

# Abandoned Uranium Mine Site Assessment for the Blackhawk, Bunney, Red Bluff Nos. 7, 8, 10, & UDC No. 1 Site (NM0074)

**FINAL REPORT**

**Prepared For:**



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NM0074

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## 1.0 INTRODUCTION

INTERA Incorporated (INTERA) has prepared this Abandoned Uranium Mine (AUM) Site Assessment Report for the Mining and Minerals Division (MMD) of the New Mexico Energy, Minerals and Natural Resources Department (EMNRD) in compliance with the Professional Service Agreement dated November 2, 2009. INTERA visited the Blackhawk, Bunney, Red Bluff Nos. 7, 8, and 10, and UDC No. 1 Site (AUM Site), MMD ID: NM0074 on April 7, 2010 and April 8, 2010.

### 1.1 PREVIOUSLY KNOWN INFORMATION ABOUT THE SITE

The Red Bluff Nos. 7, 8, and 10 claims were in production from 1952 through 1958 and produced 39,284 tons of ore. Red Bluff No. 10 claim was last registered in 1964 (Anderson, 1980). The Bunney and Black Hawk claims produced a total of 13,908 tons of ore from open pits up to 40 ft deep. These claims were mined in 1952, 1956, 1958-1963, and 1965-1967 (McLemore, 1983). However, the Black Hawk claim was renamed Tycoon 2 in 1976, then becoming the New Black Hawk in 1980 (Anderson, 1980). The UDC Nos. 1-5 claims produced 927 tons of ore from a pit 80 ft deep (McLemore, 1983). Anderson (1980) was unable to determine the location of UDC No. 5, but notes that only minor activity occurred on UDC Nos. 1-4 (Anderson, 1980).

Anderson (1980) visited the Black Hawk, Bunney, Red Bluff Nos. 7, 8, and 10, and UDC Nos. 1-4 claims in 1980. Note that Anderson (1980) also includes Gay Eagle claim with these sites, but the present report considers the Gay Eagle a separate AUM Site (see the NM0121 Gay Eagle report). Anderson (1980) found that the most common features on these claims are trenches, open cuts, and pits. However, five adits are reported on the Black Hawk and Bunney claims, and large waste piles are present throughout the Site. The largest cuts occur in the Red Bluff Nos. 7, 8, and 10 claims, exposing reef structures in the Todilto Formation limestone. Anderson (1980) does not describe the 80 ft deep pit in the UDC claims mentioned by McLemore (1983), and notes that very little prospecting has occurred in these claims (Anderson, 1980).

### 1.2 SITE LOCATION AND DIRECTIONS

The AUM Site is on private and federal (Bureau of Land Management) land. The Site is located in the southern half of Section 4, Township 12 North, Range 9 West, in Cibola County (formerly Valencia County), approximately 10 miles northeast of the town of Milan. The location of this site was provided to INTERA by MMD.

To access the AUM Site from Albuquerque, drive west on Interstate 40 for 83 miles. Take Exit 79 towards San Mateo and turn right. Continue straight until you reach U. S. 66, less than a quarter mile. Turn left on U.S. 66 and drive 0.2 miles, then turn right onto New Mexico 605. Continue northeast on New Mexico 605 for 7.4 miles, then turn right onto a dirt road, passing through a locked gate. Drive east along this road for approximately 2 miles, after which the road makes a slight bend to the south and then curves north and ascends a mesa. After reaching the top of the mesa, continue north for another 1.3 miles until you see a barbed wire fence running east-west. This fence marks the boundary between Section 4 and Section 9, Township 12 North,

Range 9 West. The AUM Site lies on both sides of the road for another half mile north of the fence.

Note that permission from two private landowners is required in order to access and view the AUM Site. The access route from New Mexico 605 to the mesa is owned by one landowner, and the Site is owned by a different landowner.

### **1.3 SITE GEOLOGY**

The AUM Site lies within the Grants uranium region. The topography of this region is characterized by mesas of Triassic, Jurassic, and Cretaceous sediments separated by broad valleys. The Site area is part of the Chaco Slope, the southern part of the San Juan Basin. Strata in the Chaco Slope dip gently to the north (McLemore, 2002).

The AUM Site is located within the Jurassic-age Todilto Formation, a sequence of carbonates and evaporites. This formation likely represents a salt lake environment intermittently connected to the ocean. The Todilto Formation is underlain by the Entrada Formation and overlain by the Summerville Formation (Hilpert, 1963). The Todilto consists of two members, the upper Tonque Arroyo Member and the lower Luciano Mesa Member. The Tonque Arroyo Member consists of gypsum and is absent from the Site area. The Luciano Mesa Member consists of a thinly laminated, locally deformed lower layer and a massive, vuggy upper layer (Lucas and Anderson, 2000). Primary-type uranium minerals such as pitchblende are reported to occur in the Todilto Limestone as well as secondary minerals such as carnotite and tyuyamunite (McLaughlin, 1963). Radiation levels are highest in the Red Bluff No. 8 claim, where a measurement taken in a heavily fractured zone in the Todilto Formation limestone exceeded 5000  $\mu\text{R/hr}$  at 0 ft above ground. The area of highest gamma ray activity consists of a dark grey to black fracture fill surrounded by a halo of yellow secondary-type uranium minerals. Euhedral calcite is common in nearby exposed Todilto Formation limestone.

Sand dunes and other aeolian features are present at the AUM Site, especially in the UDC No. 1 claim.

### **1.4 SITE HYDROGEOLOGY**

The surface runoff at the AUM Site discharges to San Mateo Creek, which drains into the Rio San Jose approximately 8 miles to the southwest. There is no nearby permanent surface water.

The AUM Site is located in the Bluewater Underground Water Basin. This basin falls between the San Juan Underground Water Basin to the north, the Middle Rio Grande Underground Water Basin to the south and east, and the Gallup Underground Water Basin to the west (Edwards and Kiely, 2004). Aquifers are found in alluvium near major drainages such as San Mateo Creek and throughout the Cretaceous, Jurassic, and Triassic strata in the region. Groundwater flows southward in alluvium and northeast in Mesozoic strata (Brod, 1979).

### **1.5 REGIONAL TOPOGRAPHY AND TERRAIN**

The AUM Site is found on the Dos Lomas Quadrangle 7.5 minute United States Geological Survey topographic map at an elevation of approximately 7000-7100 feet above mean sea level

(see Figure 2). The AUM Site is located just west of La Jara Mesa, on a broad mesa capped by the Todilto Formation.

## 2.0 MINE FEATURES

The mine features described below are based on the features provided to INTERA by MMD in the GIS Data Dictionary (MMD, 2009). INTERA marked the locations of the AUM Site features using a Trimble Global Positioning System (GPS), and entered details about the features into the GPS using the MMD data dictionary. Nine adits, three open cuts, one area with mining equipment, three barbed wire fences, one vent hole, eighteen piles, twenty pits and two structures were found onsite. Please see the Photo Log in Appendix A for photos of the AUM Site features, Table 1 for a list of the AUM Site features, and Figures 4a, 4b, 5a, and 5b for the locations of the AUM Site features. Note that the scale differs between Figures 4a-4b and Figures 5a-5b. The UDC No. 1 claim is not included in Figures 4a, 4b, 5a, or 5b because no mine features were found at that location.

### 2.1 MINE SHAFTS, ADITS, AND DECLINES

Nine adits were found at the AUM Site. The first eight adits were found on the Blackhawk/Bunney claims, and the ninth adit was found on the Red Bluff No. 8 claim. Adit-1, Adit-2, and Adit-3 are small holes in the wall of Pit-2 (see Photos 9-11 in Appendix A). Adit-4 is accessed through a vertical entrance at the north end of Pit-2. Adit-5, Adit-6, Adit-7, and Adit-8 are located in the walls of Pit-3. Adit-5 has a timbered entrance and two passageways (see Photos 20 and 21 in Appendix A). Adit-6 parallels the axis of an anticline in the Todilto Formation (see Photos 22 and 23 in Appendix A). Adit-7 is partially infilled with sand (see Photo 26 in Appendix A). Adit-8 also parallels the axis of an anticline in the Todilto Formation (see Photos 30 and 31 in Appendix A). Adit-9 is located in the southwestern end of Pit-16 and is almost completely filled with mud (see Photo 77 in Appendix A). Although this adit appears to run underneath the fence between Section 4 and Section 9, there is no corresponding entrance in the pit immediately to the south on the Section 9 claims. The highest gamma ray readings at the entrance to these adits was 1000  $\mu\text{R/hr}$  at 0 ft above ground at radiation survey point Rad-11, associated with Adit-6.

### 2.2 MINING AND EXPLORATION PITS AND OPEN CUTS

A total of three open cuts and twenty pits were found at the AUM Site. All three open cuts were located on the western portion of the Blackhawk/Bunney claims. They consist of shallow scrapings cut into the Todilto Formation limestones near the edge of the mesa. The maximum gamma ray reading in these cuts was 220  $\mu\text{R/hr}$  at 0 ft above ground measured at radiation survey point Rad-23 in CutPly-3. See Photo 46 in Appendix A for an example of these cuts.

Eight pits were located in the Blackhawk/Bunney claims. Two of the three pits on the eastern end of the claims (Pit-2 and Pit-3) contained adits. Pit-3 also had a mining structure (StrucPly-1) in the bottom (see Photo 23 in Appendix A). The three eastern pits (Pit-1, Pit-2, and Pit-3) tend to be narrow (15-30 ft wide), with several arms (see Photo 32 in Appendix A). The maximum gamma radiation measured in these pits was 2800  $\mu\text{R/hr}$  at 0 ft above ground at radiation survey

point Rad-14 (see Photo 29 in Appendix A). The five western pits in the Blackhawk/Bunney claims of the AUM Site tend to be linear. No adits, structures, or other mine features were found within these pits. The highest gamma radiation measured in these pits was 2400  $\mu\text{R/hr}$  at 0 ft above ground at radiation survey point Rad-21 in Pit-5. Another reading of 1300  $\mu\text{R/hr}$  at 0 ft above ground was taken at radiation survey point Rad-17 in Pit-4. Pit-6, Pit-7, and Pit-8 had gamma radiation levels below 1000  $\mu\text{R/hr}$  at 0 ft above ground. See Photo 44 in Appendix A for an example of these pits.

The Red Bluff No. 7 claim contains four pits: Pit-9, Pit-10, Pit-11, and Pit-12. These pits are similar to the pits in the western section of Blackhawk/Bunney, but they are slightly larger. Out of the four, only Pit-10 has a gamma radiation count above 1000  $\mu\text{R/hr}$  at 0 ft above ground. See photo 59 in Appendix A for an example of these pits.

The Red Bluff No. 8 claim has three relatively small pits (Pit-13, Pit-14, and Pit-15) and one very large pit (Pit-16; approximately 0.25 miles long). Out of the three small pits, only Pit-14 had a gamma radiation level above 1000  $\mu\text{R/hr}$  at 0 ft above ground. See Photo 73 for an example of these pits. Pit-16 covers most of the southern portion of Red Bluff No. 8 and contains the highest gamma radiation levels measured at the AUM Site. This measurement (radiation survey point Rad-50) exceeded the maximum scale of the scintillometer at above 5000  $\mu\text{R/hr}$  at 0 ft above ground (see Photo 84 in Appendix A). A small, infilled adit (Adit-9) is located in the eastern end of Pit-16. See Photo 78 in Appendix A for a view of Pit-16.

The four pits located in the Red Bluff No. 10 claim had radiation levels similar to or lower than background. These pits are linear scrapings in the aeolian overburden, and no Todilto Formation is exposed. See Photo 90 for an example of these pits.

No pits were found in the UDC No. 1 claim.

### **2.3 WASTE AND ORE PILES AND DISTURBANCES**

Eighteen piles were found at the AUM Site. Six piles were found on the Blackhawk/Bunney claims, seven piles were found on the Red Bluff No. 7 claim, four piles were found on the Red Bluff No. 8 claim, and one pile was found on the Red Bluff No. 10 claim. No piles were found on the UDC No. 1 claim.

Piles on the AUM Site consisted of overburden, waste rock, or a combination of the two. Overburden piles tended to be larger, with shallower slopes (see Photos 33 and 87 in Appendix A for examples). These piles also tend to have less gamma radiation, though individual pieces of waste rock in the overburden can have elevated radiation levels. Waste rock piles tended to be smaller, steeper, and less well vegetated than overburden piles (see Photo 53 in Appendix A for an example). These piles also tended to have higher gamma radiation readings than overburden piles. Some waste rock piles spill over the mesa edge into drainages below (see Photo 62 in Appendix A for an example). The highest gamma radiation measurement on a pile recorded 1200  $\mu\text{R/hr}$  at 0 ft above ground at radiation survey point Rad-47 on PilePly-16.

