US Department of the Interior
Bureau of Land Management

Environmental Assessment UT- 050-07-032-EA
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ENVIRONMENTAL ASSESSMENT TO COMMENCE MINING OPERATIONS AT THE TONY M UNDERGROUND URANIUM MINE

Location: **PHASE 1 OF THE TONY M MINE IS LOCATED IN PORTIONS OF THE E½ OF SECTION 8; PORTIONS OF THE W½NE¼ AND THE W½ OF SECTION 9, ALL OF SECTION 16, PORTIONS OF THE E½ OF SECTION 17; PORTIONS OF THE W½NE¼, PORTIONS OF THE NW¼, PORTIONS OF THE N½SW¼, AND PORTIONS OF THE NW¼SE¼ OF SECTION 21; T35S, R11E, SALT LAKE MERIDIAN, GARFIELD COUNTY, UTAH**

Applicant/Address: **DENISON MINES (USA) CORP., 1050 17TH STREET, SUITE 950 DENVER, COLORADO 80265**

D E N I S O N M I N E S

DENISONMINES

US Department of the Interior
Bureau of Land Management
Henry Mountains Field Station
P.O. Box 99
Hanksville, Utah 84734
Phone: 435.542.3461
FAX: 435.542.3016

BLM

TONY M MINE ENVIRONMENTAL ASSESSMENT

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CHAPTER 1
INTRODUCTION AND NEED FOR THE PROPOSED ACTION

INTRODUCTION

International Uranium Corporation USA (IUC) acquired the Tony M Mine claims in 2005. In December of 2006, Denison Mines (USA) Corp. (DUSA) merged with IUC, and the combined entity that currently holds claim rights and permitting responsibility for the Tony M Mine is DUSA. DUSA plans to reopen and redevelop the former Tony M underground uranium mine near Ticaboo, Utah. DUSA plans to commence mine reopening and redevelopment in the third quarter of 2007. The mine is located in Shootaring Canyon, north of the town of Ticaboo, and is associated with the following unpatented mining claims: B.F. 145-151, 153-154; BULL 680-682; TIC #17B-30B, 33B; and Star 1-10, 13-15, 5 Fraction, 7 Fraction, 14 Fraction, 15 Fraction, and State of Utah Mineral Lease ML-49703-OBA. The mine was first developed by Plateau Resources in 1977 and operated into the early 1980s when it was placed on standby due to low uranium prices. The Tony M Mine was reclaimed in stages between 1995 and 2003.

The project location is shown in the attached Figure 1. A map of the project area is included as Figure 2 and a topographic base map is included as Figure 3 (located in Attachment 1). The Utah Department of Oil, Gas, and Mining (UDOGM) and the United States (US) Department of Interior (DOI) Bureau of Land Management (BLM) have agreed to evaluate the proposed mine development in three phases. DUSA has an approved UDOGM Exploration Permit, No. E/017/044, and an accepted BLM notice UTM-80022 for initial exploration and investigation work at the site.

Figure 2 depicts the existing workings, identified ore deposit, and potential future production and ventilation holes. DUSA plans to reopen the mine using a phased approach. Phase 1 consists of reconstructing the surface facilities and further developing the underground workings utilizing the existing declines. Phases 2 and 3 consist of developing the full northern extent of the ore deposit, which would require construction of production shafts and additional roads and surface facilities.

During Phase 1, the mine is expected to initially employ approximately 10 to 20 miners and support personnel to rehabilitate and further develop the main declines[1] and then expand to 60 to 70 employees during full production. Depending on market conditions and production rates, Phase 1 is expected to start in the third quarter of 2007 and extend over a 2- to 3-year period. Phases 2 and 3 have the potential to employ up to 300 miners and extend the mine life to 25 years or more.

[1] Declines are ramps that form the entrance to the underground deposits.

DUSA is currently working with UDOGM to develop the permit documents, and is submitting this environmental assessment to BLM to develop the National Environmental Policy Act (NEPA) resource baselines and clearances, for the Phase 1 project. DUSA hopes to have the needed UDOGM, BLM and Utah Department of Environmental Quality (UDEQ) permits and approvals for Phase 1 in place by late July 2007 to allow mine operations to begin in the third quarter of 2007. Additional information is provided in the Notice of Intent / Plan of Operations (NOI/PO) submitted to UDOGM and BLM in November of 2006 (Attachment A of Appendix A), the reformatted Plan of Operations (POO) adhering to BLM requirements submitted in June 2007, and in the Interdisciplinary Team Analysis Record Checklist (IDT Checklist) provided in Appendix A.

NEED FOR THE PROPOSED ACTION

The purpose for the proposed action is to also permit and regulate DUSA's development of an underground uranium mine to supply ore for the nuclear fuel cycle. This EA will analyze the impacts that would result from implementing the POO and also analyze whether any undue and unnecessary degradation would result from implementation of the POO. The need is based on the projected growth of energy consumption in the US and abroad. Presently, there are approximately 435 nuclear reactors in the world, including 104 in the US. To continue to operate, the reactors require approximately 180 million pounds of uranium fuel annually. Currently, only an estimated 100 million pounds of uranium fuel are produced annually from all producing nations (http://www.uic.com.au/ueg.htm).

The demand for energy worldwide is growing exponentially. Recent forecasts indicate the demand for energy would double from the year 2002 to 2030. This demand is more dramatic in growing countries such as China where power generation requirements are expected to double in 15 years. Worldwide, electricity is the most widely used and rapidly growing form of secondary energy supply. Presently, the most important fuel for generating electricity is coal, which provides 39 percent of all electricity generated. Approximately 16 percent of electricity is generated from hydro-electric power generation. Uranium-fueled nuclear power generating stations provide 20 to 25 percent of all electricity generated.

Hydro-electric and nuclear power generation do not directly contribute carbon dioxide to the atmosphere, and the expanded use of nuclear power is a measure which would effectively limit future global carbon dioxide emissions. Worldwide energy demand and secondary electrical demand have been predicted to continue to increase, even with current and proposed future conservation,. The need for domestic energy production would continue to be important to domestic national energy policy as the US continues to attempt to decrease its dependence on foreign energy supplies. Nuclear power generation is well suited to

meeting the world's demand for continuous, reliable electricity supply on a large scale, including base-load electricity, the major part of the demand.

The Management Framework Plan (MFP) for the Henry Mountain Resource Area, approved in 1982, identifies Shootaring Canyon as having valuable uranium deposits that could be fully developed (BLM 1982). The Director of the Bureau of Mines has identified uranium as a mineral with compelling national significance. One of the long term objectives of the BLM is to make nationally significant minerals available for use.

CONFORMANCE WITH BLM LAND USE PLAN(S)

This EA was prepared in conformance with the BLM Utah's NEPA Guidebook, dated March 2006. The BLM Henry Mountain MFP, approved in 1982, states that uranium is considered by the Director of the Bureau of Mines to be of compelling national significance. In addition, the MFP identifies Shootaring Canyon as an area designated for uranium mining and such mining as one of its permissible land uses. The Proposed Action is consistent with the terms, conditions and decisions of the approved MFP; therefore, the proposed action is considered to be in conformance with the Henry Mountain MFP (1982).

RELATIONSHIPS TO STATUTES, REGULATIONS AND OTHER PLANS

The proposed action is consistent with federal, state, and local laws and regulations. The proposed action also is consistent with Rangeland Health Standards and Guidelines and does not affect any tribal lands held in trust for the tribes by the federal government.

FEDERAL ENVIRONMENTAL LAWS

More than three dozen federal environmental laws and regulations apply to all aspects of mining. In addition, each state has laws and regulations that mining companies must follow. The following are some of the major laws governing mining.

- **Surface Resources Act at 43 Code of Federal Regulations (CFR) subpart 3715** – regulates residency or seasonal occupancy of mining claims by mining claimants and requires occupancy to be authorized by the proper BLM field office through a notice or plan of operations.
- **Federal Mining Law at 43 CFR subpart 3809, Surface Management Program** – requires proper permits and authorizations for mineral exploration mining, and reclamation actions on the public lands administered by BLM
- **National Environmental Policy Act** – requires interdisciplinary approach to environmental decision making.
- **Federal Land Policy and Management Act** – requires the prevention of undue and unnecessary degradation of federal lands.

