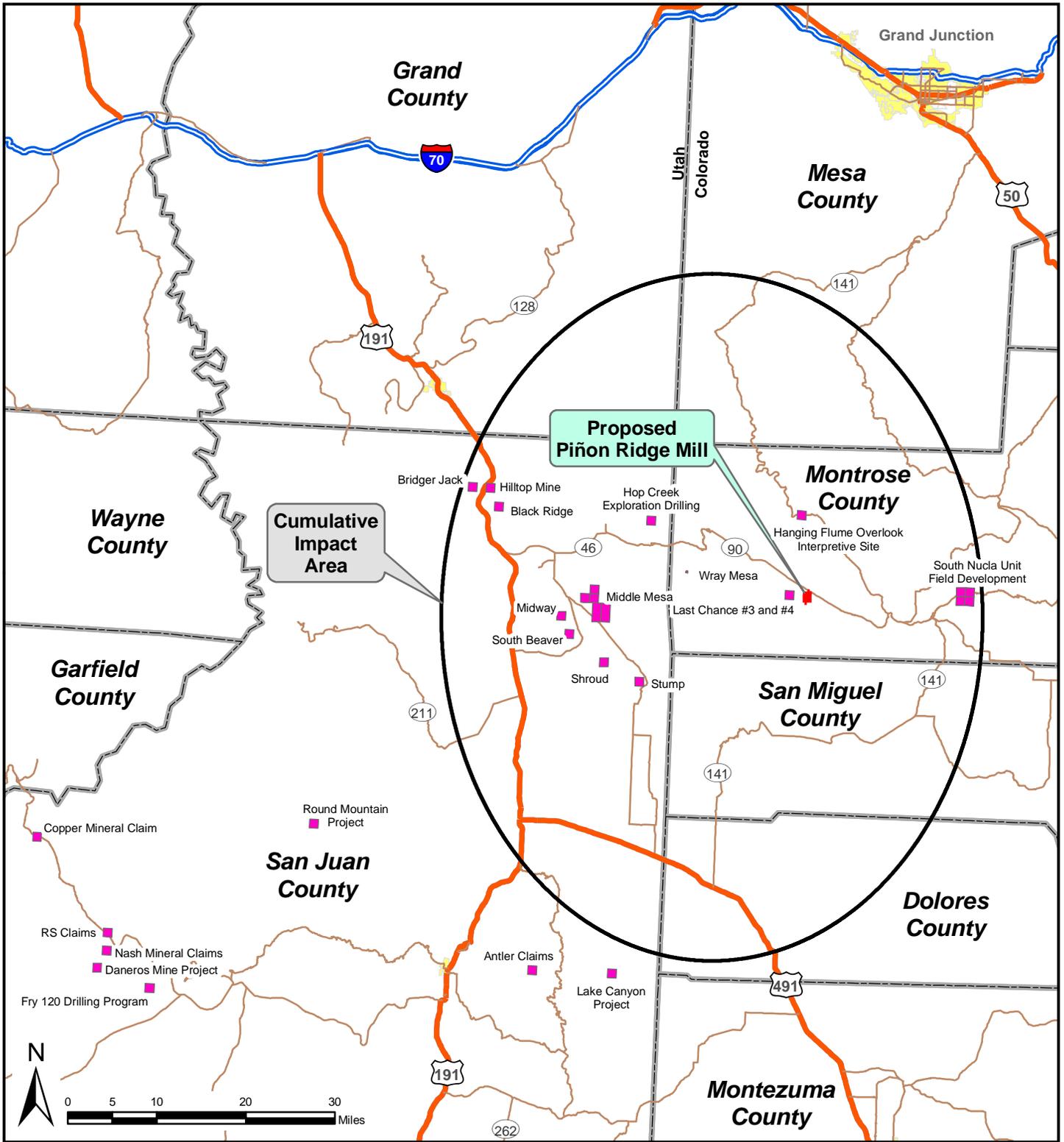


Figure 6.3-1

Proposed Projects in the Vicinity of the Piñon Ridge Mill Site

6.3.1 Uranium Mining Projects

Construction and operation of the proposed Piñon Ridge Mill would allow Energy Fuels to commence mining operations at its Whirlwind and Energy Queen Mines. It would also allow for permitting and development of additional uranium/vanadium deposits controlled by Energy Fuels, as well the resumption of mining at some of the permitted mines within the Cumulative Impact Area controlled by mining companies other than Energy Fuels and Denison. The locations of permitted uranium mines relative to the Site are shown in Figure 6.3-2. As discussed in the *Mine Operations Plan* (Energy Fuels, 2009d), the Mill is expected to be able to process ore from five to nine mines in the area at any one time. These mines are primarily located in western Montrose, Mesa, and San Miguel counties in Colorado and eastern San Juan County in Utah. Some feeder mines could also be located in Grand and Emery counties in Utah. The mines feeding the Mill are expected to change over the course of the 40-year mill life as projects are mined out and reclaimed and other projects come on line.