### **2.4 MINING RELATED BUILDINGS AND FOUNDATIONS**

Two structures were found onsite. StrucPly-1 is a wooden structure located inside Pit-3 on the Blackhawk/Bunney claims (see Photos 24, 25, and 28 in Appendix A). StrucPly-2 is a wooden structure sunk into the ground on the Red Bluff No. 7 claim (see Photo 68 in Appendix A).

## 2.5 OTHER MINE FEATURES

Three barbed wire fences (Fenc-1, Fenc-2, and Fenc-3) were located on the AUM Site. A vent hole (MiscPt-1) was found on the Blackhawk/Bunney claims (see Photo 16 in Appendix A). This vent hole may have provided ventilation to the underground workings associated with nearby adits. A pile of wooden beams and metal (Equip-1) was found near Pit-3 on the Blackhawk/Bunney claims (see Photo 18 and 19 in Appendix A).

## 2.6 BOREHOLES

No boreholes were found that dated back to the period of mining activity at the AUM Site.

## 2.7 RECLAMATION ACTIVITIES

No apparent reclamation activities have taken place at the AUM Site.

## 3.0 ARCHEOLOGICAL SITES

No apparent archeological sites were identified at or near this AUM Site.

## 4.0 SITE GAMMA RADIATION READINGS

One background gamma radiation reading was taken near the AUM Site, recording 26  $\mu\text{R/hr}$  at 0 ft above ground and 30  $\mu\text{R/hr}$  at 4 ft above ground. Please see Table 2 for all of the gamma radiation readings taken at the AUM Site and Figures 4a, 4b, 5a, and 5b for the locations of the radiation readings.

The maximum gamma radiation reading for the AUM Site was over 5000  $\mu\text{R/hr}$  at 0 ft above ground at radiation survey point Rad-50 (see Photo 7 and 8 in Appendix A) on the Red Bluff No. 8 claim. This reading was taken on mineralization on the walls of Pit-16 (see Photo 84). Other notable radiation readings were taken at radiation survey point Rad-33 (2000  $\mu\text{R/hr}$  at 0 ft above ground) in Pit-10 on the Red Bluff No. 7 claim and radiation survey point Rad-14 (2800  $\mu\text{R/hr}$  at 0 ft above ground) in Pit-3 on the Blackhawk/Bunney claims.

## 5.0 CURRENT LAND USES

### 5.1 HUMAN ACTIVITY AND RECREATIONAL SITE USE

Barbed wire fences and cow prints suggest the area is active ranchland. Evidence of present-day mineral exploration efforts (sample bags, water pipes, etc) was found onsite.

### 5.2 NEARBY RESIDENTIAL, COMMERCIAL AND INDUSTRIAL STRUCTURES

No structures were sighted within a mile of the AUM Site.

### **5.3 NEARBY DOMESTIC WELLS**

One domestic well (B-01340) is located about 0.9 miles south of the AUM Site. This well is 300 ft deep, but depth to water and installment date are not known. A non-domestic well (B-01341) is located about 0.6 miles south of the Site (NMOSE, 2008).

### **5.4 EVIDENCE OF GRAZING OR AGRICULTURE**

Barbed wire fences and cow prints indicate that the AUM Site is active ranchland.

### **5.5 EVIDENCE OF WILDLIFE**

Scrub jays, crows, cottontails, and jackrabbits were observed onsite. Deer, rabbit, and rodent scat were found and coyote tracks were identified on the AUM Site.

## **6.0 VEGETATION**

The AUM Site is located in the Coniferous and Mixed Woodland vegetation type and borders the Desert Grassland (Ecotone). Woody species at the site include Utah juniper, pinyon pine, fourwing saltbush and rubber rabbitbush. Snakeweed, narrowleaf yucca, and common sagewort were also present. Scapose bitterweed was present at the AUM Site along with grama grass, dropseed, and Indian ricegrass. Cryptogamic crust was present in areas. No noxious weeds were observed.

## **7.0 POTENTIAL OFFSITE IMPACTS**

### **7.1 EROSION**

No evidence of erosion was observed onsite.

### **7.2 ENVIRONMENTAL IMPACTS**

There is no evidence of soil staining from chemicals potentially brought to the AUM Site.

## **8.0 REFERENCES**

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## TABLES

**Table 1  
Site Features**

**Blackhawk Bunney, Red Bluff Nos 7, 8 & 10, and UDC No 1-NM0074  
Abandoned Uranium Mine Assessments**

Feature Name	On Site?	Feature Type	Associated Feature	Material	Height or Depth (ft)	Width or Diameter (ft)	Length (ft)	Open	Collapsed	Closure Type	Associated Photo	Claim	Notes
Access-1	No	Access	--	Dirt	--	--	--	--	--	--	--	--	--
Access-2	No	Access	--	Dirt	--	--	--	--	--	--	--	--	--
Adit-1	Yes	--	--	--	1	3	10	Yes	No	None	NM0074_009	Blackhawk Bunney	in Pit-2
Adit-2	Yes	--	--	--	2	2	6	Yes	No	None	NM0074_010	Blackhawk Bunney	in Pit-2
Adit-3	Yes	--	--	--	3	1	6	No	No	None	NM0074_011	Blackhawk Bunney	In Pit-2
Adit-4	Yes	--	Timber	--	10	15	0	No	No	None	NM0074_012 NM0074_013 NM0074_014	Blackhawk Bunney	Cannot determine length; in Pit-2
Adit-5	Yes	--	Timber	--	6	8	0	Yes	No	None	NM0074_020 NM0074_021	Blackhawk Bunney	Cannot determine length; in Pit-3
Adit-6	Yes	--	Timber	--	4	8	0	Yes	No	None	NM0074_022 NM0074_023	Blackhawk Bunney	Cannot determine length; in Pit-3
Adit-7	Yes	--	--	--	1	4	0	Yes	No	Other	NM0074_026	Blackhawk Bunney	Cannot determine length. Filled in by erosion from above. In Pit-3
Adit-8	Yes	--	--	--	4	6	0	Yes	No	None	NM0074_030 NM0074_031	Blackhawk Bunney	Cannot determine length
Adit-9	Yes	--	--	--	5	9	15	Yes	No	Other	NM0074_077	Red Bluff No. 8	Infilled by mud. In Pit-16
CutPly-1	Yes	--	--	--	6	30	60	--	--	--	NM0074_039	Blackhawk Bunney	--
CutPly-2	Yes	--	--	--	3	7	15	--	--	--	NM0074_040	Blackhawk Bunney	--
CutPly-3	Yes	--	--	--	10	30	40	--	--	--	NM0074_046	Blackhawk Bunney	--
Equip-1	Yes	Wood, cables	--	--	--	--	--	--	--	--	NM0074_018 NM0074_019	Blackhawk Bunney	--
Fenc-1	Yes	Barbwire	--	Metal, wood	4	--	--	--	--	--	--	Blackhawk Bunney	--
Fenc-2	Yes	Barbwire	--	Metal, wood	4	--	--	--	--	--	--	Red Bluff No. 7	--
Fenc-3	Yes	Barbwire	--	Metal, wood	4	--	--	--	--	--	--	Red Bluff No. 8 & 10	--
MiscPt-1	Yes	Vent	--	--	--	--	--	--	--	--	NM0074_015	Blackhawk Bunney	Vent for underground workings
PilePly-1	Yes	Waste	--	Rock	25	50	150	--	--	--	NM0074_033 NM0074_034	Blackhawk Bunney	--
PilePly-2	Yes	Waste	--	Rock	6	15	40	--	--	--	NM0074_041	Blackhawk Bunney	--
PilePly-3	Yes	Waste	--	Rock	4	20	30	--	--	--	NM0074_045	Blackhawk Bunney	--
PilePly-4	Yes	Waste	--	Rock	8	20	70	--	--	--	NM0074_047	Blackhawk Bunney	--



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Site Features**

**Blackhawk Bunney, Red Bluff Nos 7, 8 & 10, and UDC No 1-NM0074  
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Feature Name	On Site?	Feature Type	Associated Feature	Material	Height or Depth (ft)	Width or Diameter (ft)	Length (ft)	Open	Collapsed	Closure Type	Associated Photo	Claim	Notes
PilePly-5	Yes	Waste	--	Rock	15	50	100	--	--	--	NM0074_050	Blackhawk Bunney	--
PilePly-6	Yes	Waste	--	Rock	15	75	200	--	--	--	NM0074_053	Blackhawk Bunney	--
PilePly-7	Yes	Waste	--	Rock	15	30	40	--	--	--	NM0074_054	Red Bluff No. 7	--
PilePly-8	Yes	Waste	--	Soil	8	15	30	--	--	--	NM0074_060	Red Bluff No. 7	--
PilePly-9	Yes	Waste	--	Rock	10	40	50	--	--	--	NM0074_061 NM0074_062	Red Bluff No. 7	Spreads down slope
PilePly-10	Yes	Waste	--	Rock	15	20	200	--	--	--	NM0074_064	Red Bluff No. 7	Numerous cones
PilePly-11	Yes	Waste	--	Rock	10	60	150	--	--	--	NM0074_065	Red Bluff No. 7	--
PilePly-12	Yes	Waste	--	Soil	6	15	75	--	--	--	NM0074_067	Red Bluff No. 7	--
PilePly-13	Yes	Waste	--	Soil	8	20	75	--	--	--	NM0074_070	Red Bluff No. 7	--
PilePly-14	Yes	Waste	--	Soil	10	30	100	--	--	--	NM0074_071	Red Bluff No. 8	--
PilePly-15	Yes	Waste	--	Soil	35	100	400	--	--	--	NM0074_074	Red Bluff No. 8	--
PilePly-16	Yes	Waste	--	Soil	25	70	200	--	--	--	NM0074_076	Red Bluff No. 8	--
PilePly-17	Yes	Waste	--	Tailings	30	50	200	--	--	--	NM0074_087 NM0074_088	Red Bluff No. 8	--
PilePly-18	Yes	Waste	--	Rock	4	10	30	--	--	--	NM0074_089	Red Bluff No. 10	--
Pit-1	Yes	Mining	--	--	15	40	150	Yes	--	--	NM0074_001 NM0074_002	Blackhawk Bunney	--
Pit-2	Yes	Mining	--	--	20	50	800	Yes	--	--	NM0074_003 NM0074_004 NM0074_005 NM0074_006 NM0074_007 NM0074_035 NM0074_036	Blackhawk Bunney	--
Pit-3	Yes	Mining	--	--	30	70	800	Yes	--	--	NM0074_016 NM0074_017 NM0074_018 NM0074_019 NM0074_028 NM0074_029 NM0074_032	Blackhawk Bunney	--
Pit-4	Yes	Mining	--	--	10	50	75	Yes	--	--	NM0074_037 NM0074_038	Blackhawk Bunney	--
Pit-5	Yes	Mining	--	--	8	10	150	Yes	--	--	NM0074_044	Blackhawk Bunney	--
Pit-6	Yes	Mining	--	--	10	20	40	Yes	--	--	NM0074_048	Blackhawk Bunney	--
Pit-7	Yes	Mining	--	--	10	15	60	Yes	--	--	NM0074_049	Blackhawk Bunney	--
Pit-8	Yes	Mining	--	--	5	20	120	Yes	--	--	NM0074_051 NM0074_052	Blackhawk Bunney	--



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Pit-9	Yes	Mining	--	--	10	150	200	Yes	--	--	NM0074_056 NM0074_057 NM0074_058	Red Bluff No. 7	--
Pit-10	Yes	Mining	--	--	20	20	100	Yes	--	--	NM0074_059	Red Bluff No. 7	--
Pit-11	Yes	Mining	--	--	3	50	75	Yes	--	--	NM0074_063	Red Bluff No. 7	Shallow scrape
Pit-12	Yes	Mining	--	--	10	25	200	Yes	--	--	NM0074_066	Red Bluff No. 7	--
Pit-13	Yes	Mining	--	--	6	15	40	Yes	--	--	NM0074_072	Red Bluff No. 8	--
Pit-14	Yes	Mining	--	--	6	20	50	Yes	--	--	NM0074_073	Red Bluff No. 8	--
Pit-15	Yes	Mining	--	--	15	50	100	Yes	--	--	NM0074_075	Red Bluff No. 8	--
Pit-16	Yes	Mining	--	--	25	40	600	Yes	--	--	NM0074_078 NM0074_079 NM0074_080 NM0074_081 NM0074_082 NM0074_083 NM0074_084 NM0074_085 NM0074_086	Red Bluff No. 8	--
Pit-17	Yes	Exploration	--	--	5	15	400	Yes	--	--	NM0074_090	Red Bluff No. 10	Filled with sand
Pit-18	Yes	Exploration	--	--	3	10	50	Yes	--	--	NM0074_091	Red Bluff No. 10	Sand filled
Pit-19	Yes	Exploration	--	--	5	15	400	Yes	--	--	NM0074_092	Red Bluff No. 10	Sand filled
Pit-20	Yes	Exploration	--	--	4	15	180	Yes	--	--	NM0074_093	Red Bluff No. 10	Sand filled
StructPly-1	Yes	Building	Pit-3	Wood	4	10	10	--	--	--	NM0074_024 NM0074_025 NM0074_028	Blackhawk Bunney	In Pit-3
StructPly-2	Yes	Building	--	Wood	3	3	5	--	--	--	NM0074_068 NM0074_069	Red Bluff No. 7	Small pit reinforced by wood

**Notes:**

-- designates no information

By convention, adits have height, width, and length but not depth.