- **Clean Air Act** – sets air quality standards.
- **Federal Water Pollution Control Act (Clean Water Act)** – directs standards to be set for surface water quality and for controlling discharges to surface water.
- **Safe Drinking Water Act** – directs standards to be set for quality of drinking water supplied to the public (states are primary authorities) and regulates underground injection operations.
- **Solid Waste Disposal Act** – regulates the generation, storage and disposal of hazardous waste and management of solid, non-hazardous waste.
- **Comprehensive Environmental Response, Compensation and Liability Act** – requires owners/operators to report releases of hazardous substances to the environment and inventory chemicals handled.
- **Toxic Substance Control Act** – requires regulation of chemicals that present risk to health or environment.
- **Endangered Species Act** – mandates protection for plants and animals listed that are threatened or endangered.
- **Migratory Bird Treaty Act** – prohibits killing of nearly all bird species.

Other laws that impact mining include:

- Rivers and Harbors Act
- Mining Law of 1872
- National Historic Preservation Act
- Law Authorizing Treasury's Bureau of Alcohol, Tobacco and Firearms to Regulate Sale, Transport and Storage of Explosives
- Federal Mine Safety and Health Act

The following is a list of known federal, state, and local approvals and permits required, identified by type and entity. All required permits and approvals will be issued in DUSA's name.

Permit or Approval	**Entity**
Air Order	UDEQ – Division of Air Quality
Groundwater Discharge Permit by Rule	UDEQ – Division of Water Quality
Water Rights Confirmation	Utah State Engineers Office
Dam Safety Permit	Utah SEO – Dam Safety Office
Large Mine Permit/Plan of Operations/ Reclamation Plan	Utah DOGM
Septic System Construction Permit	UDEQ – Utah Water Pollution Control Committee and Southwest Utah Public Health Department (copy only)
Stormwater Diversion Construction Permit	UDEQ – Division of Water Quality
NEPA EA Approval	BLM
Cultural Clearance	State Historic Preservation Office
Concurrence on Wildlife Protection	Utah Division of Wildlife

CHAPTER 2
DESCRIPTION OF ALTERNATIVES

INTRODUCTION

The EA for the Tony M Mine focuses on only two alternatives: the Proposed Action (to reactivate underground uranium mining activities at the mine Phase I) and the No Action (not to reactivate mining activities at the mine) alternatives. No other alternatives were evaluated for this EA; therefore, no issues were identified associated with other alternatives, and no additional mitigation for other action alternatives are addressed in this EA. The No Action Alternative is considered and analyzed to provide a baseline for comparison of impacts from the proposed action.

PROPOSED ACTION

The POO submitted by DUSA is considered to be the proposed action. DUSA plans to reopen the Tony M Mine, an underground uranium mine that was previously operated by Plateau Resources, as described in the reformatted POO resubmitted to BLM in June 2007.

Figure 2 shows the existing workings, identified ore deposit, and proposed future production shafts and ventilation holes. DUSA plans to reopen the mine using a phased approach. Phase 1 consists of reconstructing the surface facilities and further developing the underground workings utilizing the existing declines. Phases 2 and 3 consist of developing the full northern extent of the ore deposit, which would require construction of production shafts and additional roads and surface facilities. Phases 2 and 3 are contingent on the Phase 1 results and are considered qualitatively in the cumulative impacts section of the EA.

During Phase 1, the mine is expected to initially employ 20 miners and support personnel to rehabilitate and further develop the main declines (sloped tunnel used to transport mine employees, equipment, and ore), and then expand to 60 to 70 employees during full production. Depending on market conditions and production rates, Phase 1 is expected to start in the third quarter of 2007 and extend over a 2- to 3-year period. Phases 2 and 3 have the potential to employ up to 300 miners and extend the mine life to 25 years or more.

This EA addresses proposed Phase 1 activities including rehabilitation of the existing mine workings; extension of the underground declines and laterals further to the north; re-establishment of the mine ventilation and dewatering systems; and construction of mine buildings and related surface facilities. These proposed activities, with a few minor exceptions such as two proposed vent holes and their access

roads, (totaling 0.62 acre new surface disturbance), are limited to those surface areas that were previously disturbed and reclaimed by the former operator. No concurrent reclamation is proposed during Phase 1, as the entire surface facilities would be needed to support potential Phase 1 and Phase 2 mine operations. DUSA would reuse Plateau Resources' underground workings including two existing 12,000-foot declines. DUSA is currently working with UDOGM to develop the permit documents, and is submitting this environmental assessment to BLM to develop the NEPA resource baselines and clearances for the Phase 1 project. DUSA anticipates that the UDOGM permit will be issued in July 2007.

The primary focus of Phase 1 mine development would be to rehabilitate the existing main declines and extend them further to the north. The main decline system, a series of ramps that form the entrance to the underground deposits, shown on Figure 3, consists of two 8-foot high by 12-foot wide parallel declines spaced 40 feet apart. The declines currently extend approximately 10,000 feet into the ore body at a nominal three percent dip. Laterals also were developed at right angles to the main declines to establish the ventilation system and emergency access routes. The area of existing development averages about 400 feet below the ground surface with maximum depths of 750 feet below the ground surface in the northern end of the mine. The lower, northern portions of the two declines are flooded (see water boundary on Figure 3) and would likely require extensive rehabilitation in some areas.

In order to rehabilitate the existing main declines and extend them further to the north, the mine dewatering system would need to be reestablished by installing a pumping station at Vent Hole 4 and pumping the water to the reconstructed evaporation pond located on top of the mesa. The water would be pumped through six-inch diameter continuous steel and high-density polyethylene (HDPE) pipe at rates up to 200 gallons per minute (gpm). Exhaust fans, powered by generators with insulated power cables that run through the underground mine workings, also would be reinstalled in Vent Holes 1, 3, 4, 5, and 6 to establish positive ventilation. Additional ventilation would be provided by installing Vent Holes 7 and 8, as mine development extends northward.

The mine would be developed to ultimately support an ore production rate of approximately 10,000 tons per month. Eight-foot high by 12-foot wide laterals would be driven to the east and west as the declines are advanced in a northerly direction. The laterals would be driven through known ore-bearing zones to provide access for production mining. The laterals also provide access for geologic mapping, long-hole drilling, rib scanning, and sample collection. This geologic data would be used to develop detailed mine planning and stope development for each lateral.

The ore would be mined using a modified room-and-pillar system. This mining method is a common method for mining in uranium-bearing sandstone and is designed to follow the irregular configuration of the individual ore bodies. The ore seams vary in height with an average seam thickness of approximately 4 to 5 feet. The waste/ore ratio also varies depending on the thickness of splits within the ore seams and the market price for uranium. A typical equipment list for the underground operations is presented in the upper portion of Table 2.

Jumbo drills operating on compressed air would be utilized to drill the blast holes and rock-bolt holes in the declines and laterals. Air-jacklegs would be utilized in production areas. All blasting operations would be conducted in accordance with MSHA regulations (30 CFR Parts 56 and 57). Blast holes would be loaded with an electric blasting cap, chemical booster, and a mixture of ammonium nitrate and fuel oil (ANFO) prills. The blasts would be initiated electronically with the hole pattern, firing sequence, and delays designed to allow for optimum breakage. Explosives and detonators would be stored in underground magazines and transported from the magazines to the working face in accordance with Mine Safety and Health Administration (MSHA) regulations (30 CFR Part 56 and 27 CFR Part 55).

The ore and waste rock would be mucked out using low-profile diesel loaders. Depending on the size of the opening, the loaders would vary in capacity from two to five cubic yards. Ore would be hauled to the surface using low-profile diesel haul trucks with capacities ranging from two to ten tons. During initial decline and lateral development, the waste rock would be hauled to the surface and placed in the waste rock disposal area. Waste produced during subsequent development and production would be disposed of both on the surface and underground in mined out areas. As much waste rock as possible would be disposed of underground in mined out areas.

Roof support would consist of metal roof mats anchored into the roof using five to eight-foot-long mechanical split-set roof bolts. Bolting would be performed as necessary with the spacing varying according to roof conditions and the size of the opening. The size of the mine openings would depend on roof conditions, but would typically be 14-feet or less in width based on the experience of similar mining operations conducted in the same formation. Ten-foot-long mats would be installed diagonally on the ribs when additional rib support is required.