The mines that would feed the Mill are predominantly existing underground mines with relatively small disturbance footprints, typically encompassing between 5 and 30 acres of surface disturbance depending on the size of the mine. Although some new disturbance would occur as the mines develop further, most of the surface disturbance associated with the mines (*i.e.*, roads, portals, mine buildings, ore pads, and waste dumps) already exists. Section 4.0 evaluated the potential traffic-related impacts of ore haulage from mines to the Mill, and the potential employment impacts of mining personnel associated with Mill operations. An estimated 228 mining workers (miners, support personnel, and truckers) would be required to provide the 175,000 tons of ore consumed annually (500 tpd) by the Proposed Action (Energy Fuels, 2009d). Section 4.0 did not evaluate the mines' socioeconomic impacts. The text addresses the socioeconomic impacts of the Proposed Action – which consists of the Mill only. Section 4.0 discusses indirect employment associated with mining (miners and truckers only), and the fiscal analysis includes the spending of mining-income associated with the Mill. The fiscal analysis does not include direct spending by mines, indirect spending associated with the mines, or any taxes paid by the mines.

6.3.2 Uranium Exploration Projects

According to the Colorado DRMS and Utah DOGM, there are several proposed uranium exploration projects, most of which are located in San Juan County. In Montrose County, the BLM Uncompahgre Field Office is evaluating exploration data concerning underground mining at the Last Chance #3 and #4 mines. Activities limited to exploration are not likely to contribute to cumulative impacts as exploration typically involves few workers, low traffic volumes, and no emissions. If any of the exploration projects noted in Table 6.3-1 lead to new or renewed mining activity, there could be additional land use and biological impacts within the vicinity of the Site, as well as cumulative impacts due to increased traffic, particularly ore-haul trucks, and surface disturbance. Air emissions from underground uranium mining operations are regulated, and the potential for fugitive dust and combustion emissions is low (40 CFR, Part 61, Subpart b). Mine developers would be required to obtain air permits from the CDPHE APCD or the Utah Department of Environmental Quality – Division of Air Quality, which would minimize the potential for cumulative air quality impacts. Potential cumulative socioeconomic impacts associated with an expanded mining and ore-haul workforce, such as increasing populations and potential increases in school enrollments and housing demand could occur.