**Table 2  
Gamma Radiation Survey Results**

**Blackhawk Bunney, Red Bluff Nos 7, 8 & 10, and UDC No 1-NM0074  
Abandoned Uranium Mine Assessments**

Reading ID	0 ft ( $\mu$ R/hr)	4 ft ( $\mu$ R/hr)	Associated Photo	Associated Feature
Rad-1	350	150	--	Pit-1
Rad-2	2000	110	--	Pit-1
Rad-3	350	200	--	Pit-2
Rad-4	800	140	--	Pit-2
Rad-5	1800	420	NM0074_008	Pit-2
Rad-6	230	150	--	Adit-1
Rad-7	170	150	--	Adit-2
Rad-8	340	110	--	Adit-3
Rad-9	35	38	--	Adit-4
Rad-10	90	90	--	Adit-5
Rad-11	1000	490	--	Adit-6
Rad-12	1500	300	--	Pit-3
Rad-13	260	120	--	Adit-7
Rad-14	2800	500	NM0074_029	Pit-3
Rad-15	330	270	--	Adit-8
Rad-16	26	26	--	PilePly-1
Rad-17	1300	230	--	Pit-4
Rad-18	60	25	--	CutPly-1
Rad-19	220	110	--	CutPly-2
Rad-20	160	80	--	PilePly-2
Rad-21	2400	190	--	Pit-5
Rad-22	290	80	--	PilePly-3
Rad-23	180	80	--	CutPly-3
Rad-24	160	100	--	PilePly-4
Rad-25	100	80	--	Pit-6
Rad-26	38	27	--	Pit-7
Rad-27	900	240	--	Pit-7
Rad-28	340	80	--	PilePly-5
Rad-29	600	180	--	Pit-8
Rad-30	210	180	--	PilePly-6
Rad-31	80	80	--	PilePly-7
Rad-32	310	180	NM0074_058	Pit-9
Rad-33	2000	190	--	Pit-10
Rad-34	360	70	--	PilePly-8
Rad-35	390	140	--	PilePly-9
Rad-36	150	110	--	Pit-11
Rad-37	260	80	--	PilePly-10
Rad-38	330	110	--	PilePly-11
Rad-39	600	70	--	Pit-12



**Table 2**  
**Gamma Radiation Survey Results**

**Blackhawk Bunney, Red Bluff Nos 7, 8 & 10, and UDC No 1-NM0074**  
**Abandoned Uranium Mine Assessments**

Reading ID	0 ft ( $\mu$ R/hr)	4 ft ( $\mu$ R/hr)	Associated Photo	Associated Feature
Rad-40	80	60	--	PilePly-12
Rad-41	230	80	--	PilePly-13
Rad-42	240	110	--	PilePly-14
Rad-43	100	80	--	Pit-13
Rad-44	1100	200	--	Pit-14
Rad-45	600	100	--	PilePly-14
Rad-46	350	140	--	Pit-15
Rad-47	1200	100	--	PilePly-16
Rad-48	700	400	--	Adit-9
Rad-49	700	230	--	Pit-16
Rad-50	5000	600	NM0074_084	Pit-16
Rad-51	2700	260	--	Pit-16
Rad-52	90	30	--	Pit-16
Rad-53	1100	340	--	Pit-16
Rad-54	360	180	--	PilePly-17
Rad-55	700	160	--	PilePly-18
Rad-56	30	19	--	Pit-17
Rad-57	11	11	--	Pit-18
Rad-58	10	9	--	Pit-19
Rad-59	9	10	--	Pit-20
Rad-60	6	6	--	UDC No 1
RadBack-1	26	30	--	--

**Notes:**

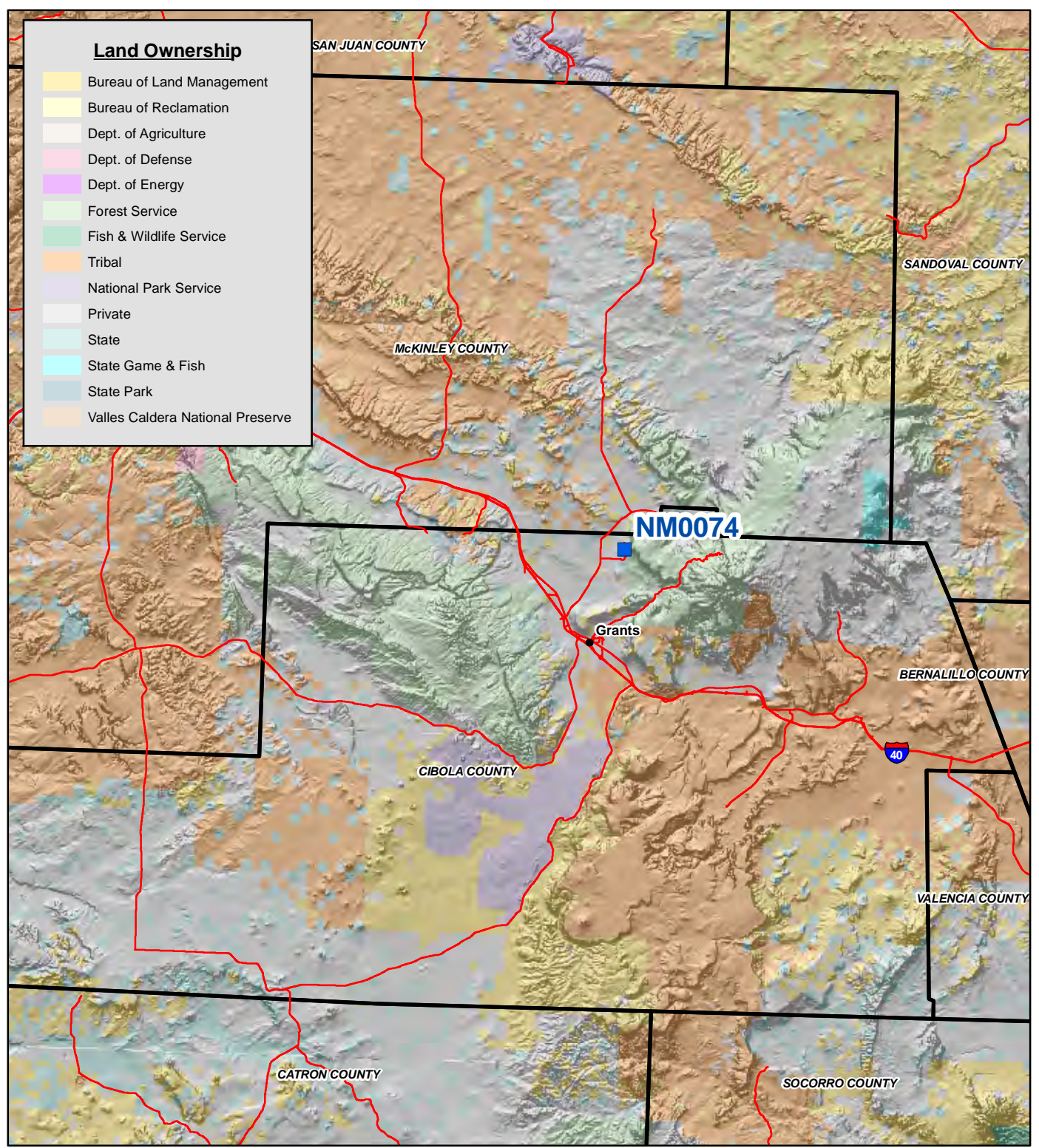
All gamma readings at this site taken by Ludlum 192  $\mu$ R/Ratemeter

$\mu$ R/hr=microroetgens per hour

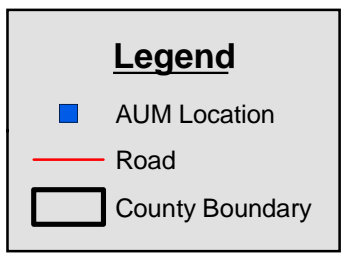
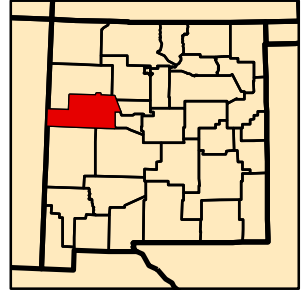
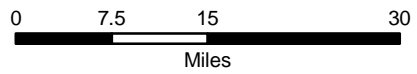
-- designates no information



## FIGURES

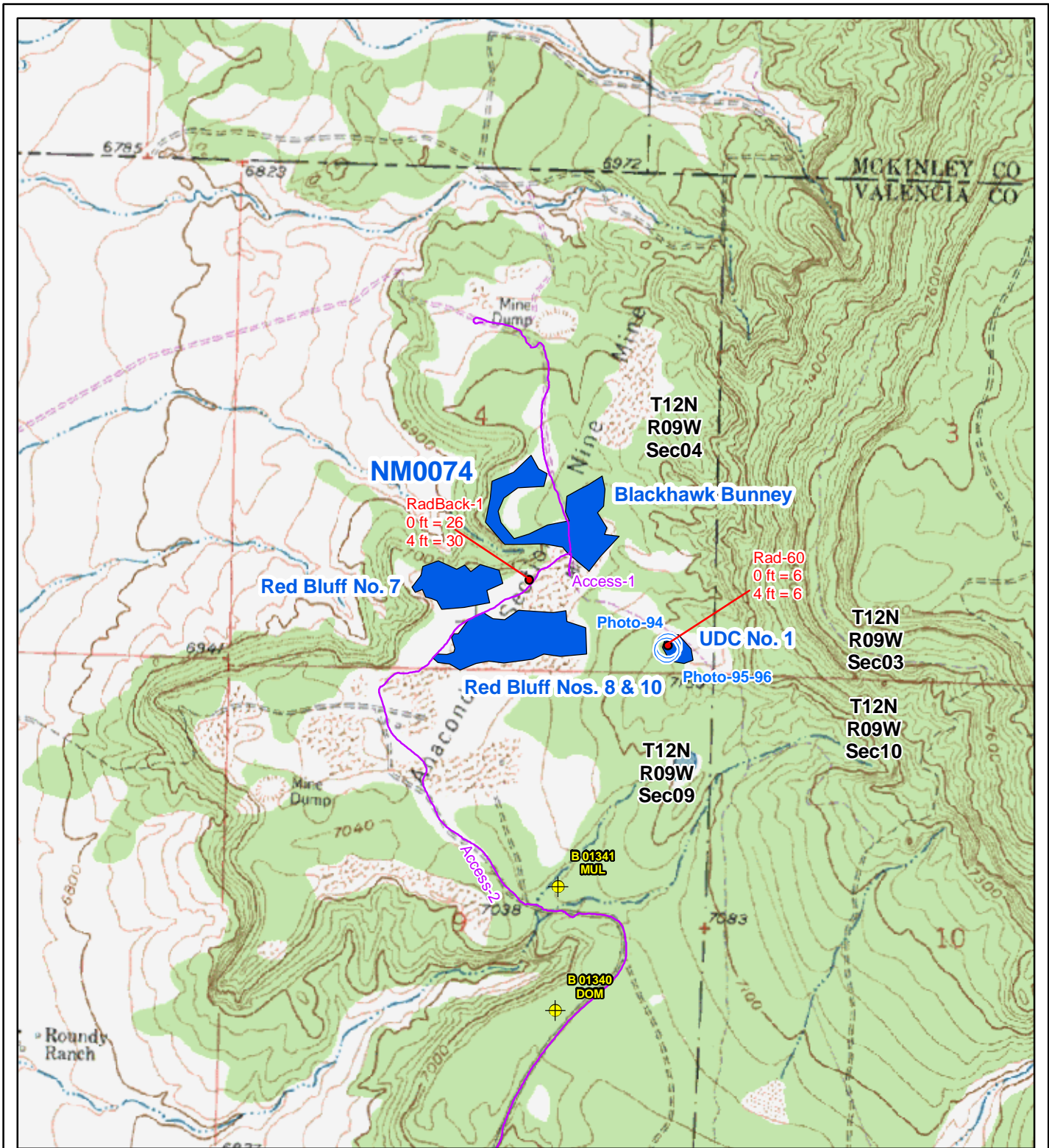


Map Source(s):  
Ownership - BLM, 2008

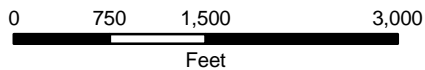


**Figure 1**  
**Site Location Map**  
**NM0074-Blackhawk,**  
**Red Bluff, and UDC**  
Abandoned Uranium  
Mine Assessment