The underground area also would include maintenance and storage areas. Routine maintenance and minor repairs would generally be done underground, with more extensive repairs and maintenance completed in the surface shop. Roof support materials, blasting supplies, lubricants, and the smaller and

more commonly used equipment parts would be stored in designated locations underground. These locations are expected to change as the mine workings are advanced.

Phase 2 may consist of developing resources on claims just to the north of the formerly worked part of the Tony M including new surface facilities. Phase 3 may consist of extending mine workings and new surface facilities to develop the Bullfrog claims to the north, which are the larger and better part of the ore body. Phases 2 and 3 would involve construction of some additional surface features such as vents, portals or shafts, and access roads. Phase 2 and 3 have not been defined or scheduled, and DUSA is not currently seeking permits or clearances for these Phases. These phases would be covered under separate NEPA documentation.

DUSA plans to process ore at its own licensed and active mill, the White Mesa Mill, in Blanding, Utah. DUSA hopes to have the needed UDOGM, BLM, and UDEQ permits and approvals for Phase 1 in place by late July 2007 to allow mine operations to begin in the third quarter of 2007. No processing activities would occur on site.

Depending on market conditions and production rates, mining is expected to start in the third quarter of 2007 and extend over a two to three-year period. A portion of the proposed mining activities and surface facilities would be located on State land (Section 16); and the remaining portion would be located on BLM land. Table 2.1 summarizes proposed surface disturbance areas and lists the land owner.

TABLE 2.1
PROPOSED SURFACE DISTURBANCE (ACRES)

Description[a]	Previously Disturbed (acres)	Previously Undisturbed (acres)	Land Owner
Portals, Adits, and Vent Holes			
Main Portal Area	0.72	0.00	State of Utah
South Adit Pad (40 x 85)	0.08	0.00	State of Utah
North Adit Pad (20 x 35)	0.02	0.00	State of Utah
VH-1 Pad (30 x 94)	0.06	0.00	State of Utah
VH-3 Pad (21 x 88)	0.04	0.00	State of Utah
VH-4 Pad (62 x 86)	0.12	0.00	State of Utah
VH-5 Pad (32 x 100)	0.07	0.00	BLM
VH-6 Pad (48 x 101)	0.11	0.00	BLM
VH-7 Pad (50 x 90)	0.00	0.10	BLM
VH-8 Pad (50 x 90)	0.00	0.10	BLM
Subtotal	**1.23**	**0.21**	BLM
Waste Rock Area (WRA)	**7.63**	**0.00**	State of Utah (2.39 acres) and BLM (5.24 acres)
Roads [b]			
Portal Access Road (40 x 357)	0.33	0.00	State of Utah
South Adit Road (16 x 672)	0.25	0.00	State of Utah
North Adit Road (16 x 664)	0.24	0.00	State of Utah
VH-1 Access Road (16 x 589)	0.22	0.00	State of Utah
VH-3 Access Road (16 x 551)	0.19	0.00	State of Utah
VH-5 Access Road (16 x 293)	0.11	0.00	BLM
VH-6 Access Road (16 x 297)	0.11	0.00	BLM
VH-7 Access Road (16 x 168)	0.00	0.06	BLM
VH-8 Access Road (16 x 964)	0.00	0.35	BLM
Evaporation Pond East Road (16 x 779)	0.29	0.00	BLM
Subtotal	**1.73**	**0.42**	
Dewatering System			
Evaporation Dam and Pond	22.22	0.00	BLM
Waterline Corridor (20 x 2,819)	1.30	0.00	State of Utah (0.26 acres) and BLM (1.04 acres)
Subtotal	**23.52**	**0.00**	
Diversion Channels & Sedimentation Ponds [c]			
WRA Diversion Channel (permanent)	1.50	0.00	State of Utah (0.33 acres) and BLM (1.17 acres)
County Road Channel (temporary)	0.47	0.00	State of Utah (0.01 acres) and BLM (0.46 acres)
County Road Sediment Basin (temporary)	0.08	0.00	BLM
Subtotal	**2.05**	**0.00**	
Structures and Buildings			
Shop/Warehouse	0.06	0.00	BLM
Mine Office/Dry	0.08	0.00	BLM
Parking Lot	0.45	0.00	BLM

TABLE 2.1 (Continued)

Description[(a)]	Previously Disturbed (acres)	Previously Undisturbed (acres)	Land Owner
Leach Field	0.24	0.00	BLM
Building Area Common Areas [(d)]	1.73	0.00	BLM
Subtotal	**2.55**	**0.00**	
Yards and Storage Areas			
Storage Yard 1	1.96	0.00	BLM
Storage Yard 2	0.90	0.00	BLM
Subtotal	**2.86**	**0.00**	
Stockpile Areas			
OS-1 Ore Stockpile Area	1.15	0.00	State of Utah (0.21 acres) and BLM (0.94 acres)
TS-1 Topsoil Stockpile	0.31	0.00	BLM
TS-2A Topsoil Stockpile	0.50	0.00	State of Utah (0.30 acres) and BLM (0.20 acres)
TS-2B Topsoil Stockpile	0.35	0.00	BLM
TS-3 Topsoil Stockpile	0.29	0.00	BLM
TS-4 Topsoil Stockpile	0.40	0.00	BLM
TS-5 Topsoil Stockpile	0.20	0.00	BLM
Stockpile Area Common Areas [(e)]	2.39	0.00	State of Utah (2.09 acres) and BLM (0.20 acres)
Subtotal	**5.59**	**0.00**	
Total	**47.17**	**0.62**	
Grand Total Of All Disturbed Areas	**47.79**		

Notes:

(a) The surface acres of larger disturbances were planimetered from Figure 5 and 6. The measured dimensions in feet, shown in parenthesis, were used to calculate the surface acres of the smaller disturbances.
(b) The existing county maintained road and the existing BLM/State road that extends from the county maintained road to the top of the mesa were not included as surface disturbance because these roads are pre-existing and would remain in place after the mine is closed and reclaimed.
(c) The WRA permanent diversion channel would remain intact as part of the reclaimed topography.
(d) The building area common areas include the areas around the buildings that do not have a specified use.
(e) The stockpile area common areas include the areas around the stockpiles that do not have a specified use.
(f) Acreages are rounded to the nearest hundredth; subtotals reflect this rounding and accurately represent acreages.

The proposed surface facilities are depicted on Figures 4A, 4B and 4C. There would be no processing activities on site as all the ore would be transported to the White Mesa Mill. Figures 4A and 5 depict the portal area where the main support facilities are located. These facilities include the following.

- waste rock area (WRA)
- ore slots and ore stockpile area (OSA)
- topsoil stockpile (TS) areas

- surface drainage control structures
- fuel and oil storage areas
- mine offices and dry
- maintenance shop and warehouse
- designated parking areas and storage yards
- mine access roads and pads
- electrical generators
- air compressor station
- well house
- septic system
- solid waste storage (trash, scrap metal, batteries – to be recycled)
- propane heating system

The fuel and oil storage areas, electrical generators, air compressor station, and well house would be located on state land, while the remaining facilities are located on BLM land (Figure 5). An existing telephone line services the mine surface facilities and is currently working for mine activities. Proper precautions would be taken to prevent disturbance of this line.

Figure 6 shows the evaporation pond area where mine water would be relocated and evaporated. Figures 4B and 4C show the access roads and ventilation shafts in the surrounding area. The facilities shown on these maps include:

- evaporation pond
- waterline corridor
- vent holes (existing and proposed)
- pond and vent hole access roads

The evaporation pond, waterline corridor, vent holes and access roads are all located on BLM land. Table 2.1 and Figure 7 depict the land ownership. Minor changes may be made to the proposed layouts during construction; however, construction activities, unless otherwise noted, would be confined to the previously disturbed and reclaimed areas of the project site. Some of these facilities, such as the reopening of reclaimed secondary roads and vent holes, were approved by BLM in notice UTU-80022 for exploration activities submitted in March of 2006 by DUSA, formerly IUC.

The existing evaporation pond at the mine site has been breached. The material from the breached area consists of high quality clays and was placed downstream of the dam area following the dam breach. For

the NOI/PO (Attachment A of Appendix A), DUSA completed a volumetric evaluation of this breached material from a 1 foot contour survey. This evaluation indicated that enough of the previous dam material is available in the downstream area to fill the breached space and rebuild the dam for Phase I activities.