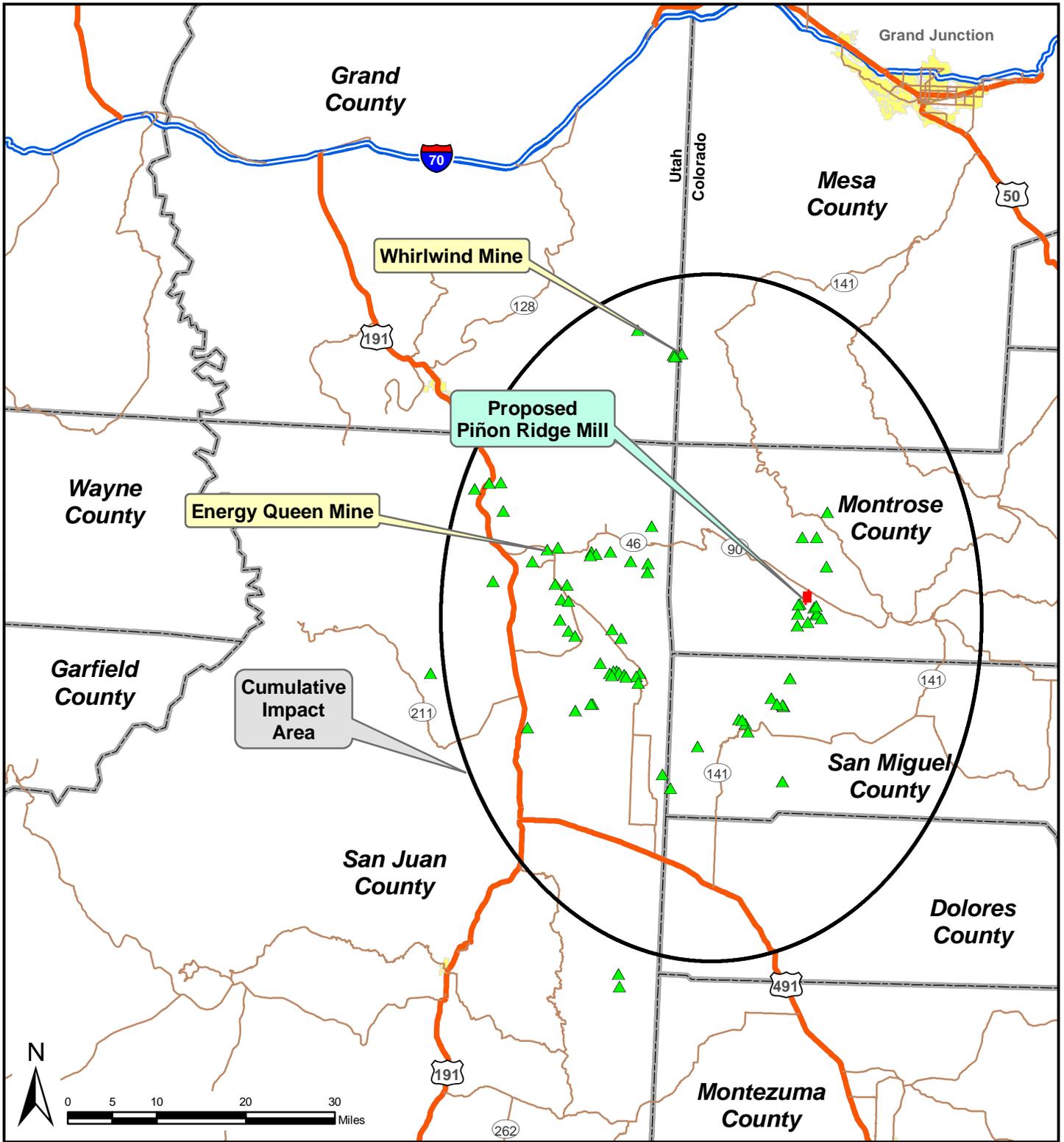


Figure 6.3-2

Permitted Uranium Mines
in the Vicinity of the Piñon Ridge Mill Site

Permitted Mines

- ▲ Uranium, Vanadium, and Zinc
(Mines shown designated as "Active" in source data)

NOTE:
 Source data obtained from;
 Utah Division of Oil, Gas and Mining and
 Colorado Division of Reclamation, Mining and Safety

6.3.3 Oil and Gas Development Projects

According to the BLM Uncompahgre Field Office, three oil and gas projects, with a total of 36 proposed wells on BLM land, are currently under NEPA review. Oil and gas development typically requires 7 to 10 weeks for construction, drilling and completion (BLM, 2008). During this time, assorted heavy equipment and pickup trucks would add to traffic in the vicinity of the Site. Workers would travel daily to a well location; however, the heavy equipment needs would not result in daily transit during well development. There would be brief periods of highly intensive heavy equipment travel (e.g. 4 to 10 trucks for a few days). Depending on the number of wells developed at any one time, localized traffic increases would likely be experienced in the region. The proposed oil and gas development would result in additional land use and biological impacts in the region; however, as with uranium mining, oil and gas drill rig impacts are limited to the localized area of a drill pad, which typically covers 5 to 10 acres. The cumulative effects on land use and biota in the region would be an increase in the acreage of public lands that would be affected by mineral exploration. The three oil and gas projects under consideration could result in additional surface disturbance of 180 to 360 acres.

6.3.4 Other Projects

The Hanging Flume is a historic structure situated above the San Miguel and Dolores rivers that supplied water for placer gold mining in the late 1800s. The Hanging Flume Site is listed on the National Register of Historic Places and is accessed via a 0.5-mile graveled road leading west from SH 141. In September 2009, the BLM Uncompahgre Field Office approved construction of the Hanging Flume Overlook Interpretive Site to replace the existing graveled parking area that is situated above the Unaweep Canyon rim. Phase One of the project, which includes a graveled vehicle parking area to accommodate six to eight vehicles, two interpretive kiosks, and two to three picnic tables, is scheduled for completion in early 2010. Phase Two includes the construction of a concrete or hardened trail to the river overlook, and is scheduled for construction in the fall of 2010. During late 2010 and early 2011, when construction activities at the Piñon Ridge Site and the Interpretive Site are scheduled to occur, the cumulative impact of increased traffic along SH 141 could result. In particular, a high volume of trucks hauling gravel and other construction materials would be expected along SH 141 through the Unaweep Canyon. Short-term traffic impacts would be mitigated through speed control, dust control, appropriate signage, employee training, and scheduling. Over the long term, the Hanging Flume Interpretive Site will mitigate traffic concerns in the Unaweep Canyon as the BLM considers the current pullout to the Hanging Flume Site to be poorly situated for highway safety (BLM, 2009x).