Map Source(s):  
 U.S. Geological Survey 7.5-Minute  
 Topographic Map  
 -Dos Lomas, 1980

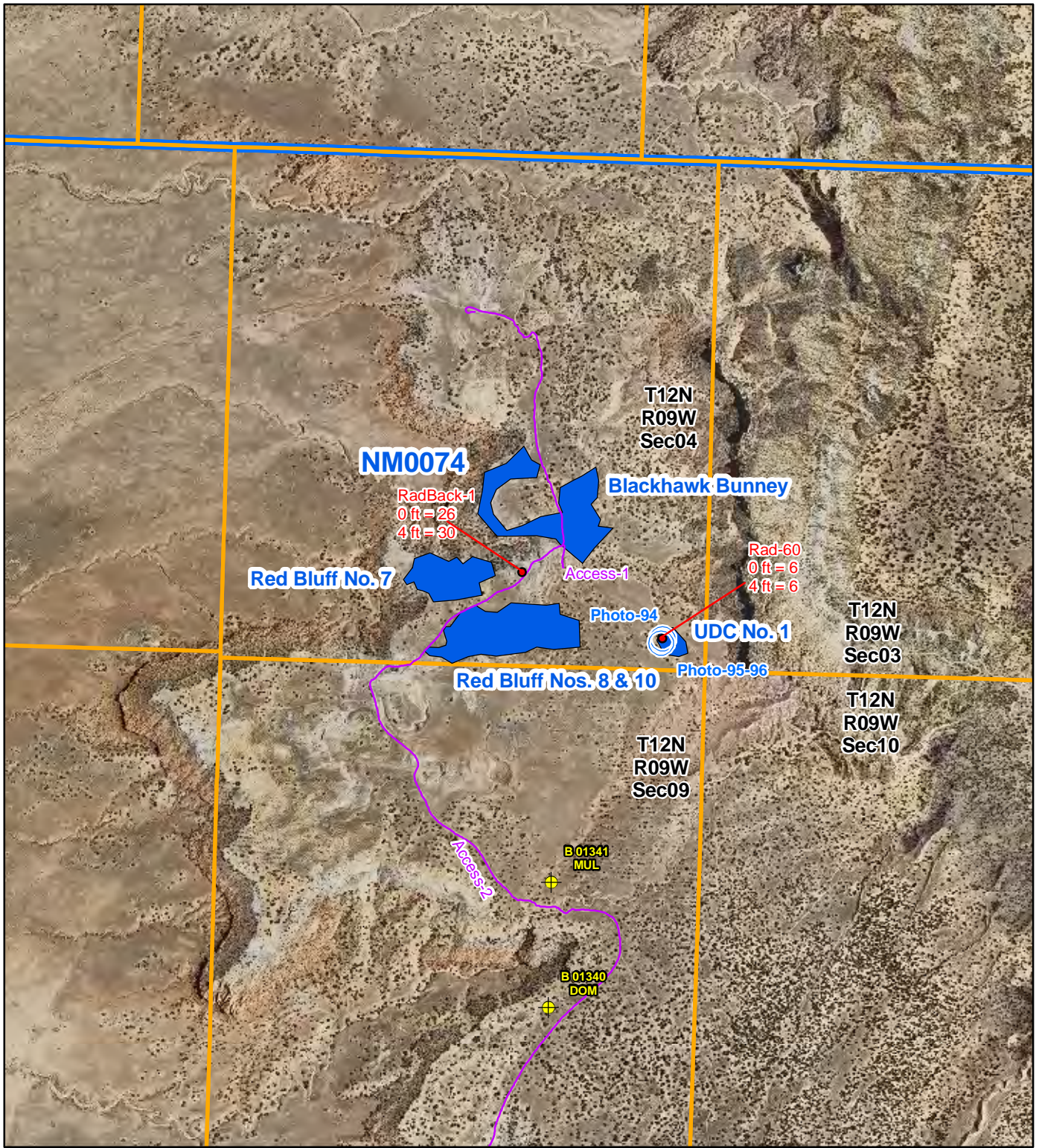


**Legend**

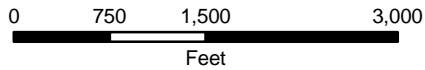
- Radiation Readings ( $\mu\text{R/hr}$ )
- Photo Location
- ⊕ Well Within 1 Mile of Site
- Access Route
- AUM Location Boundary (MMD Provided)

**Figure 2**  
**Topographic Map**  
**NM0074-Blackhawk,**  
**Red Bluff, and UDC**  
 Abandoned Uranium  
 Mine Assessment





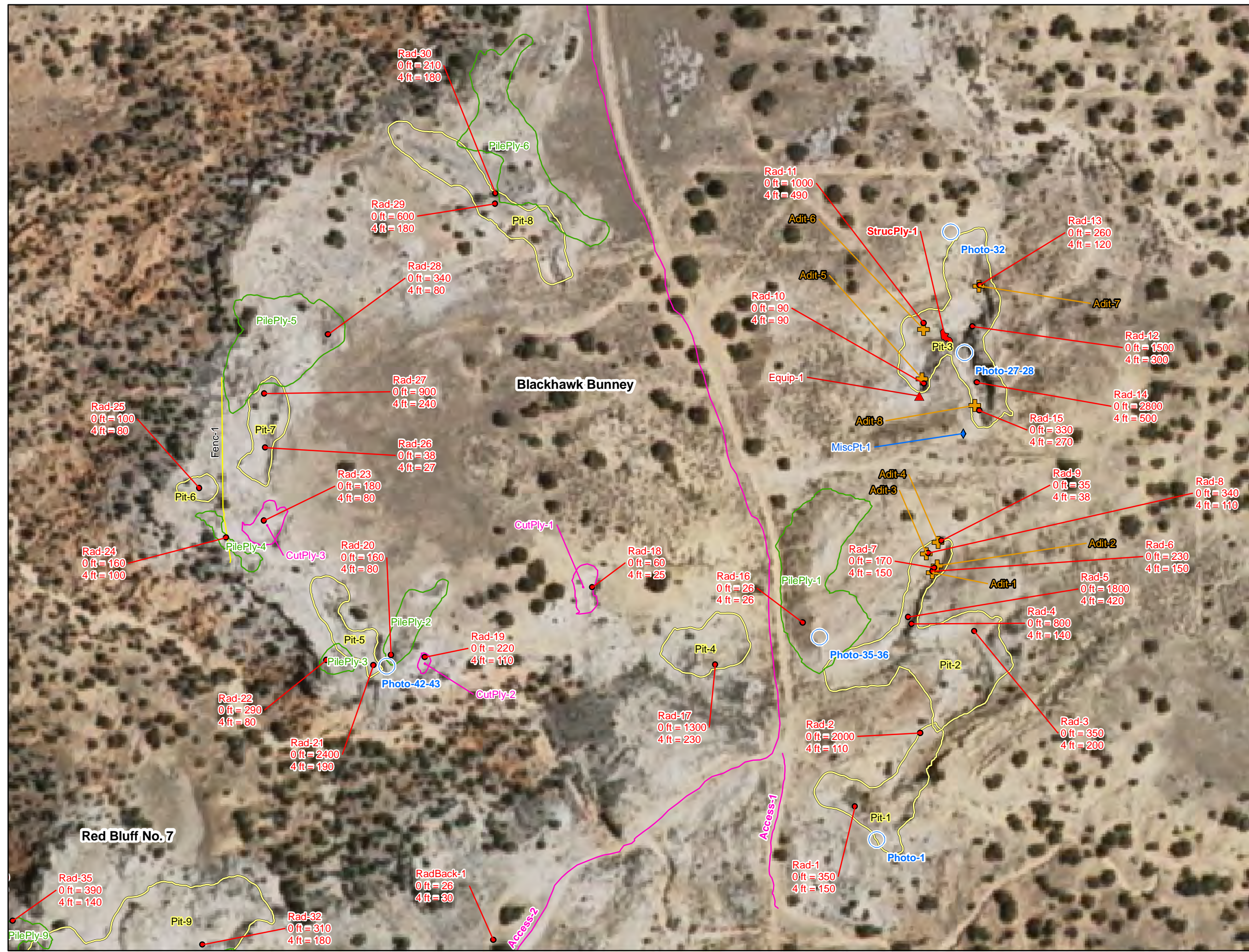
Map Source(s):  
 U.S. Geological Survey 7.5-Minute  
 DOQQ County Mosaic  
 -Cibola County, 2009



Legend	
●	Radiation Readings ( $\mu\text{R/hr}$ )
○	Photo Location
⊕	Well Within 1 Mile of Site
—	Access Route
■	AUM Location Boundary (MMD Provided)
□	Section Boundary
▭	Township/Range Boundary

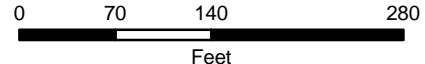
**Figure 3**  
**Aerial Photo**  
**NM0074-Blackhawk,**  
**Red Bluff, and UDC**  
 Abandoned Uranium  
 Mine Assessment





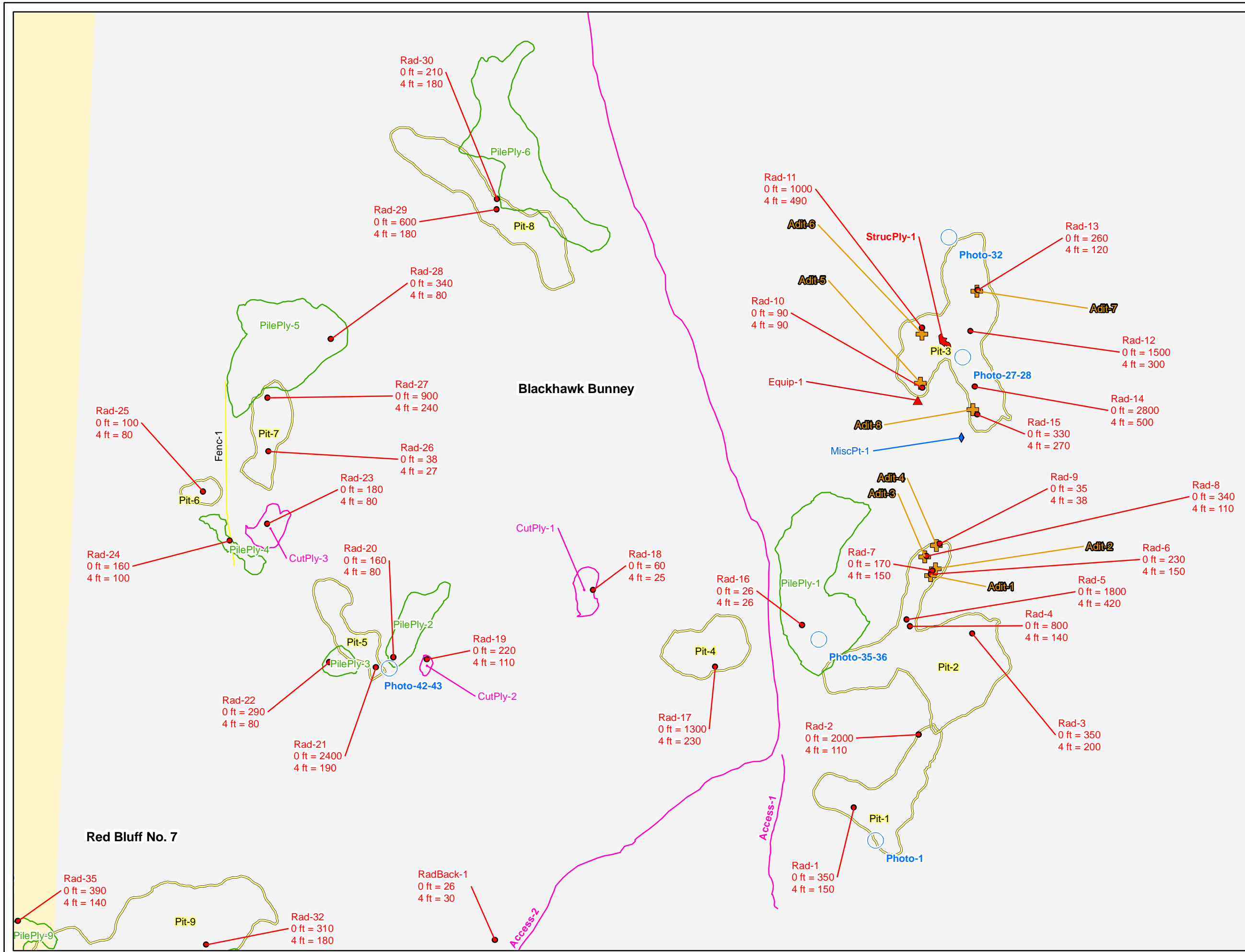
**Legend**

- Radiation Readings (µR/hr)
- Photo Location
- ◆ Miscellaneous Feature
- ⊕ Adit
- ▲ Equipment Location
- Access Route
- Fence
- ▭ Pile Boundary
- ▭ Open Cut Boundary
- ▭ Pit Boundary
- ▭ Structure Boundary