Topsoil piles would be contoured, furrowed, and broadcast seeded in late fall with a seed mix recommended in the NOI/PO (Attachment A of Appendix A). In addition, earthen berms would be placed around the soil stockpiles to protect them from erosion, and they would be contoured to the natural terrain and placed in a topographically protected area (canyon) to prevent wind erosion. An inoculum, or soil amendment, of mycorrhizal fungi would be added to the topsoil stockpiles to promote vegetation growth and improve organic content as necessary.

Areas where noxious weeds are found would be marked and growth medium from this area would be handled so seed or plant parts do not contaminate any other soil. In addition, the Garfield County Noxious Weed Control Authority and the BLM would be contacted and advised of the location of the population.

Minor changes may be made to the proposed layouts during construction; however, construction activities, unless otherwise noted, would be confined to the previously disturbed and reclaimed areas of the project site and outside of surface drainages. Some of these facilities, such as the reopening of reclaimed secondary roads and vent holes, were approved under a previously submitted exploration notice UTU-80022. Each of the above referenced facilities is described in the paragraphs that follow. Below is a summary of the acreage for the Tony M Mine surface disturbance. Table 2.1 provides additional details on proposed surface disturbance acreage, including which areas are located on state and BLM land.

Waste Rock Area

The WRA would be located southwest of the portal entrance in the same position as the former WRA, which has been partially reclaimed. The waste rock would be placed using top dumping and end dumping methods to create a two-bench structure with maximum bench heights of 35 feet. Waste rock slopes would be at the angle of repose (approximately 1.5 Horizonal:1 Vertical) during active mining operations. The WRA, with a capacity of 280,000 tons of waste rock, has been designed to contain the maximum volume of waste generated during Phase 1 of the operation (i.e., no underground waste disposal is assumed for Phase 1). See the NOI/PO (Attachment A to Appendix A)for information on the design of the WRA , waste rock characterization and handling, and waste rock reclamation the design of the WRA, respectively.

Ore Slots and Ore Stockpile Area

Ore would typically be end dumped directly into the ore slots located in front of the portal entrance. The ore slots would have a concrete foundation and base with steel sides. The ore would then be loaded using a front end loader into 22-ton, over-the-road haul trucks for transportation to the mill. Ore transportation would be limited to weekdays with no ore being shipped on weekends or holidays. The truck beds would be covered with tarps to prevent fugitive dust. If the ore cannot be shipped immediately to the mill, the front end loader will place the ore in nearby stockpiles within the OSA (see Figure 5). The NOI/PO (Attachment A to Appendix A) provides additional information on sizing of ore stockpiles.

Topsoil Stockpile Areas

The mine area was disturbed by historic mining and exploration activities that occurred prior to the implementation of state and federal reclamation laws. As a result, very little topsoil was salvaged prior to initial mine development and the majority of the mine site was later reclaimed using the soils and waste rock that existed on the disturbed area at the time of reclamation. Figure 7 in the NOI/PO (Attachment A to Appendix A) depicts the measured thickness of topsoil in the portal area. All of the available topsoil would be stripped prior to disturbing an area. The former waste rock disposal area has the lowest percentage of vegetative cover because the waste rock, which was used as the seed bed, is a relatively poor growth medium. The upper six inches of growth medium from the reclaimed waste rock disposal area would be stockpiled separately in Topsoil Stockpiles 2A and 2B (TS-2A and TS-2B) as shown on Figure 5. TS-1 will be used for stockpiling native soils. Additional topsoil stockpiles include TS-3, TS-4, and TS-5 in the main facilities area (see Figure 6). The NOI/PO (Attachment A to Appendix A) provides additional information on topsoil stripping and stockpiling.

Surface Drainage Control Structures

Disturbances to existing drainage systems were avoided/minimized to the extent possible during the design of the surface facilities layout. Where disturbance of the existing drainage system could not be avoided, both permanent and temporary diversion channels were designed to replace the existing drainages. Permanent diversion channels were designed for the 100-year, 6-hour storm event while temporary channels were designed to handle the flow from the 25-year, 6-hour storm event. These temporary diversion structures would accommodate the runoff generated from over 98 percent of the

storms expected during the potential 25-year mine life and would be maintained by the mine operator as needed.

As shown on Figure 5, a permanent catch basin and diversion channel is proposed immediately above the WRA. This channel would divert runoff originating from above the WRA to the southwest and into an existing ephemeral drainage. The channel is designed to minimize the volume of runoff that would flow down the WRA slopes during both active mine operations and the post-reclamation period. A temporary drainage channel also is proposed along the west side of the county maintained road. The channel is designed to capture runoff from the upslope WRA, OSA, and topsoil stockpile areas. Channel flow would discharge into a temporary sediment basin that will, in turn, discharge into an existing ephemeral drainage. The temporary channel and basin would be backfilled during site reclamation and the natural drainage system restored. Earthen berms would be used to divert water from the surface facility area into temporary sediment basins.

As shown on Figure 6, the former dam would be reconstructed across a west to east trending ephemeral drainage located on top of the mesa. The evaporation pond created by the dam would encompass a maximum of 18.23 acres within a hydrologic basin of approximately 50.8 acres. The pond and dam together would encompass a maximum of 22.22 acres. Surface runoff from the surrounding basin would flow into the pond area. The pond is separated from the larger watershed and drainage system located west of the pond by a naturally occurring low ridgeline.

Sediment control measures including undisturbed buffer areas, sedimentation ponds, earthen berms, and certified weed-free straw bale barriers would also be placed downgradient from disturbed areas to minimize the volume of sediment impacting the drainage system. See the NOI/PO (Attachment A to Appendix A)for additional information on drainage control structures and sediment control during active mine operations.

Fuel and Oil Storage Areas

Diesel fuel, gasoline, and other petroleum products would be stored on-site in tanks, drums, and smaller containers. The fueling station, depicted on Figure 5, would store approximately 5,000 gallons of diesel fuel and 500 gallons of gasoline. The fueling station containment area would be surrounded with soil berms and covered with a plastic liner or equivalent with a 30-millimeter minimum thickness to contain any fuel spills or leaks. The plastic liner would be covered with a protective layer of soil and gravel. The fuel and oil storage areas would be inspected visually each month per Federal Regulation Title 40 Part 112.5. The berms would be established at the height necessary to contain the total volume of the largest

tank within the containment area plus an additional ten percent. The fueling areas would be sloped so that any spills that occur during equipment fueling or fuel delivery to the site would flow into the containment area.

Diesel fuel for the generators (see Figure 5) would be supplied by 850- or 1,700-gallon tanks built into the skid-mounted installation. A separate tank of approximately 5,000-gallons would provide additional fuel storage and would feed into the skid-mounted tanks. The generator fuel tanks would be located within a bermed and lined area similar to the secondary containment for the fuel station.

Up to 2,000 gallons of antifreeze and oil products (i.e., motor oil, hydraulic oil, gear oil, and used oil) would be stored at the maintenance shop within the concrete shop floor and used-oil storage area. With the exception of the used oil tank, these products would typically be stored in smaller tanks of less than 100 gallons, drums, and small containers. The used oil tank would be located on a concrete pad along the outside wall of the shop. The pad would be equipped with a low wall or curbing that is designed to contain the entire contents of the tank if a leak occurs. Any spills in the shop area would be contained within the shop walls and the sand trap that is between the shop drain and septic system. A vendor would periodically pump the sand trap and used oil tank contents into a tanker truck, which would transport the oil to a recycling facility. See the NOI/PO (Attachment A to Appendix A) for additional information on the transportation, storage, use, inspection, and spill response for petroleum products.

Mine Offices and Dry

Mobile trailers initially would be used to house the mine offices and change/shower facilities (i.e., dry). If the mine develops as expected, these trailers may be replaced with prefabricated metal buildings constructed on four-inch-thick concrete pads as the labor force expands. Figure 5 depicts the footprint of the mine offices (40 feet by 24 feet) and dry (40 feet by 60 feet) based on the maximum projected Phase 1 work force of 70 personnel. These buildings would be painted a tan or light brown color, as approved by the BLM, to better blend in with the surrounding natural features. Gravel would be placed in the parking area outside the mine office. The gravel parking areas of the mine offices, dry, maintenance shop, and warehouse would occupy a total of approximately 20,000 square feet.

