

Abandoned Uranium Mine Site Assessment for the San Lorenzo Mine (NM0254)

DRAFT REPORT

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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 San Lorenzo Mine (AUM Site), MMD ID: NM0254, at MMD given location Latitude 34.22508 degrees, Longitude -106.987556 degrees on December 16, 2009.

1.1 PREVIOUSLY KNOWN INFORMATION ABOUT THE SITE

The AUM Site was mined by surface mining methods in 1955. Other known aliases for the mine include Jerome, and San Lorenzo No. 1. The mine produced a total of 6 pounds of U_3O_8 ore at an average production grade of 0.02 percent from this sedimentary uranium deposit (McLemore and Chenoweth, 1989).

This AUM Site was not included in the Anderson Report (Anderson, 1980).

1.2 SITE LOCATION AND DIRECTIONS

The AUM Site is located on Bureau of Land Management (BLM) land in the southern half of the northwest quarter of Section 18, Township 1 south, Range 1 west. This AUM Site is located in Socorro County and is approximately 4 miles west of Interstate 25, and 12 miles north of the city of Socorro (please see Figure 1). The location of the observed AUM Site is Latitude 34.2253 degrees and Longitude -106.9892 degrees.

From Albuquerque, drive south on Interstate 25 for approximately 60 miles. Take Exit 163 (San Acacia) and turn left, crossing the freeway. Turn right onto the frontage road on the east side of Interstate 25. Continue south along the frontage road, crossing two large arroyos on the way. After about 2.2 miles, begin looking for a paved turnoff on your right. The turnoff will be just before several houses. Turn right at the turnoff and go under Interstate 25 through a narrow tunnel. Keep straight onto a dirt road past a BLM sign that says "San Lorenzo Canyon." After about 2 miles, you will see the San Lorenzo Canyon turnoff on your right (the BLM has provided another sign). Do not take this turn, but continue straight. After about 0.7 miles after the San Lorenzo turnoff, the road will enter an arroyo. From this point on, follow the vehicle tracks in the arroyo. The arroyo will enter a canyon called Cañoncito de las Cabras (locally known as Cabra Canyon). The arroyo makes a tight S shaped meander. After the meander, watch carefully for a prospect pit on the hill to your right. Park in the arroyo here. This is the southern end of the AUM Site. Proceed on foot to the prospect pit on a rocky slope, and follow an outcropping of sandstone and chert northwestward into the Site.

1.3 SITE GEOLOGY

The AUM Site is located in the Miocene Poptosa Formation of the lower Santa Fe Group. In the Cañoncito de las Cabras area this formation consists of fanglomerates with interlayered playa lake beds and ash layers. The fanglomerates likely derive from the Magdalena Mountains to the west. These fanglomerates contain subangular to subrounded clasts of mostly volcanic origin in a

complex package of conglomerates, channels deposits, and tabular sandstones. These beds represent fluvial and debris flow deposits from an alluvial fan interfingered with clays and finer sandstones from a series of playa lakes. The conglomerates are typically poorly sorted and massive. Sandstone sheets are thin, usually less than a foot thick. Ash beds and water-lain tuffs are present throughout the conglomerates and playa lake deposits (Bruning, 1973). The soil present at the mine site is a sandy gravel with many cobbles, and little to no organic matter. Some of the conglomerates and sandstones are resistant to erosion and weathering, forming cliffs, with the softer sandstones and lacustrine deposits forming slopes. These beds dip northeast at approximately 30 to 40 degrees at the mine site and are offset by faults, usually with less than 10 feet displacement.

Radioactivity readings were found to originate from a 2-3 inch thick gray tuffaceous sandstone bed lying directly above a chert layer. This chert layer is more resistant than the surrounding deposits and projects up to a few feet from the hillside. The chert can be traced from the Cabra Canyon arroyo northwest for at least a third of a mile. Elevated radiation levels extend from the Cabra Canyon arroyo for about a quarter of a mile along this layer. The decrease in radioactivity to the north seems to correlate with an increase in carbonate material in the chert layer.

1.4 SITE HYDROGEOLOGY

The groundwater and surface water at the AUM Site are hydraulically connected with basins of the Rio Grande Valley. The AUM Site is approximately 6.5 miles south of the Rio Salado and 1 mile southwest of the San Lorenzo Arroyo. The surface waters at the AUM Site drain northeast out of the Canoncito de las Cabras into the San Lorenzo Arroyo. The San Lorenzo Arroyo drains to the east into the Rio Grande flood plain.