Map Source(s):  
 U.S. Geological Survey 7.5-Minute  
 DOQQ County Mosaic  
 -Cibola County, 2009

**Figure 4a**  
**Site Map on**  
**Aerial Photo**  
**NM0074-Blackhawk**  
**Bunney**  
 Abandoned Uranium  
 Mine Assessment

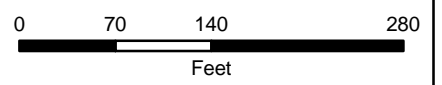


**Legend**

- Radiation Readings (µR/hr)
- Photo Location
- ◆ Miscellaneous Feature
- ⊕ Adit
- ▲ Equipment Location
- Access Route
- Fence
- ▭ Pile Boundary
- ▭ Open Cut Boundary
- ▭ Pit Boundary
- ▭ Structure Boundary

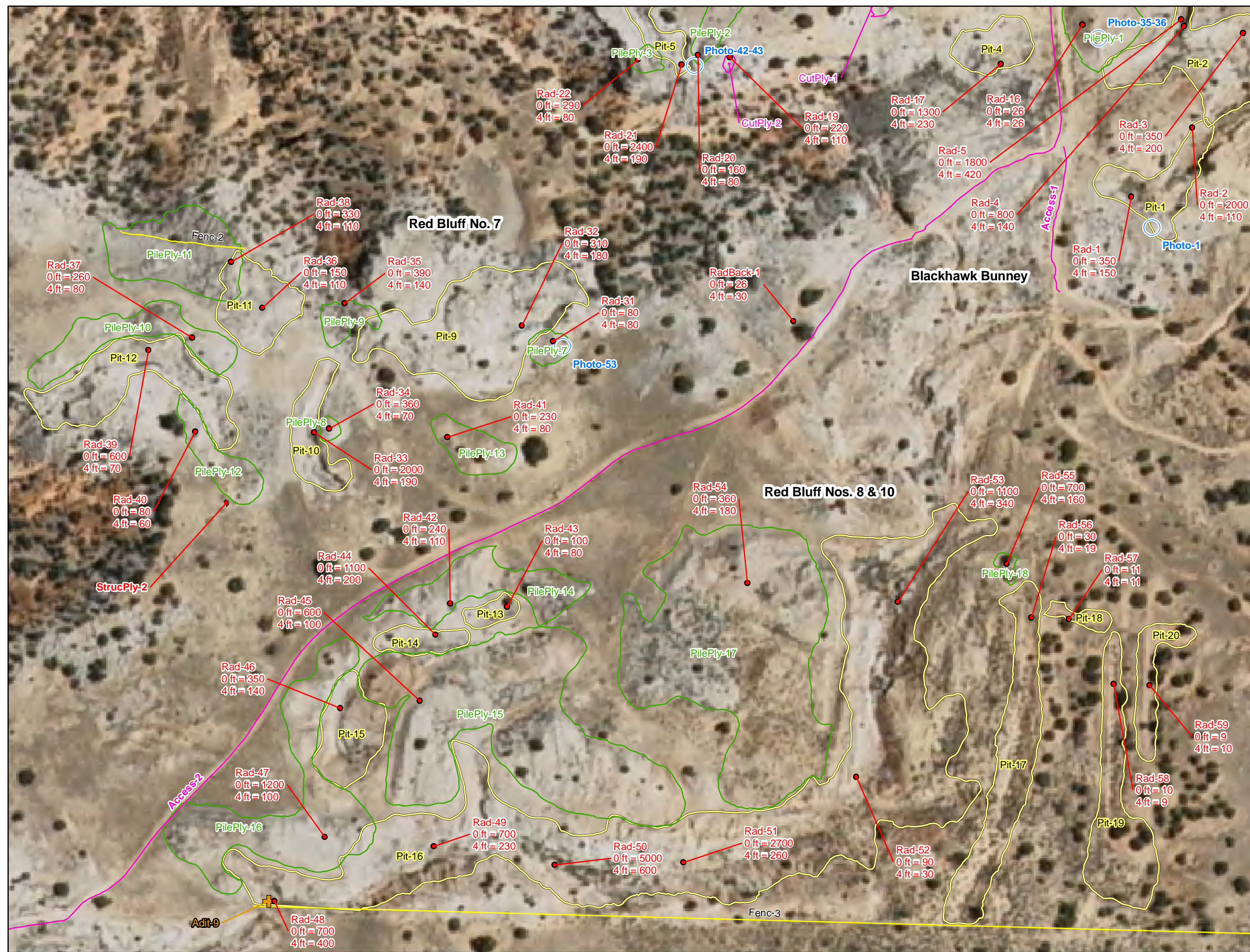
**Surface Ownership**

- Bureau of Land Management
- Private



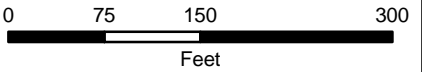
Map Source(s):  
Ownership - BLM, 2008

**Figure 4b**  
**Site Map with**  
**Surface Ownership**  
**NM0074-Blackhawk**  
**Bunney**  
Abandoned Uranium  
Mine Assessment



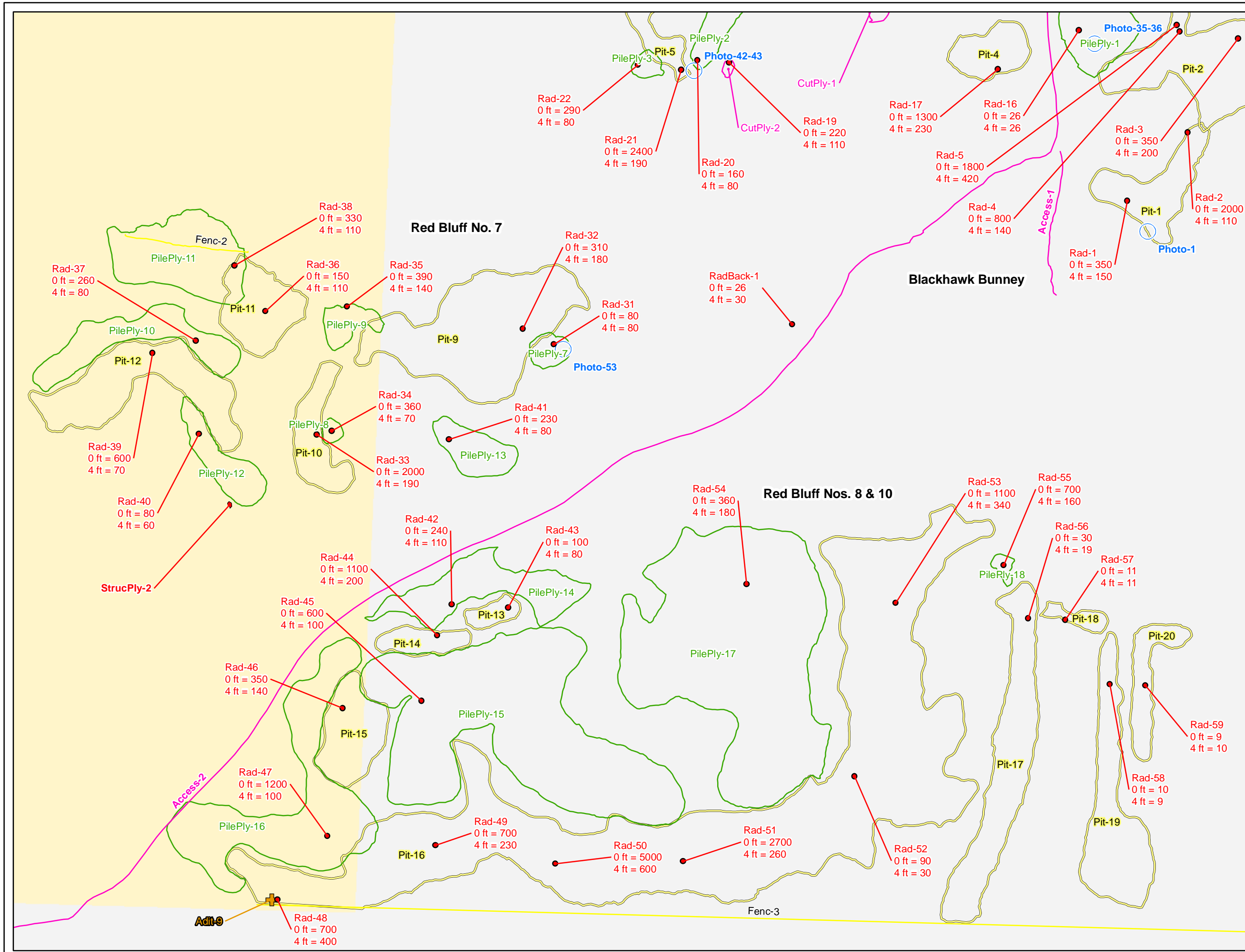
**Legend**

- Radiation Readings (µR/hr)
- Photo Location
- ⊕ Adit
- Access Route
- Fence
- ▭ Pile Boundary
- ▭ Open Cut Boundary
- ▭ Pit Boundary
- ▭ Structure Boundary



Map Source(s):  
 U.S. Geological Survey 7.5-Minute  
 DOQQ County Mosaic  
 -Cibola County, 2009

**Figure 5a**  
**Site Map on**  
**Aerial Photo**  
**NM0074-Red Bluff**  
**Nos. 7, 8, & 10**  
 Abandoned Uranium  
 Mine Assessment

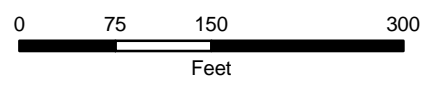


**Legend**

- Radiation Readings (µR/hr)
- Photo Location
- ⊕ Adit
- Access Route
- Fence
- ▭ Pile Boundary
- ▭ Open Cut Boundary
- ▭ Pit Boundary
- ▭ Structure Boundary

**Surface Ownership**

- Bureau of Land Management
- Private



Map Source(s):  
Ownership - BLM, 2008

**Figure 5b**  
**Site Map with**  
**Surface Ownership**  
**NM0074-Red Bluff**  
**Nos. 7, 8, & 10**  
**Abandoned Uranium**  
**Mine Assessment**

## **APPENDIX A**

### **PHOTO LOG**

Note: Gaps in the numbering sequence of the photos is the result of removing photos not suitable for the report. A full set of photos is provided in the electronic deliverable.



Photo 1-Site photo, Pit-1 (Blackhawk/Bunney claims) in background, looking north.



Photo 2-Looking south at Pit-1 (Blackhawk/Bunney claims).



Photo 3-Looking northeast at the southeastern arm of Pit-2 (Blackhawk/Bunney claims).



Photo 4-Looking northeast at the northern arm of Pit-2 (Blackhawk/Bunney claims).



Photo 5-Looking west at western arm of Pit-2 (Blackhawk/Bunney claims).



Photo 6-Looking south at southeastern arm of Pit-2 (Blackhawk/Bunney claims).



Photo 7-Looking west at the junction of the two arms of Pit-2 (Blackhawk/Bunney claims).



Photo 8-Yellow mineralization at radiation survey point Rad-5 (1800  $\mu$ R/hr at 0 meters; Blackhawk/Bunney claims).



Photo 9-Looking southeast into Adit-1 (Blackhawk/Bunney claims).



Photo 10-Looking east into Adit-2 (Blackhawk/Bunney claims).



Photo 11-Looking west into Adit-3 (Blackhawk/Bunney claims).



Photo 12-Looking down and northward into Adit-4 (Blackhawk/Bunney claims).



Photo 13-Closeup of Adit-4 (Blackhawk/Bunney claims). No scale is provided because the entrance to the adit is inaccessible.



Photo 14-Looking down into the entrance of Adit-4 (Blackhawk/Bunney claims).



Photo 15-Looking south at a vent pipe (MiscPt-1; Blackhawk/Bunney claims).



Photo 16-Looking north at the northern arm of Pit-3 (Blackhawk/Bunney claims).



Photo 17-Looking northwest into Pit-3 (Blackhawk/Bunney claims).



Photo 18-Looking west at scattered lumber and metal (Equip-1; Blackhawk/Bunney claims).



Photo 19-Closeup of Equip-1 (Blackhawk/Bunney claims).



Photo 20-Looking south into Adit-5 (Blackhawk/Bunney claims).



Photo 21-Looking south at Adit-5 (Blackhawk/Bunney claims).



Photo 22-Looking north at entrance of Adit-6 (Blackhawk/Bunney claims).



Photo 23-Looking northwest into Adit-6 (Blackhawk/Bunney claims).



Photo 24-Looking west at old mine structure (StrucPly-1; Blackhawk/Bunney claims).