Maintenance Shop and Warehouse

A maintenance shop (30 feet by 50 feet) and warehouse (30 feet by 30 feet) would be constructed as shown on Figure 5. These facilities would consist of prefabricated metal buildings on six-inch concrete

pads and would be painted tan or light brown as approved by the BLM. Gravel would be placed in the area outside the maintenance shop as part of a 20,000-square-foot parking lot area.

Designated Parking and Storage Yards

A gravel parking area (20,000 square feet) would be provided for employees and visitors adjacent to the mine offices as shown on Figure 5. A fenced storage yard (Storage Yard 1) would be located on the west side of the county maintained road. The yard would be used to store underground supplies (e.g., roof bolts, mats, pipe, hoses, power cable), mobile equipment, and large replacement parts. A second storage yard, Storage Yard 2, also has been included in the event that additional area is needed for storage, parking, mobile trailers, or other uses.

Mine Access Roads and Pads

The primary road into the site is a county maintained road that continues on to the northeast past the mine. Secondary roads would access the portals, WRA, and the buildings and storage yards as shown on Figure 5. The portal access road would be 40 feet wide and all other access roads would be 16 feet wide. A metal gate would be installed at the entrance to the portal area. This gate would be locked when the mine is not operating. Two access roads and small pads were previously reopened (under an approved exploration notice) to gain access to adits located in the canyon north of the main portals. These adits, which are shown on Figure 4A, are laterals that connect to the two main declines. They provide additional ventilation and emergency escapeways for the mine. New roads would be constructed for access to Vent Holes 7 and 8. The remaining roads are existing or existed during former mining operations. Those roads that existed during former mining operations would be reconstructed as shown on figures 4A, 4B, and 4C. No new or reconstructed roads would require side slope cuts exceeding 3 feet with the exception of a portion of the portal access road. This side slope cut would be into waste rock from the former mining operations and would not affect the amount of topsoil required during reclamation.

Electrical Generators

The mine is located in an area of the state where utility-supplied power is unavailable. Power for the mine site would be supplied by four generators (three primary and one backup). The generator sets would be installed in accordance with state and federal requirements including protection from impact, perimeter fencing, and appropriate warning signs. The generators would supply power to the surface facilities, air compressor station, and to the underground workings. Power would be delivered to electrical

transformers underground via insulated power cables hung from roof bolts. The transformers, in turn, would supply power to the pumping system, ventilation system, and electrically-powered equipment.

Air Compressor Station

During the initial phase of operations, compressed air would be supplied to the mine by diesel-powered systems. Once the electrical generators are on line, electrically-powered compressors would be installed near the generators. Three units rated at 1,200 cubic feet per minute (cfm) each would be needed for Phase 1.

Well Water System

Water for bathrooms, showers, washing equipment, and other general uses would be supplied from an existing 8-inch diameter water well using a submersible pump and buried waterlines. The water is not potable and the mine would supply bottled water for drinking purposes during the initial stage of mine rehabilitation and development. Water quality has been analyzed and the well water is suitable for irrigation uses. As the work force expands, a water treatment system would be installed within the dry to meet potable water standards. Non-transient, non-community water systems that supply water to 25 or more people are required, under Utah regulations, to meet potable water quality standards. Underground water needs would be supplied from the sump in the underground mine. Water for dust suppression on the surface roads would be supplied from the existing 8-inch diameter water well. Information on water rights is provided in Attachment E of the NOI/PO (Attachment A to Appendix A). DUSA currently is taking steps to transfer the water rights and would provide a copy to the BLM once the transfer is complete.

Septic System

The septic system used by the previous operator was abandoned in place at the time of mine closure and reclamation. Due to recent flood conditions in the area, this system cannot be restored to accommodate sanitary wastewater disposal for the proposed buildings. A new septic system currently is being designed and would be constructed. A sand trap would be installed between the shop floor drains and the septic system to capture any grease or oil that might enter the drain from maintenance activities. The septic system would be pumped out, as needed, on a routine basis. It is anticipated that the Tony M mine office/dry and warehouse would discharge more than 5,000 gallons of wastewater per day at full operation. Wastewater systems that discharge more than 5,000 gallons per day are classified as a large underground disposal system by the Utah Administrative Code (UAC) R317-5. Approval for

construction of a large underground disposal system is obtained by submitting an engineering report and construction plans to the UDEQ for review and approval. DUSA currently is submitting these plans to UDEQ. The engineering report shall consist of the design criteria and all other information necessary to clearly describe the proposed project and demonstrate project feasibility. Plans for new large underground wastewater disposal system shall be submitted under the supervision of a registered professional engineer licensed to practice in the State of Utah. A construction permit must be issued by the Utah Water Pollution Control Committee prior to construction of the wastewater disposal system or the building(s) to be served by the wastewater system. The Design Report and Plans would also be submitted to the Southwest Utah Public Health Department for their information, but their approval would not be required.

Solid Waste Storage

A roll-off container for solid waste disposal would be located next to the maintenance shop and warehouse. The trash would be picked up on a routine basis by a service company and disposed of at an approved landfill. No landfills would be constructed on site and no waste or organic debris would be buried on site. Scrap metal would be stored in a bin and/or on pallets near the maintenance shop and warehouse until it can be picked up for recycling. Used batteries and tires would be stored in the same area on wood pallets on the concrete floor of the maintenance shop and would be picked up and recycled by vendors every two weeks. New or used batteries would not be placed on bare surfaces.

Propane Heating System

Propane would be used to heat the buildings. The tank would be located in a fenced area near the buildings.

Evaporation Pond

A dam and 18.23-acre evaporation pond would be constructed on top of the mesa approximately one mile northwest of the portal area. The dam and evaporation pond together represent a proposed surface disturbance area of 22.22 acres. The dam and pond would be within the footprint of the previous dam and evaporation pond. The evaporation pond would hold up to 332 acre-feet of water. The previous dam was breached during reclamation and would have to be reconstructed using the same clay material that was removed from the breach. The majority of the clay soils used to construct the dam and clay liner were imported from a borrow area located approximately one-mile south of the pond (see Figure 2). The clay was removed as part of a mineral material sale with the BLM and the borrow area was later reclaimed.

Additional clay material would not be needed for construction of the Phase 1 pond; however, the borrow area may need to be reopened in the future, or an alternative site found, if the pond is expanded in size during Phase 2.

The clay soils in the pond area would be reconditioned and compacted to meet the new liner specifications. An emergency overflow would be constructed on the southwest corner of the pond as shown on Figure 6. The pond would be fenced as approved by the BLM to preclude livestock and wildlife, as the water is of poor quality and not suitable for drinking.

Additional information regarding the evaporation pond is provided in the NOI/PO (Attachment A to Appendix A). The Dam Permit Application and the UDEQ approved Request for Ground Water Discharge Permit by Rule are included as Attachments E and F respectively of the NOI/PO (Attachment A to Appendix A). Information on water rights is included in Attachment E while Attachment F contains supporting information on geotechnical conditions and the expected water quality of the water discharged into the pond.

Waterline Corridor

Water initially would be pumped from the mine workings via Vent Hole 3. This water would be used to condition the clay soils used to reconstruct the dam and clay liner for the evaporation pond. A temporary aboveground water tank would be installed at Vent Hole 3 and water trucks would be filled from the tank. Once the water level has been lowered sufficiently, a permanent pumping station would be installed at Vent Hole 4. The pump for this station would be located underground and would be rated at 220 gpm. A 6-inch diameter pipe would be installed from the mine workings to the surface within Vent Hole 4 and then from there to the evaporation pond. The pipe would follow the pre-existing waterline corridor which extends approximately one-half mile from the vent hole to the pond (see Figure 6). The waterline corridor is approximately 20 feet wide. An aboveground storage tank of approximately 5,000 gallons would be located near Vent Hole 4 to contain all of the water in the pipe in the event the system has to be shut down for repair or maintenance. The tank would be painted tan or light brown to blend in with the surrounding terrain.

The waterline would consist of HDPE continuous pipe laid on the ground surface and covered with soil within an existing side-hill cut. The previously used waterline, consisting of 8-inch aluminum pipe, is buried under soil sloughage originating from above the side-hill cut. This pipe and soil would be removed as the new pipe is installed. The old pipe would be disposed of at an off-site landfill while a portion of the soil would be pushed down the hill and the remainder would be used to cover the new pipe.