6.4 POTENTIAL CUMULATIVE IMPACTS ASSOCIATED WITH INCREASED URANIUM MINING IN THE VICINITY OF THE PIÑON RIDGE MILL SITE

The potential cumulative impacts from development of uranium resources within the region depends largely on the number of mining claims and DOE leases that are brought into production. Mine development is constrained by actual and potential milling capacity in the foreseeable future. Table 6.4-1 shows the estimated capacity (tpd) and operational status of uranium mills that have been announced, are in the permitting process, or are already permitted. Figure 6.4-1 shows the location of these mills in relation to the Cumulative Impact Area.

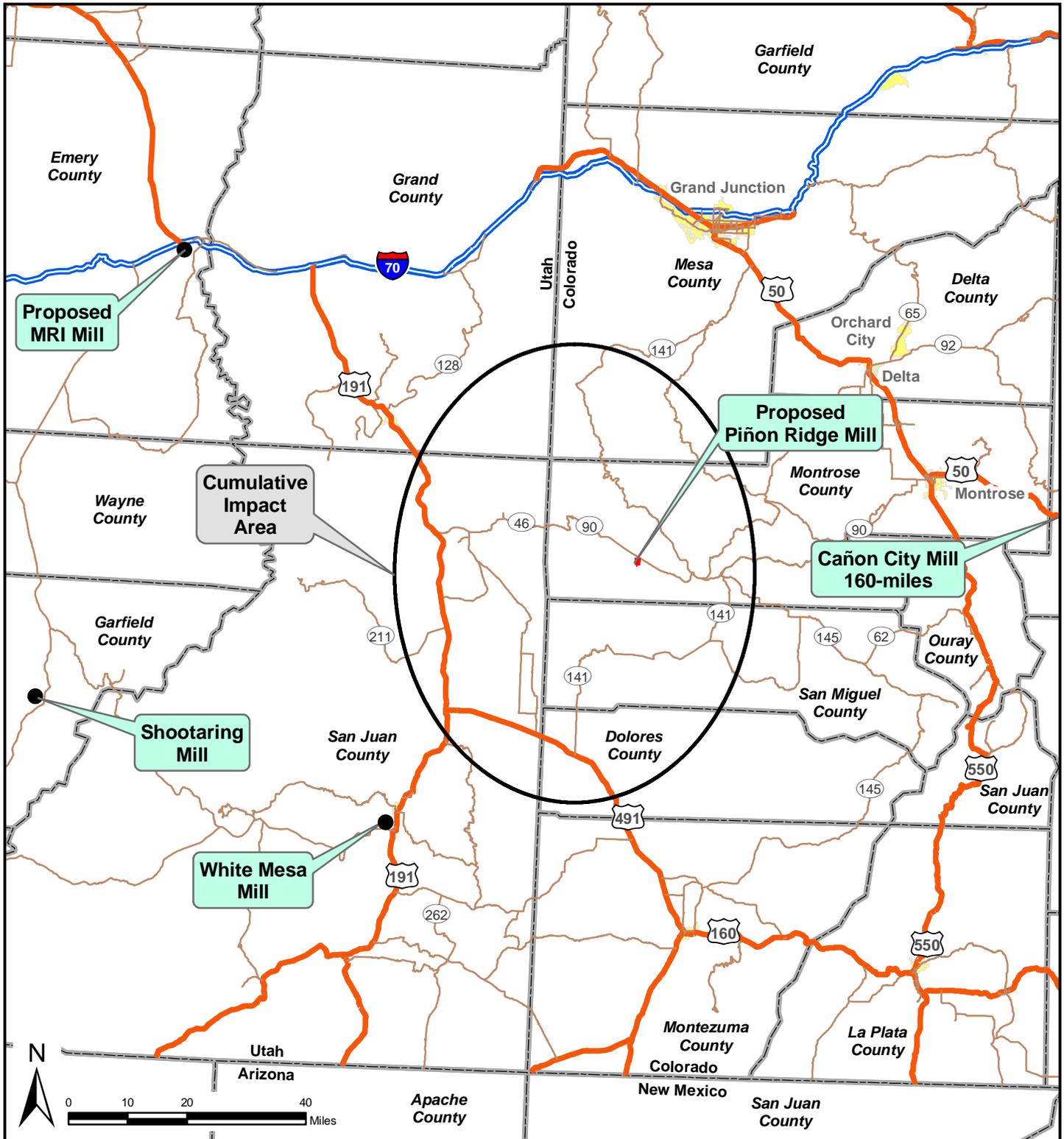


Figure 6.4-1

Existing and Proposed Mills
in the Vicinity of the Piñon Ridge Mill Site

**Table 6.4-1
Status of Potential Uranium Mills¹**

Mill	Location	Owner	Estimated Milling Capacity	Estimated Operational Status
White Mesa Mill	Blanding, UT	Denison Mines (USA) Corp.	1,500 tpd ¹	Operating
Piñon Ridge Mill	Bedrock, CO	Energy Fuels Resources Corporation.	500 tpd	Projected 2012 start date
Cañon City Mill	Cañon City, CO	Cotter Corporation	1,500 tpd ²	Inactive
Shootaring Mill	Ticaboo, UT	Uranium One, Inc.	750 tpd ²	Inactive
MRI Mill	Green River, UT	Mancos Resources, Ltd.	1,200 tpd ²	Baseline investigation phase initiated
Total			5,450 tpd	
¹ Source: Denison, 2009.				
² Source: BLM, 2008.				

If all the uranium mills shown in Table 6.4-1 were operational and processing ore at the full capacity of 5,450 tpd, this would result in approximately 227 ore-truck round trips per day (454 total trips) based on 24 tons per shipment. Approximately 28 acres of surface disturbance is likely to be associated with every 100 tpd of production (BLM, 2008). This equates to 1,526 acres of cumulative surface disturbance to supply ore to 5,450 tpd of milling capacity. Energy Fuels estimates that cumulative employment associated with this production rate would include approximately 2,000 workers, including mill workers, miners, mining support personnel and truckers (Filas, 2009).