Photo 25-Looking east at StrucPly-1 (Blackhawk/Bunney claims).



Photo 26-Looking east into Adit-7 (Blackhawk/Bunney claims). The adit appears half full of sand eroded from the walls of Pit-3.

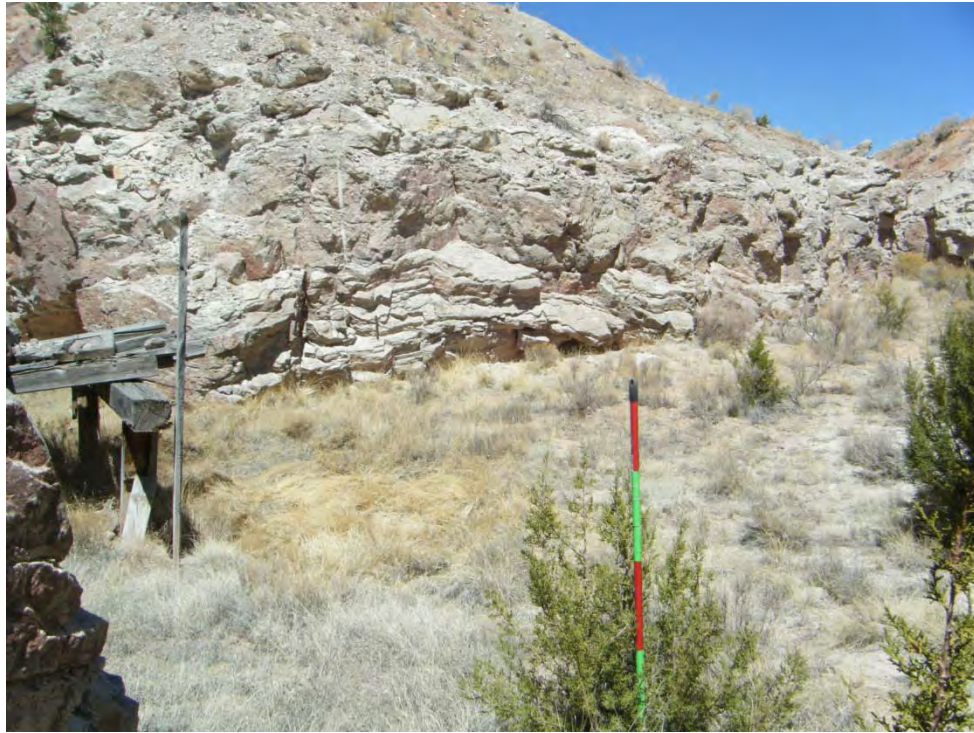


Photo 27-Looking north at the northern arm of Pit-3 (Blackhawk/Bunney claims).



Photo 28-Looking west at western/southwestern arm of Pit-3 at mining structure StrucPly-1 (Blackhawk/Bunney claims).



Photo 29-Radiation survey point Rad-14 (2800  $\mu$ R/hr at 0 meters; Blackhawk/Bunney Claims).



Photo 30-Looking south at Adit-8 (Blackhawk/Bunney claims).



Photo 31-View into interior of Adit-8 (Blackhawk/Bunney claims).



Photo 32-Looking south at Pit-3 from above (Blackhawk/Bunney claims).



Photo 33-Looking southeast at PilePly-1 (Blackhawk/Bunney claims).



Photo 34-Looking northeast at PilePly-1 (Blackhawk/Bunney claims).



Photo 35-Looking east at Pit-2 (Blackhawk/Bunney claims).



Photo 36-Looking northeast at Pit-2 (Blackhawk/Bunney claims).



Photo 37-Looking southwest at Pit-4 (Blackhawk/Bunney claims).



Photo 38-Looking northeast at Pit-4 (Blackhawk/Bunney claims).



Photo 39-Looking north at CutPly-1 (Blackhawk/Bunney claims).



Photo 40-Looking southwest at CutPly-2 (Blackhawk/Bunney claims).



Photo 41-Looking north at PilePly-4 (Blackhawk/Bunney claims).



Photo 42-Looking east/southeast at the Gay Eagle claims. Note waste piles spilling down slope into drainage.



Photo 43-Looking southwest at Red Bluff No. 7 claim.



Photo 44-Looking northwest at Pit-5 (Blackhawk/Bunney claims).



Photo 45-Looking north at PilePly-3 (Blackhawk/Bunney claims).



Photo 46-Looking northeast at CutPly-3 (Blackhawk/Bunney claims).



Photo 47-Looking northwest at PilePly-4 (Blackhawk/Bunney claims).



Photo 48-Looking east at Pit-6 (Blackhawk/Bunney claims).



Photo 49-Looking north at Pit-7 (Blackhawk/Bunney claims).



Photo 50-Looking west at PilePly-5 (Blackhawk/Bunney claims).



Photo 51-Looking southeast at Pit-8 (Blackhawk/Bunney claims).



Photo 52-Looking northwest at Pit-8 (Blackhawk/Bunney claims).



Photo 53-Looking north at PilePly-6 (Blackhawk/Bunney claims).



Photo 54-Looking south at PilePly-7 (Red Bluff No. 7 claim).



Photo 55-Looking northwest at AUM Site.



Photo 56-Looking northwest at Pit-9 (Red Bluff No. 7 claim).



Photo 57-Looking northwest at lower part of Pit-9 (Red Bluff No. 7 claim).



Photo 58-Looking southwest at rock face in Pit-9 (Red Bluff No. 7 claim).



Photo 59-Looking south at Pit-10 (Red Bluff No. 7 claim).



Photo 60-Looking west at PilePly-8 (Red Bluff No. 7 claim).



Photo 61-Looking west at PilePly-9 (Red Bluff No. 7 claim).



Photo 62-Looking northwest off the slope of the mesa. Debris from PilePly-9 spreads down the slope in the foreground.



Photo 63-Looking south at Pit-11 (Red Bluff No. 7 claim).



Photo 64-Looking west at PilePly-10 (Red Bluff No. 7 claim).



Photo 65-Looking west at PilePly-11 (Red Bluff No. 7 claim).



Photo 66-Looking southwest at Pit-12 (Red Bluff No. 7 claim).



Photo 67-Looking southeast at PilePly-12 (Red Bluff No. 7 claim).



Photo 68-A wooden structure sunk into the ground (StrucPly-2; Red Bluff No. 7 claim).



Photo 69-Lid near StrucPly-2 (Red Bluff No. 7 claim).



Photo 70-Looking west at PilePly-13 (Red Bluff No. 7 claim).



Photo 71-Looking west at PilePly-14 (Red Bluff No. 8 claim).



Photo 72-Looking north at Pit-13 (Red Bluff No. 8 claim).



Photo 73-Looking south at Pit-14 (Red Bluff No. 8 claim).



Photo 74-Looking northeast at PilePly-15 (Red Bluff No. 8 claim).



Photo 75-Looking southeast at Pit-15 (Red Bluff No. 8 claim).

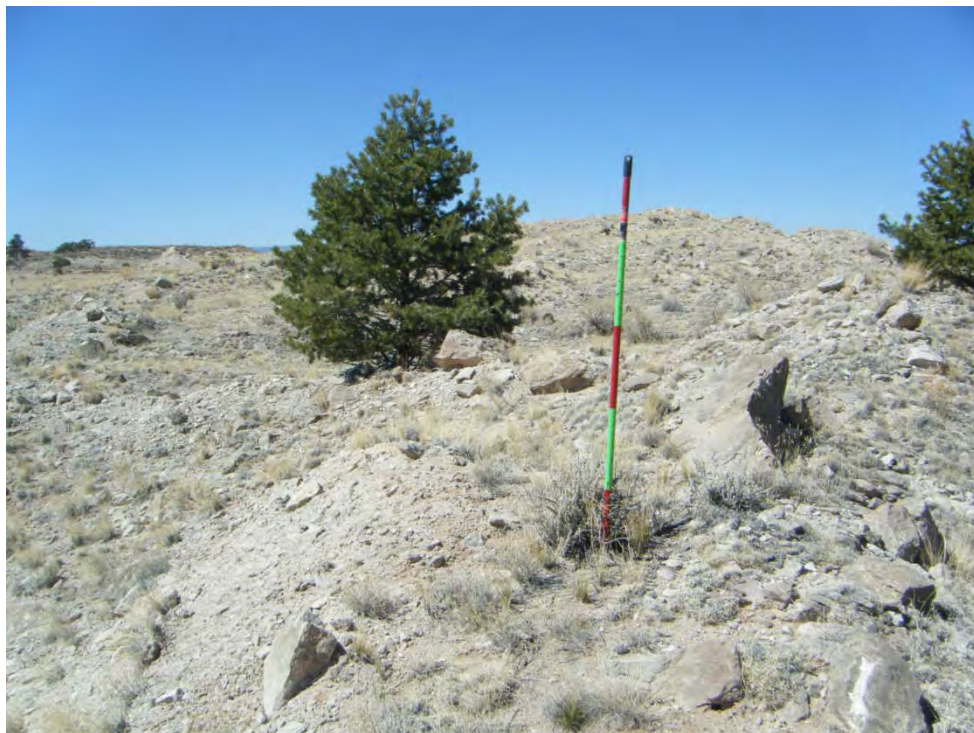


Photo 76-Looking west at PilePly-16 (Red Bluff No. 8 claim).



Photo 77-Looking south at Adit-9 (Red Bluff No. 8 claim).



Photo 78-Looking east at the western end of Pit-16 (Red Bluff No. 8 claim). This photo shows the same location as Photo (16) in Anderson (1980), but with a different aspect.



Photo 79-Looking south at the wall of Pit-16 (Red Bluff No. 8 claim).



Photo 80-Looking east/northeast at Pit-16 (Red Bluff No. 8 claim).



Photo 81-Looking east down Pit-16 (Red Bluff No. 8 claim).



Photo 82-Looking east down Pit-16 (Red Bluff No. 8 claim).



Photo 83-Looking north at wall of Pit-16 (Red Bluff No. 8 claim).



Photo 84-Radiation survey point Rad-50 in Pit-16 (over 5000  $\mu$ R/hour at 0 meters; Red Bluff No. 8 claim).

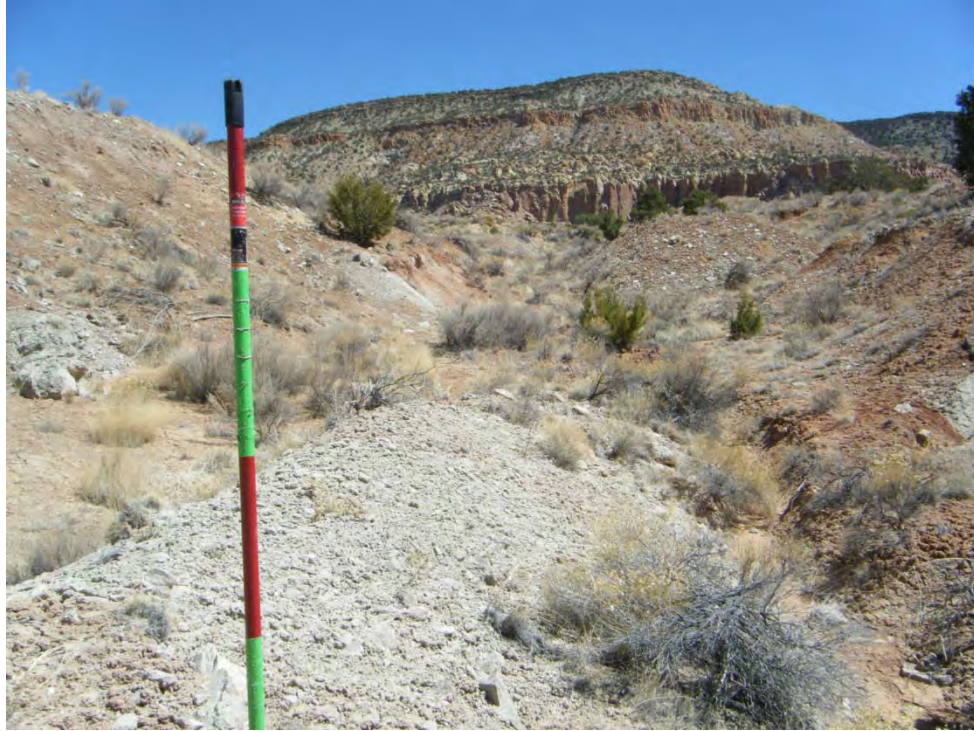


Photo 85-Looking east down Pit-16 (Red Bluff No. 8 claim).



Photo 86-Looking north at eastern end of Pit-16 (Red Bluff No. 8 claim).



Photo 87-Looking east at PilePly-17 (Red Bluff No. 8 claim).



Photo 88-Looking southeast at PilePly-17 (Red Bluff No. 8 claim).



Photo 89-Looking northwest at PilePly-18 (Red Bluff No. 10 claim).