The waterline would be constructed of one continuous HDPE pipe with heat-fused joints that should preclude breakage of the pipeline. An all-terrain vehicle (ATV) trail would be maintained along side the pipe to allow for periodic monthly inspections during pumping operations inspection.

Vent Holes

Vent Holes 1, 3, 4, 5, and 6 were reopened as part of a previously submitted exploration notice UTU-80022 for the site (note: there is no Vent Hole 2). With the exception of Vent Hole 3, which is only 11-inches in diameter, the vent holes are between 60 and 72 inches in diameter. Two new vent holes, Vent Holes 7 and 8, would be installed as the declines are advanced further to the north. The surface disturbance associated with the new vent holes would be minimal (approximately 0.65-acre) because the vents would be of similar size to the existing vent holes and in close proximity to existing roads. Metal diffusers would be installed above each of the existing and new openings. The diffusers would be about four to five-feet tall, screened on top to prevent entry, and painted tan or light brown to blend in with the surroundings. The locations of the existing and proposed vent holes are shown on Figures 4B and 4C.

Pond and Vent Hole Access Roads

The existing access road to the evaporation pond area starts at the county maintained road just north of Vent Hole 4 and heads south past Vent Hole 4, Vent Hole 3, the evaporation pond dam, and Vent Hole 1 (see Figures 3 and 4B). This access road is located on both State of Utah and BLM managed land. An existing secondary road also accesses the evaporation pond area from the south. Sections of reclaimed roads were reconstructed as part of an approved exploration notice UTU-80022 to access the top of the evaporation pond dam and Vent Holes 1 and 3. All existing, reconstructed, and proposed vent hole access roads would be 16 feet wide and do not require side slope cuts exceeding 3 feet deep. The pad for Vent Hole 4 is located immediately adjacent to the State/BLM road and a separate access road is not required for this vent hole.

After its intersection with the State/BLM road, the county maintained road continues in a northwest direction and ultimately leaves the project area. As part of the approved exploration notice UTU-80022, previously reclaimed roads were reconstructed to access Vent Holes 5 and 6. New roads would be constructed to access proposed Vent Holes 7 and 8. Figures 3 and 4C show the existing, reconstructed, and proposed access roads for these vent holes.

Reclamation is required by both state law and Federal Regulation at 43 CFR 3809.2(e). At all US mining operations, detailed reclamation plans must be approved by federal, state, and local officials before

mining begins. Reclamation bonds are posted by the mine operator to ensure a successful completion of the process.

Reclamation includes the following steps:

- saving and protecting topsoil during initial development
- contouring of land
- placement of topsoil or an approved substitute on the graded area
- reseeding with native vegetation, crops and/or trees
- covering seeded areas with ¼- to ½-inch of soil
- monitoring to assure success

Although underground mines such as the proposed Tony M Mine do not have much surface disruption, they do have reclamation responsibilities for stabilizing waste rock and evaporation pond areas during use and reclaiming the areas when mining is completed. Ultimately, reclaimed sites have been returned to many productive uses, ranging from recreation areas, farms and golf courses to wildlife areas, parks, wetlands and housing developments. For the Tony M Mine, it is envisioned that the land would be returned to its former uses as wildlife and rangeland area.

NO ACTION ALTERNATIVE

The No Action Alternative assumes the Tony M Mine would not be re-opened. Uranium ore to support power utilities would not be mined from the underground mine workings but would be available for future uses. The waste rock pile would remain in its present condition until bond release criteria are achieved. The evaporation pond dam would remain in its present condition. Under the no action scenario, additional mining activities in this area may or may not occur on neighboring sites. The previously disturbed area would remain under bond until rehabilitated and released.

If BLM were to deny the proposed action, the applicant could attempt to reverse BLM's decision through administrative appeals, seek to exchange its lease for leases in other locations, or seek compensation from the Federal government. The outcome of these actions is beyond the scope of this EA as they cannot be projected or meaningfully analyzed at this time.

CHAPTER 3
AFFECTED ENVIRONMENT

INTRODUCTION AND GENERAL SETTING

The affected environment of the Proposed Action and No Action alternatives were considered and analyzed by an interdisciplinary team as documented in the IDT Checklist, Appendix A. The IDT Checklist indicates which resources of concern are either not present in the project area of would not be impacted to a degree that requires detailed analysis. Critical Elements of the Human Environment are those elements that are subject to the requirements specified in statute, regulation, or executive order, and must be considered in all EAs (BLM H-1790-1, Appendix 5). The Critical Elements of the Human Environment and other resources of concern included in Appendix A (Critical Elements are designated with *) are:

- *air quality
- *areas of critical environmental concern
- *cultural resources
- environmental justice
- *farmlands (prime or unique)
- *floodplains
- *invasive non-native species
- *Native American religious concerns
- *threatened, Endangered, or candidate species
- *wastes (hazardous or solid)
- *water quality (drinking/ground)
- *wetlands/riparian zones
- *wild and scenic rivers
- *wilderness/WSA
- rangeland health standards and guidelines
- livestock grazing
- woodland/forestry
- vegetation including special status plant species
- fish and wildlife including special status species
- soils/watershed
- recreation
- visual resources

- geology/mineral resources/energy minerals
- paleontology
- lands/access geology/mineral resources/energy minerals
- fuels/fire management
- socio-economics
- wild horses and burros
- wilderness characteristics

None of the critical elements would be potentially impacted.

Other resources of concern which could be impacted to a level requiring further analysis are described in Chapter 3, and impacts on these resources are analyzed in Chapter 4 below. Those resources for which further analysis was conducted are socio-economics and geology/mineral resources/energy minerals. The general setting and present conditions for socio-economics and geology/mineral resources/energy minerals are further described below.

As shown on Figure 1, the Tony M Mine is situated on the south flank of the Henry Mountains in Garfield County, Utah. The mine is located approximately 50 miles south of Hanksville and 15 miles north of Bullfrog Marina. The main access road to the mine is via six miles of all-weather, county maintained road proceeding 1.5 miles west from Utah Highway 276 and then 4.5 miles north through Shootaring Canyon as shown on Figure 2. The mine area is located within the Colorado Plateau, which is characterized by wide areas of nearly flat-lying sedimentary rocks interrupted by abrupt monoclinal folds that form broad basins and uplifts. The mine is situated among sheer cliff faces and is populated entirely by desert scrub and grassland vegetation communities. The elevation of the mine area ranges from 4,800 to 5,000 feet. The climate is arid, with annual precipitation totaling not more than 4 inches.

Socio-economics

The mine is located in Garfield County Utah. The population of Garfield County in 2006 was 4,534 people (U.S. Census Bureau 2007). The population decreased by 4.2 percent from 2000 to 2006. Garfield County's population and tax base have diminished since the 1980s and the regional economy relies largely on seasonal recreation and tourism. There is also limited agriculture in the county, primarily cattle grazing. During the winter months, employment possibilities are limited, creating a somewhat transient population.

There were 3,146 housing units in Garfield County in 2005, and the median household income was estimated at $37,454 in Garfield County in the 2004 data (U.S. Census Bureau 2007). 9.8 percent of the population in Garfield County lives at or below the poverty level (U.S. Census Bureau 2007).

The nearest town to the mine is Ticaboo. Most of the existing work force in the Ticaboo area is employed in seasonal service jobs in the recreation industry. The next nearest community to the mine is Bullfrog, Utah, in Kane County in the Glen Canyone National Recreation Area. Bullfrog is approximately 16 miles south of the project site. According to the Kane County Sheriff Department, Bullfrog has a variable transient population. Most of the existing work force in the Bullfrog area is employed in seasonal service jobs in the recreation industry.

The nearest school (Kingergarten through 12th grade) is Lake Powell School, located in Bullfrog. The elementary school has 41 students and 5 teachers. Thirty-eight of the school students are Caucasian and three are Hispanic. This ethnic distribution reflects that of Kane County, whose population is approximately 96 percent Caucasian.

There is a volunteer fire department in Ticaboo to respond to fires (www.localfirehouse.com/departments/state/UT.html). There is a medical clinic in Hanksville (Wayne Medical Clinic) which is only open on Tuesdays, and an urgent care facility (Bullfrog Urgent Care) is located in Bullfrog. The nearest emergency responder is the county Deputy Sheriff in Bullfrog.