Cumulative impacts in the vicinity of the Mill Site are likely to be lower than this because not all of the mills plan to process ore from mines in western Colorado and eastern Utah. Cotter intends to process ore shipped from the Mount Taylor Mine at its Cañon City Mill (Cotter, 2009). The Mount Taylor Mine, which is owned by Rio Grande Resources Corporation, an affiliate of Cotter, is located near Grants, New Mexico. Ore would most likely be transported from the mine to Cañon City by train, well outside the Cumulative Impact Area. Denison recently announced its intention to supply the White Mesa Mill with ore from its Arizona 1 deposit in north central Arizona. Denison intends to start production at the Arizona 1 deposit in 2010, and to haul ore by truck to the White Mesa Mill (Denison, 2009). Ore would most likely be transported from the mine to the mill along US Highway 191, south of the Cumulative Impact Area. This ore would be in addition to the ore currently produced at its La Sal, Utah and San Miguel County, Colorado mines, which are located at the east and south edges of the Cumulative Impact Area, respectively. With the addition of the ore feed from its Arizona Mines, White Mesa's potential need for additional ore from mines within the Cumulative Impact Area is significantly reduced.

Excluding the Cañon City and White Mesa mills, the remaining mills have a processing capacity of 2,450 tpd. If the Piñon Ridge, Shootaring and MRI mills were all operational and processing ore at their full capacities, this would result in approximately 102 ore-truck round-trips per day (204 total trips) based on 24 tons per shipment. Supplying ore to 2,450 tpd of mill capacity would result in approximately 686 acres of cumulative surface disturbance and a workforce of about 1,000 mill workers, miners, mine support workers, and truckers (Filas, 2009). However, both the inactive Shootaring Mill and the proposed MRI Mill are outside of the Cumulative Impact Area. Although they could draw uranium ore from the western portion of the Cumulative Impact Area, they would likely rely more heavily on ore produced from uranium mining districts in closer proximity. These include the Yellow Cat, San Rafael, Temple Mountain, and Henry

Mountain Mining Districts, all of which are outside of the Cumulative Impact Area. Accordingly, impacts associated with these activities would be spread over a much greater area.

Based on the cumulative analysis in this Section and the impact analysis in Section 4.0, it is unlikely that the cumulative impacts that could potentially occur as a result of the Proposed Action and past, present and reasonably foreseeable future actions could not be mitigated.