Photo 90-Looking south at Pit-17 (Red Bluff No. 10 claim).



Photo 91-Looking east at Pit-18 (Red Bluff No. 10 claim).



Photo 92-Looking south at Pit-19 (Red Bluff No. 10 claim).



Photo 93-Looking south at Pit-20 (Red Bluff No. 10 claim).



Photo 94-Looking southwest at MMD provided polygon area on the UDC No. 1 claim.



Photo 95-Site photo from the UDC No. 1 claim, looking west.



Photo 96-Site photo from the UDC No. 1 claim, looking west.

**APPENDIX B**  
**FIELD NOTES**

4/7/10 A+ Abandoned Uranium Mines

138

Site Name: NM0074; Blackhawk Bunny,  
Red Bluffs Nos. 7, 8, 10 and UDC-1

Objective: Site Assessments

Personnel: Annelia Tinklenberg  
Danny Bowman

Equipment: Rental truck, Trimble Geo XM  
(SN: 4948447271, 2008 Series), Ludlum 192  
(SN: 234149), Fuji film digital camera (No. 80839493),  
backup Garmin GPS, cell phone amplifiers,  
field laptop.

1130 A+ AUM Site - Blackhawk Bunny

Photo 1 - looking north at site name and Pit 1

Pit 1 - 15' deep, 150' long, 40' wide "L" shaped

Rad 1 - Pit 1; Om - 350  $\mu$ R/h; Im - 150  $\mu$ R/h

Photo 2 - looking south at Pit 1

Rad 2 - Pit 1; Om - 2000  $\mu$ R/h; Im - 110  $\mu$ R/h

Pit 2 - 20' deep, 50' wide, "800' long" "L" shaped

Photo 3 - looking northeast at southeastern arm

Photo 4 - looking northeast at northern arm

Photo 5 - looking west at ~~the~~ <sup>A+</sup> south western arm from  
inside Pit 2

Photo 6 - looking south at southeastern arm from  
inside Pit 2

Rad 3 - Pit 2, southeastern arm; 0m - 350 uR/h;  
1m - 200 uR/h

Photo 7 - looking west toward junction of arms in  
Pit 2

Rad 4 - Pit 2, junction; 0m - 800 uR/h; 1m - 140 uR/h

Rad 5 - Pit 2, yellow mineralization  
0m - 1800 uR/h; 1m - 420 uR/h

Photo 8 - Rad 5, yellow mineralization

Adit 1 - northern arm of Pit 2; 1' high, 3' wide, 10' long

Photo 9 - looking south east into Adit 1

Rad 6 - Adit 1; 0m - 230 uR/h; 1m - 150 uR/h

Adit 2 - northern arm of Pit 2; 2' high, 2' wide, 6' long

Photo 10 - looking east into Adit 2

Rad 7 - Adit 2; 0m - 170 uR/h; 1m - 150 uR/h

Wildlife - Adit 1 and 2 have packrat scat

Adit 3 - northern arm of Pit 2; 3' high, 1' wide, 6'  
long

Photo 11 - looking west into Adit 3

Rad 8 - Adit 3; 0m - 340 uR/h; 1m - 110 uR/h

Adit 4 - northern end of Pit 2, very deep, depth  
unknown; 10' tall, 15' wide, > 30' deep

Photos 12 - 14 - looking north into Adit 4

Rad 9 - Adit 4 entrance; 0m - 35 uR/h; 1m - 38 uR/h

Misc Pit venthole, metal pipe; 2' tall, 6" diameter  
Photo 15 - misc Pit looking south

Pit 3 - 30' deep, 70' wide, ~ 800' long

Adit connects to Adit 4 in Pit 2

Photo 16 - looking north at northern arm of Pit 3

Photo 17 - looking northwest at loadout structure in  
Pit 3

Equip-1 - timber, metal, and rubber hoses, at entrance  
on southwestern arm of Pit 3

Photo 18 - looking west at Equip-1

Photo 19 - closeup of main Equip-1

Adit 5 - southwestern arm of Pit 3; 6' tall, 8' wide,  
> 50' deep (unknown) timber structural support

Photo 20 - looking south into Adit 5, trends south

Photo 21 - looking south at Adit 5 entrance

Rad 10 - Adit 5 entrance; 0m - 90 uR/h; 1m - 90 uR/h

Adit 5 - seems to be filling in with sand

Adit 6 - western edge of Pit 3, trends north <sup>ACT</sup> then  
turns northwest; 4' high, 8' wide, > 40' deep

Photo 22 - looking north at Adit 6 entrance

Photo 23 - looking northwest into Adit 6

Rad 11 - Adit 6; 0m - 1000 uR/h; 1m - 490 uR/h

Adit 6 - seems to be filling in with sand; wooden  
structural supports

Struct Ply 1 - 4' high, 10' x 10'; in Pit 5

Photo 24 - looking west at Struct Ply 1

Photo 25 - looking east at Struct Ply 1

Rad 12 - Pit <sup>3</sup> ~~3~~ <sup>ALT</sup> - Om - 1500 uR/h; Im - 300 uR/h

~~Pit 3~~ <sup>ALT</sup>

Adit 7 - northern arm of Pit 3; filling in with sand  
1' tall, 4' wide, >40' deep; trends east

Photo 26 - looking east at Adit 7

Rad 13 - Adit 7; Om - 260 uR/h; Im - 120 uR/h

Photo 27 - looking north at northern arm of Pit 3 from center.

Photo 28 - looking west at western/southwestern arm of Pit 3 from center.

Rad 14 - Pit 3, eastern wall; Om - 2800 uR/h; Im - 500 uR/h

Photo 29 - looking northeast at Rad 14, black rock

Adit 8 - southeastern arm of Pit 3, filling in with sand

~~may connect~~ ALT 4' high, 6' wide, >50' deep

Photo 30 - looking south at Adit 8, trends south

Photo 31 - looking south into Adit 8

Rad 15 - Adit 8; Om - 330 uR/h; Im - 270 uR/h

Photo 32 - looking south at Pit 3 area from above

~~3-10~~ <sup>ALT</sup>

1340 - Susan returned our call - we do not need to return to Christmas day; we assessed the shapefile and that is adequate.

Pile Ply 1 - 25' high, 150' long, 50' wide

east of main access road

Photo 33 - Pile Ply 1 looking southeast

Photo 34 - Pile Ply 1 looking northeast

Rad 16 - Pile Ply 1; Om - 26 uR/h; Im - 26 uR/h

Photo 35 - Pit 2 of Blackhawk Bunny looking east

Photo 36 - Pit 2 looking northeast

Pit 4 - 10' tall, 75' long, 50' wide

Photo 37 - looking south west at Pit 4

Photo 38 - looking northeast at Pit 4

Rad 17 - Pit 4; Om - ~~420~~ <sup>ALT</sup> 1300 uR/h; Im - 230 uR/h

Cut Ply 1 - 6' deep, 30' wide, 60' long

Photo 39 - Cut Ply 1, looking north

Rad 18 - Cut Ply 1 - Om - 60 uR/h; Im - 25 uR/h

Cut Ply 2 - 3' deep, 7' wide, 15' long

Photo 40 - Cut Ply 2 looking southwest

Rad 19 - Cut Ply 2; Om - 220 uR/h; Im - 110 uR/h

Pile Ply 2 - <sup>ALT</sup> 8' tall, 15' wide, 40' long

Photo 41 - looking north at ~~Ply 2~~ <sup>ALT</sup> Pile Ply 4

Rad 20 - Pile Ply 2; Om - 160 uR/h; Im - 80 uR/h

Photo 42 - looking east/southeast at Gay Eagle

Photo 43 - looking southwest at Red Bluff No. 7

Pit 5 - 8' deep, 10' wide, 150' long

Photo 44 - looking northwest at Pit 5

Rad 21 - Pit 5 - Om - 2400 uR/h; Im - 190 uR/h

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1445

Pile Ply 3 - 4' high, 20' wide, 30' long

Photo 45 - Pile Ply 3 - looking north

Rad 22 - Pile Ply 3; Om - 220 uR/h; Im - 80 uR/h

Cut Ply 3 - 10' high, 30' wide, 40' long

Photo 46 - Cut Ply 3 - looking north <sup>NE</sup> east

Rad 23 - Cut Ply 3; Om - 180 uR/h; Im - 80 uR/h

Pile Ply 4 - 8' high, 20' wide, 70' long

Photo 48<sup>ALT</sup> - Pile Ply 4, looking northwest

Rad 24 - Pile Ply 4; Om - 160 uR/h; Im - 100 uR/h

Fence 1 - barbed wire fence

Pit 6 - 10' deep, 20' wide, 40' long

Rad 25 - Pit 6; Om - 100 uR/h; Im - 80 uR/h

Photo 46<sup>ALT</sup> - looking east at Pit 6

Pit 7 - 10' deep, 15' wide, 60' long

Photo 47<sup>ALT</sup> - looking north at Pit 7

Rad 26 - Pit 7; Om - 38 uR/h; Im - 27 uR/h

Rad 27 - Pit 7; Om - 900 uR/h; Im - 240 uR/h

Pile Ply 5 - variable height 2'-15' high, 15' wide, 100' long

Photo 48<sup>ALT</sup> - looking west at Pile Ply 5

Rad 28 - Pile Ply 5; Om - 340 uR/h; Im - 80 uR/h

Pit 8 - 10'-30' wide, 5' deep, 120' long

Photo 49<sup>ALT</sup> - looking south east at Pit 8

Photo 50<sup>ALT</sup> - looking north west at Pit 8

Rad 29<sup>ALT</sup> - Pit 8; Om - 600 uR/h; Im - 180 uR/h

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1520

Pile Ply 6 - 15' high, 75' wide, 200' long

Photo 51<sup>ALT</sup> - looking north at Pile Ply 6

Rad 30 - Pile Ply 6; Om - 210 uR/h; Im - 180 uR/h

1535 - Back at truck

Collecting vegetation samples for Grants Ridge Sites.