Geology/Mineral Resources/Energy Minerals

Formations which crop out or are present in the subsurface within the project area include, in descending order, the Morrison, Summerville, Entrada Sandstone, Carmel, and Navajo Sandstone. The Morrison Formation in this area consists of two members, the Salt Wash Sandstone Member and the overlying Brushy Basin Member. The Brushy Basin Member is composed of bentonitic claystone interbedded with minor siltstone and sandstone beds. The Salt Wash Member, which is the major uranium host formation, consists predominately of sandstone beds interbedded with minor siltstone and claystone beds. The sediments within the Salt Wash Member are sulfide-poor and therefore are not likely to produce acid rock drainage (ARD). The Salt Wash Member contains an unconfined aquifer and has a downward hydraulic gradient. The Salt Wash Member is believed to pinch out near the center of the mine property, and the Salt Wash Member is unsaturated southeast of this point (Figure 3 Geologic Cross Section Attachment G-1 of Appendix A). The Summerville Formation is composed of alternative thin, even beds of marine sandstones, siltstones, mudstones, gypsum, and shales and underlies the Salt Wash Member (Jackson and Noller, 1991). Finally, the Entrada Sandstone Formation is very fine-grained eolian quartz sandstone.

The Navajo aquifer system is confined by the Carmel Formation as indicated by hundreds of feet of hydraulic head measured in Plateau Resources Limited wells D-35-11-02cba-1 near the Tony M Portal and D-36-11-03vvc-1 at the inactive Shootaring Canyon Mill. As a result, the Navajo aquifer is protected from contamination by a strong upward hydraulic gradient and an effective, heterogeneous aquitard.

The Carmel Formation is present between the Entrada Sandstone Formation and the Navajo Sandstone. The Carmel Formation is a heterogeneous unit composed of interbedded sandstone, mudstone, limestone, dolomite and gypsum, and acts as an effective aquitard for the Navajo aquifer system, (Jackson and Noller, 1991). According to the well log in the Report of Well Driller for well D-35-11-02cba-1, the Carmel Formation is 180 feet thick near the Tony M Mine portal in Section 2.

CHAPTER 4
ENVIRONMENTAL IMPACTS

This section analyses the potential direct, indirect, and cumulative impacts of the Proposed Action and the No Action Alternative.

DIRECT AND INDIRECT IMPACTS

Direct impacts are those caused by an action and occur at the same time and place as the action. Indirect impacts are those caused by the action that are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, growth rate, and related effects on air and water and other natural systems (including ecosystems).

PROPOSED ACTION

This section analyzes the potential direct and indirect impacts of the proposed action to socio-economics and geology/mineral resources/energy minerals as described in the affected environment in Chapter 3.

Socio-economic Impacts

During Phase 1, the mine is expected to initially employ about 10 to 20 miners and support personnel to rehabilitate and further develop the main declines and then expand to 60 to 70 employees during full production. Depending on market conditions and production rates, Phase 1 is expected to start in the third quarter of 2007 and operate over a 2- to 3-year period.

Under the Proposed Action Alternative, mine construction would provide short-term employment to area residents and mine operations would provide long-term employment and would contribute relatively high-paying jobs and a dependable long-term tax base to Garfield County. The result is a direct positive impact to the local economy and residents.

Priority would be given to protecting all communities as defined by assistance strategies. Planned actions would be coordinated and developed with Garfield County and other agencies in a manner that does not exclude persons/populations from participation or subject individuals to discrimination because of race, color, or national origin. Disproportionately high and adverse human health or environment effects would not be borne by minority or low income populations. There would be a positive economic impact.

Adequate housing to support the workforce under the Proposed Action Alternative would be available in Ticaboo and Hanksville. Most of the families of the work force would likely live in Ticaboo. Some of

the families of the work force also could live in Hanksville. Hanksville is located about 50 miles north of the mine location. In situations where the nearest town is located at this distance from the mine, some form of transportation assistance, such as vans or buses, may be provided.

Mitigation Measures for Socio-economic Impacts

No mitigation measures are necessary. The only impacts to socio-economics are positive impacts to the local economy and residents resulting from improved employment opportunities.

Residual Socio-economic Impacts

Following mine closure, the employment and tax base generated by the operation of the mine would end. There is no immediately foreseeable employment that would continue to support miners following the closure and reclamation of the mine.

Monitoring and/or Compliance for Socio-economic Impacts

No mitigation measures are applicable; therefore, no monitoring or compliance would be required with regard to socio-economics under the Proposed Action Alternative.

Geology/Mineral Resources/Energy Minerals Impacts

The project area is located within the Colorado Plateau physiographic province, which is characterized by wide areas of nearly flat-lying sedimentary rocks interrupted by abrupt monoclinal folds that form broad basins and uplifts. Vertical and sub-vertical faults, commonly having a northeasterly or northwesterly strike, and bedding plane faults are common but do not generally extend far from the intrusive bodies forming the Henry Mountains. Waste rock and uranium ore would be extracted from the underground mine workings. Uranium ore would be permanently removed from the region. It would be processed at the White Mesa Mill in Blanding, Utah, and the product uranium oxide would enter the nuclear fuel cycle.

The exploration for, and mining of, uranium-vanadium resources could have a positive impact for geology/mineral resources/energy minerals in this area potentially increasing the understanding of ore deposition controls and geology. The extraction of mineral resources also would constitute an irretrievable loss of the resources from this site. However, this area of Utah provides other opportunities for uranium exploration, discovery, and extraction, and even though there would be a small local negative impact, the overall impact to geology/mineral resources/energy resources would be positive.

Mitigation Measures for Geology/Mineral Resources/Energy Minerals Impacts

No mitigation measures are necessary.

Residual Geology/Mineral Resources/Energy Minerals Impacts

Following mine closure, the mine would be reclaimed, leaving no residual impact to the surface geology. Although extraction of uranium ore would reduce mineral resources at the site, the region has numerous other potential uranium and other mineral resources.

Monitoring and/or Compliance for Geology/Mineral Resources/Energy Minerals Impacts

No mitigation measures are anticipated, therefore, no monitoring or compliance would be required with regard to geology and minerals under the Proposed Action Alternative.

NO ACTION

The No Action Alternative would not meet the need for the Proposed Action. No environmental impacts would result from the No Action Alternative.

Socio-economics

Garfield County's population and tax base have diminished since the 1980s and the regional economy relies largely on seasonal recreation and tourism. There also is limited agriculture in the county, primarily cattle grazing. During the winter months, employment possibilities are limited, creating a somewhat transient population. Under the No Action Alternative, this condition would continue to exist. There would be no socio-economic benefit to Garfield County associated with the No Action Alternative.

Geology/Mineral Resources/Energy Minerals

The No Action Alternative would generate no impacts to geology and minerals. If no mining of uranium were to occur at this facility, the resource would remain in its current state.

CUMULATIVE IMPACTS

Cumulative impacts are those impacts resulting from the incremental impact of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions.

REASONABLY FORSEEABLE ACTION SCENARIO

The NOI/PO for the Tony M Mine was submitted to BLM and UDOGM on November 17, 2006 and revised in February 2007 and April 2007, for Phase 1. The NOI/PO is provided electronically in Attachment A of Appendix A, the IDT Checklist. In addition, a reformatted POO was submitted to BLM in June 2007. Phases 2 and 3 include the proposed expansion of the underground mine to the north. The

proposed Phase 2 and 3 expansion of the Tony M Mine represents a reasonably foreseeable action scenario (RFAS) in the near term and is illustrated on Figure 2 of the IDT Checklist (Appendix A).

Phase 1 of the Tony M Mine has been identified as the Proposed Action Alternative. The underground mine would be developed to ultimately support an ore production rate of approximately 120,000 tons per year.

The proposed Phase 2 and 3 of the Tony M Mine includes the expansion of the underground uranium mine to the north. As discussed in the Plan of Operations for Phase 1, the Phase 2 and 3 expansions would support up to 300 workers and extend the life of the mine 25 years. Underground mining would advance through the formation where ore is deemed adequate for processing using similar mining methods as Phase 1. Surface disturbance would be limited, since the existing portals and facilities operations areas developed for Phase 1 would be retained to support future mining operations. The potential ground surface affected by expansion to the north is shown on Figure 2 which includes a conceptual rendering of surface facilities. The conceptual plan is the best available information for the mine expansion; actual conditions may change when the Plan(s) of Operations are developed for Phases 2 and 3.