Photos GR 1-16 - Vegetation

1600 - Leaving site - Completed Blackhawk Bunny

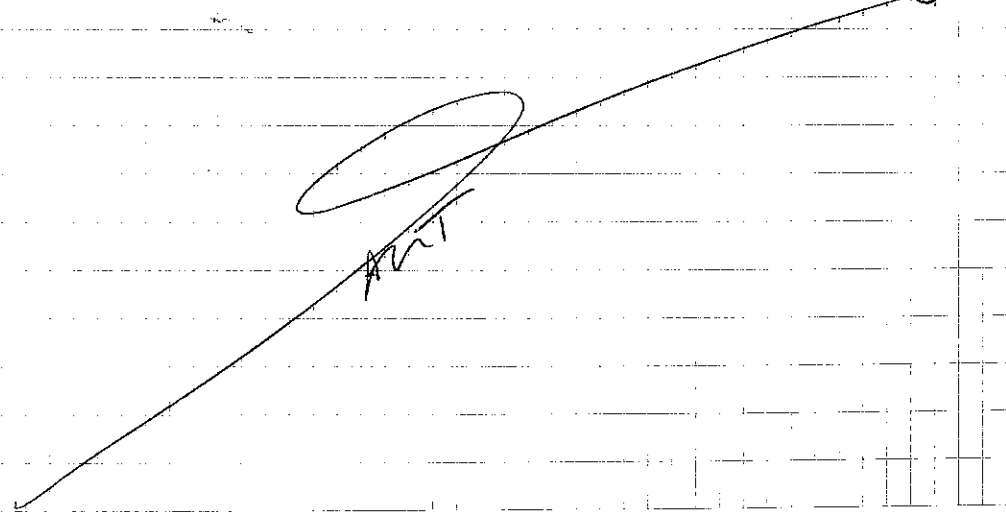
Soils: Tan to red sandy, rocky

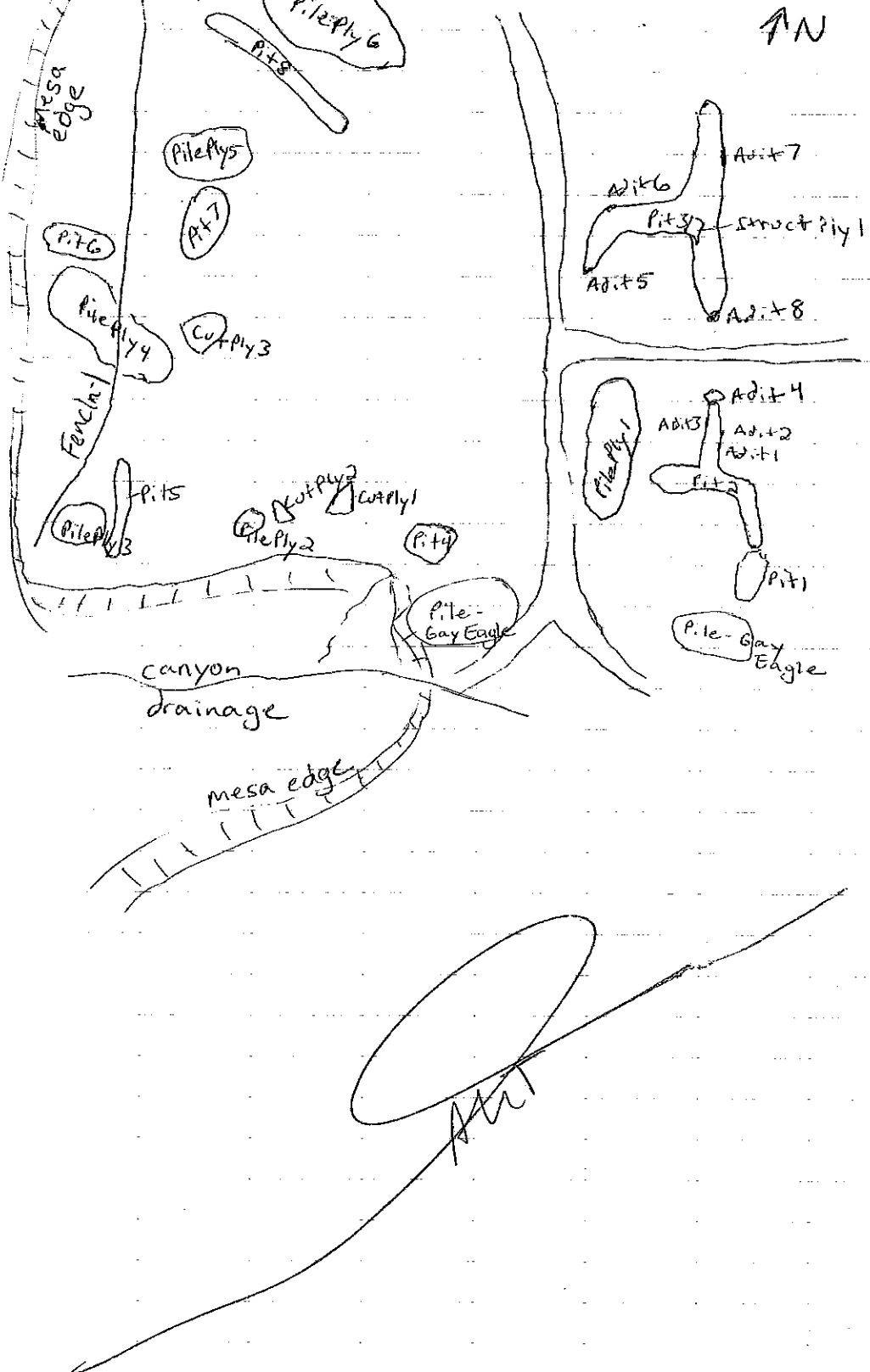
Rocks: Red Entrada sandstone, grey Todilto limestone

Human Activity: Grazing; fences, cow prints

Past mining. Active/present prospecting; truck tracks, stakes, bags of cement

Wildlife: Scrub jays, crows, rabbits droppings, coyote tracks, deer scat, packrat droppings





8:30 At site to continue NM0074, completed Blackhawk Bunny on 4/2/10 and starting on Red Bluff No. 7.

- Background Rad - 0m - 26 mR/h; 1m - 30 mR/h
- Pile Ply 7 - 10' high, 30' wide, 40' long; waste rock
- Photo <sup>54 ALT</sup> 54 - looking south at Pile Ply 7
- Rad <sup>31 ALT</sup> 31 - Pile Ply 7; 0m - 80 mR/h; 1m - 80 mR/h
- Photo <sup>55 ALT</sup> 55 - looking northwest at Site Name
- Pit 9 - 10' deep, 200' long, 150' wide; pits of variable depth all connected
- Photo <sup>56 ALT</sup> 56 - looking northwest at Pit 9
- Photo <sup>57 ALT</sup> 57 - looking northwest at lower part of Pit 9
- Photo <sup>58 ALT</sup> 58 - looking southwest at cut in Pit 9
- Rad 32 - Pit 9; 0m - 316 mR/h; 1m - 180 mR/h
- Pit 10 - 20' deep, 20' wide, 100' long
- Photo <sup>59 ALT</sup> 59 - looking south at Pit 10
- Rad 33 - Pit 10; 0m - 2000 mR/h; 1m - 190 mR/h
- Pile Ply 8 - 8' high, 15' wide, 30' long
- Photo <sup>60 ALT</sup> 60 - looking west at Pile Ply 8
- Rad 34 - Pile Ply 8; 0m - 360 mR/h; 1m - 70 mR/h
- Pile Ply 9 - 10' high, 50' long, 40' wide; spreads down slope
- Photo <sup>61 ALT</sup> 61 - looking west at Pile Ply 9
- Photo <sup>62 ALT</sup> 62 - looking northwest down the slope
- Pile Ply 9 - spreads down the side of the mesa about 50'
- Rad 35 - Pile Ply 9; 0m - 390 mR/h; 1m - 140 mR/h
- Pit 11 - 3' deep, 50' wide, 75' long
- Photo <sup>63 ALT</sup> 63 - Pit 11 looking south
- Rad 36 - Pit 11; 0m - 150 mR/h; 1m - 110 mR/h
- Pile Ply 10 - 15' high, 20' wide, 200' long; numerous cones
- Photo <sup>64 ALT</sup> 64 - Pile Ply 10 looking west

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Rad 37 - Pile Ply 10; Om - 26 UR/h; Im - 80 UR/h

Pile Ply 11 - 1' to 10' high, 60' wide, 150' long; numerous cones, piles

Photo <sup>65 ALT</sup> 63 - looking west at Pile Ply 11

Rad 38 - Pile Ply 11; Om - <sup>330 ALT</sup> 300 UR/h; Im - 110 UR/h

Fence - 2 - 3' high barbed wire

Pit 12 - 10' deep, 25' <sup>ALT</sup> wide, to 75' wide, 200' long

Photo <sup>66 ALT</sup> 64 - looking southwest at Pit 12

Rad 39 - Pit 12; Om - 600 UR/h; Im - 70 UR/h

Pile Ply 12 - 6' high; 15' wide, 75' long

Photo <sup>67 ALT</sup> 65 - looking southeast at Pile Ply 12

Rad 40 - Pile Ply 12; Om - 80 UR/h; Im - 60 UR/h

Struct Ply 2 - 3' x 5' wood supported walls, 3' deep; filling in with sand and tumbleweeds

Metal drum lid next to it: "Magnolia Petroleum Co.

Texas Div. 70041"

Photo <sup>68 ALT</sup> 66 - Struct Ply 2 looking ~~west~~ south

Photo <sup>69 ALT</sup> 67 - metal drum lid

Pile Ply 13 - 8' high, 20' wide, 75' long

Photo <sup>70 ALT</sup> 68 - Pile Ply 13 looking west

Rad 41 - Pile Ply 13; Om - 230 UR/h; Im - 80 UR/h

Note: Part of shapefile polygon <sup>ALT</sup> is the side of the mesa, this area was too steep and did not have any features.

1100 AT Red Bluff No 8+10

Pile Ply 14 - 10' high, 30' wide, 100' long "L" shaped

Photo <sup>71 ALT</sup> 69 - Pile Ply 14 looking west

Rad 42 - Pile Ply 14; Om - 240 UR/h; Im - 110 UR/h

Pit 13 - 6' deep, 15' wide, 40' long

Photo <sup>72 ALT</sup> 70 - Pit 13 looking north

Rad 43 - Pit 13; Om - 100 UR/h; Im - 80 UR/h

Pit 14 - 6' deep, 20' wide, 50' long

Photo <sup>73 ALT</sup> 71 - Pit 14 looking south

4/8/10 ACT Abandoned Uranium Mines

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Rad 44 - Pit 14; Om - 1100 UR/h; Im - 200 UR/h

Pile Ply <sup>15 ALT</sup> 14 - 35' high, 100' wide, <sup>140 ALT</sup> 250' long; waste rock and sand

Photo <sup>74 ALT</sup> 72 - looking northeast at Pile Ply <sup>15 ALT</sup> 14

Rad 45 - Pile Ply <sup>15 ALT</sup> 14; Om - 600 UR/h; Im - 100 UR/h

Pit 15 - 15' deep, 50' wide, 100' long

Photo <sup>75 ALT</sup> 73 - looking southeast at Pit 15

Rad 46 - Pit 15; Om - 350 UR/h; Im - 140 UR/h

Pile Ply 16 - 25' high, <sup>ALT</sup> 30' wide, 200' long; "V" shaped

Photo <sup>76 ALT</sup> 74 - looking west at Pile Ply 16

Rad 47 - Pile Ply 16; Om - 1200 UR/h; Im - 100 UR/h

Adit 9 - 5' tall, 9' wide, 15' deep; fills with water, deep cow prints in mud. In Pit 16. Trends south

Photo <sup>77 ALT</sup> 75 - looking south at Adit 9 in Pit 16

Rad 48 - Adit 9; Om - 700 UR/h; Im - 400 UR/h

Pit 16 - <sup>25 ALT</sup> 20' deep, 40' wide, 600' long; along southern end of section 4 and Claim Red Bluff Nos. 8+10

Photo <sup>78 ALT</sup> 76 - looking east at the western end of

Pit 16

Photo <sup>79 ALT</sup> 77 - looking south at the wall of Pit 16

Photo <sup>80 ALT</sup> 78 - looking east/northeast at Pit 16

Photo <sup>81 ALT</sup> 79 - looking east down Pit 16

Photo <sup>82 ALT</sup> 80 - looking east down Pit 16

Photo <sup>83 ALT</sup> 81 - looking north at Pit 16 wall

Rad 49 - Pit 16; Om - 700 UR/h; Im - 230 UR/h

Rad 50 - Pit 16; Om - 5000+ UR/h; Im - 600 UR/h

Photo <sup>84 ALT</sup> 82 - Rad 50, black and yellow mineralization

Rad 51 - Pit 16; Om - 2700 UR/h; Im - 260 UR/h

Photo <sup>85 ALT</sup> 83 - looking east down Pit 16

Photo <sup>86 ALT</sup> 84 - looking north at the eastern end Pit 16

Rad 52 - Pit 16; Om - 90 UR/h; Im - 30 UR/h

Rad 53 - Pit 16; Om - 1100 UR/h; Im - 340 UR/h

149 4/8/10 ALT Abandoned Uranium Mines

Rad 54 - Pileply 17; Om - 360 uR/h; Im - 180 uR/h

Pileply 17 - 30' tall, 50' wide, 200' long

Photo <sup>87 ALT</sup> 85 - Pileply 17 looking east

Photo <sup>88 ALT</sup> 86 - Pileply 17 looking southeast

Pileply 18 - 4' high, 30' long, 10' wide

Photo <sup>89 ALT</sup> 87 - Pileply 18 looking northwest

Rad 55 - Pileply 18; Om - 700 uR/h; Im - 160 uR/h

Pit 17 - 5' high, 15' wide, 400' long; filled in with sand

Photo <sup>90 ALT</sup> 88 - Pit 17; <sup>looking south</sup> Om - ~~400~~ uR/h; Im - ~~19~~ uR/h

Rad 56 - Pit 17; Om - 30 uR/h; Im - 19 uR/h

Pit 18 - 3' deep, 10' wide, 50' long; exploration

Photo <sup>91 ALT</sup> 88 - Pit 18 looking east

Rad 57 - Pit 18; Om - 11 uR/h; Im - 11 uR/h

Pit 19 - 5' deep, 15' wide, <sup>400</sup> 600' long; exploration

Photo <sup>92 ALT</sup> 90 - Pit 19 looking south

Rad 58 - Pit 19; Om - 10 uR/h; Im - 9 uR/h

Pit 20 - 4' deep, 15' wide, 180' long; exploration

Photo <sup>93 ALT</sup> 91 - Pit 20 looking south

Rad 59 - Pit 20; Om - 9 uR/h; Im - 10 uR/h

Photo <sup>94 ALT</sup> 92 - UDC-1 polygon looking southeast

Rad ALT Sand dune

Rad 60 - UDC-1; Om - 6 uR/h; Im - 6 uR/h

Photo <sup>95-96 ALT</sup> 93-94 - looking west at Red Bluff Nos. 8+10,

Gay Eagle, and Blackhawk Bunny

1430 ALT

Misc Pit 1+2 - Fenceline on south end of section 4 and north end of section 9

1430 - Leaving UDC-1 for truck

Soils: Tan-Red sands <sup>ALT</sup> ~~here~~ (Entrada); sandy, rocky

Rocks: Tan-Red sandstone (Entrada); grey Todito limestone

Human Activities: Grazing, Past and present mining/prospecting, exploration

4/8/10 ALT Abandoned Uranium Mines

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wildlife: scrub jays, cotton tail, jack rabbit, packrat droppings