Most of the Phase 2 and 3 surface disturbance would be associated with vent holes for the underground mine. Currently, a total of eight vent holes are proposed, but the actual number may change as the Plan(s) of Operations are developed for Phases 2 and 3. Associated with the vent hole surface disturbance would be road improvements to existing unimproved roads and four-wheeler tracks. New roads to the vents are also anticipated. The total disturbance anticipated from roads and vents is approximately 3 acres.

At the present time, two additional shafts to access the underground mine are anticipated.

Associated with the shafts would be newly constructed access roads and generator pads. Generators and fueling facilities would be constructed but the operation of the generators would depend on mining access requirements. It is anticipated that generator operations would be staggered so that only 1 or 2 generators would be operational at any one time.

To facilitate dewatering of a portion of the Phase 2 and 3 areas where groundwater is encountered, the existing evaporation pond would be expanded, as needed, by extending the dam embankment and other engineered measures at the present location of the evaporation pond. Only a portion of the subsurface, primarily in the southern portion of Phase 2, is expected to be saturated, and dewatering operations would most likely decrease significantly as the underground mine is expanded to the north (see Appendix A, the

IDT Checklist, Figure 3, and Attachment G1). Groundwater would be pumped to the evaporation pond overland through pipes or other containment structures. The additional ground disturbance is anticipated to be on the order of 4 acres beyond the 18 acres of disturbance for the existing evaporation pond.

The existing support facilities constructed for Phase 1, and ore and waste rock stockpiles, would be adequate to support Phase 2 and 3 mining operations (Figure 5). No additional permanent facilities such as buildings or maintenance areas are anticipated. Ore stockpiles and waste rock would be placed in the areas identified in the Phase 1 POO and illustrated on Figure 5.

All surface disturbance areas would be reclaimed in accordance with federal and State of Utah rules and regulations that are applicable at the time of reclamation.

Based on the meeting with BLM on April 5, 2006 and DUSA's understanding of other projects to be considered for cumulative impact assessment, no other projects are anticipated in the immediate area of the Tony M Mine and cumulative impacts are not an issue for the project.

Socio-economics

During Phase 1, the mine is expected to initially employ about 10 to 20 miners and support personnel to rehabilitate and further develop the main declines and expand to 60 to 70 employees during full production. Phases 2 and 3 have the potential to employ up to 300 miners and extend the mine life to 25 years or more. Long-term employment of 300 people with relatively high-paying jobs and a dependable long-term tax base to Garfield County would have a positive impact on the local economy and residents. It is likely that with time, the schools and emergency responders would need to grow to accommodate the families of the miners in the communities in which they live. Expansion of support infrastructure in Ticaboo or elsewhere in Garfield County would be supported by tax revenues generated by the mine and its employees. Infrastructure expansion in other counties such as Wayne County would be supported potentially by the tax revenues generated by mine employees and other working members of the miners' families.

Geology/Mineral Resources/Energy Minerals

There are both potential positive and negative impacts that may result from the Proposed Action in combination with other reasonably foreseeable actions and they are discussed below. The exploration for, and mining, of, uranium-vanadium resources from the Phase 1, 2, and 3 areas, would have a cumulative positive increase in the U.S.'s supply of energy minerals and other mineral resources over the life of the project. Other mining activities under development in the region would add to this impact on the U.S.'s

energy and mineral supply. The multiple phases of this project, combined with other proposed uranium-vanadium development in the region, would also have a positive cumulative impact of increasing the overall understanding of regional geology and ore deposition mechanisms.

The multiple phases of this project, along with other proposed mine development in the area, would also have a negative cumulative impact due to the permanent loss of in-ground mineral resources. However, this area of Utah, and nearby areas in western Colorado, northern New Mexico, and northern Arizona, provide other opportunities for uranium ore production.

CHAPTER 5
PERSONS, GROUPS, AND AGENCIES CONSULTED

During preparation of the EA, the public was notified of the proposed action by posting on the Utah Electronic Notification Bulletin Board (ENBB) on March 8, 2007. To date, BLM has received one comment in response to the notice. The process used to involve the public included posting of information on the Utah ENBB, which can be accessed through the Utah Internet Homepage (www.utso.ut.blm.gov/).

TABLE 5.1
LIST OF PERSONS, AGENCIES, AND ORGANIZATIONS CONSULTED

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Native American Nations	Consultation as required by the American Indian religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	Two tribes were contacted regarding this proposal: the Paiute Indian Tribe of Utah on April 2, 2007, and the Navajo Nation the following day. Both contacts were personal visits. The Paiutes reiterated that they have no interest in the Henry Mountains, and the Navajo Nation again said that they oppose uranium mining in any location but also realize that there is no way they can stop it on public land.
UDEQ – Division of Air Quality	Regulation of air quality and air emissions under Utah Administrative Code (UAC)	Utah Air Order has been approved and is undergoing public review.
UDEQ – Division of Water Quality	UAC authority to regulate and permit discharges to groundwaters of the state	UDEQ has approved a waiver from permit and monitoring requirements under the Utah permit-by-rule provisions.
UDEQ – Division of Water Quality	UAC authority to regulate and approve storm water management system design	Storm water diversion construction permit has been approved.
Utah State Engineers Office Division of Water Rights	UAC authority to regulate and approve dam and impoundment design and operation	Dam and impoundment plans and specifications are complete and a Dam Safety Permit has been issued by the State Engineers Office.
UDOGM	UAC authority to regulate and permit mining operations	UDOGM has approved a NOI/PO which is currently undergoing public review.

TABLE 5.2
LIST OF PREPARERS

BLM Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Stanley Adams	Safety/Hazardous Materials Officer	Wastes (hazardous or solid)
Dona Bastian	Range Technician	Wild horses/Burros
Robert Bate	Natural Resource Specialist (fuels)	Forestry/Woodlands
Nancy DeMille	Realty Specialist	Lands/Access
Timothy Finger	Outdoor Recreation Planner	Areas of Critical Environmental Concern (ACEC), Wild & Scenic Rivers, Wilderness, WSA's and Wilderness Characteristics
Sue Fivecoat	Outdoor Recreation Planner	Recreation/visual resource management (VRM)
Gary Hall	Assistant Field Manager, Richfield Field Office/Henry Mountains Field Station	Approving Official
Brant Hallows	Natural Resource Specialist	Farmlands (prime or unique), Floodplains, Watersheds and Soils
Craig Harmon	Archaeologist	Cultural Resources/Native American Religious Concerns
Russell Ivie	Fuels Program Manager	Fuels/Fire Management
Francis Rakow	Geologist/Team Leader	Mineral Resources, Energy Minerals, Geology, Paleontological Resources, Environmental Justice and Socio-economics
Leroy Smalley	Rangeland Management Specialist	Threatened, Endangered , and Candidate (TEC) Plant Species, Vegetation including Special Status Plants, Rangeland Health Standards & Guidelines
Suzanne Grayson	Wildlife Biologist	TEC Animal Species, Wetland/Riparian Zones, Fish and Wildlife including Special Status Species and Migratory Birds
Burke Williams	Natural Resource Specialist	Invasive/Non-Native Plants (noxious weeds)
Phil Zieg	Soil Conservationist	Air Quality, Water Quality (Drinking/Ground) and Water Rights

TABLE 5.2 (Continued)
LIST OF PREPARERS

Non-BLM Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Eric Farstad	Meteorologist, Senior Air Quality Specialist	Air Quality Analysis
Melissa Weakley	Engineer, Air Quality Specialist	Air Quality Analysis
Christy Woodward	Civil/Environmental Engineer, NEPA project staff	Water Quality Analysis, Geology, Hydrogeology
Caitlin Rood	Environmental Engineer, NEPA project staff	Socio-economics
Karen Simpson	Environmental Scientist	Technical Review
Jim Bowlby	Senior Environmental Specialist	NEPA Interdisciplinary Checklist
Jo Ann Tischler	Project Manager	Technical Review, Agency Coordination
Michelle Rehmann	Hydrologist; Regulatory Specialist	Regulatory Analysis; Geologic Analysis, Quality Review
Jim Wulff	Hydrogeologist	Groundwater background and modeling for impact studies

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