The aquifer bearing formations around the AUM Site, in the Middle Rio Grande Groundwater Basin, are the Quaternary alluvial and fluvial deposits and the lower part of the Popotosa Formation. The groundwater flow direction is hydraulically connected with the surface water flow direction and in general flows from higher elevations in the west to east toward the Rio Grande Valley (DBSA, 2003).

1.5 REGIONAL TOPOGRAPHY AND TERRAIN

The AUM Site may be found on the Lemitar Quadrangle 7.5 minute United States Geological Survey topographic map at an elevation of approximately 5300 feet above mean sea level (please see Figure 2). The regional topography around the AUM Site is fairly steep, with changes in elevation of up to 600 vertical feet within a one-mile radius of the AUM Site. The Cañoncito de las Cabras (or Cabra Canyon) is located directly south of the AUM Site, and is a seasonally active drainage system flowing from west to east and eventually empties into the Rio Grande, approximately six miles to the east. Figure 3 shows an aerial photograph of the terrain surrounding the AUM Site.

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. The San Lorenzo AUM Site is a long narrow site running from northwest to southeast, that follows the radioactivity readings in the tuffaceous sandstone outcrop. The mine features include one decline, two claim markers, one disturbance, one foundation, one abandoned empty grease can, two open cuts, one waste pile, and one exploration pit. Please see the Photo Log in Appendix A, Table 1 for a list of all AUM Site features, and Figures 4a and 4b for the locations of the AUM Site features.

2.1 MINE SHAFTS, ADITS, AND DECLINES

One decline (decl-1) was found at the AUM Site, with dimensions of 8 feet wide, 3 feet high, and 7 feet deep. This decline has been filled with soil, level with the ground surface. Erosion has washed the sediment into the decline, and there are small holes which allow water to carry more sediment into the decline cavity. The access holes into the decline are several inches in diameter, and are not large enough to allow human access to the mine. It is not evident how far the decline advances into the rock.

2.2 MINING AND EXPLORATION PITS AND OPEN CUTS

Two exploration pits were found at the AUM Site. The first pit (pit-1) is approximately in the center of the AUM Site, and has dimensions of 10 feet by 8 feet wide, by 6 feet deep. This pit was dug into the side of the hill, so one side of it is level with walking ground, and the other side is vertical. The second pit is at the very southeastern end of the AUM Site. It has dimensions of 10 feet by 8 feet wide, by 3 feet deep. This pit was also dug into the side of the hill, and the bottom of the pit is close to relatively level ground close to the arroyo in Cabra Canyon. Neither of these pits are a safety hazard, since they are shallow.

Two open cuts were found at the AUM Site. Both of these cuts parallel the tuffaceous sandstone outcrop. The first cut (cut-1) is 10 feet wide, 50 feet long, and 2 feet deep. The second cut (cut-2) is 5 feet wide, 30 feet long, and 5 feet deep. This cut (cut-2) has most likely been deepened by erosion from water runoff.

2.3 WASTE AND ORE PILES AND DISTURBANCES

One waste rock pile (pile-1) was found at the AUM Site. This pile is located at the entrance to the decline, and the material was used to create a flat landing for people and equipment entering or leaving the decline. There is approximately 3 cubic yards of waste rock in this pile. There is no evidence of soil staining or runoff below this pile.

One disturbance (distrb-1) was found at the AUM Site. A disturbance is an area of ground that appears to have been disturbed by human activity or equipment, often characterized by rough soil, broken rock, and little to no vegetation. This disturbance was an area of 5 feet by 15 feet composed of broken rock scattered on the ground, disturbed soil, and little to no vegetation.

2.4 MINING RELATED BUILDINGS AND FOUNDATIONS

One mining related foundation was found at the AUM Site. This foundation was made of flat rocks, native to the area, built up as walls around three sides of a collapsed wooden structure.

The total dimensions of the foundation are approximately 6 feet wide by 6 feet long, and each of the walls is approximately 1-foot high. The boards of the collapsed wooden structure are 10 feet long. The intended use of this structure is not clear.

2.5 OTHER MINE FEATURES

Other features that were found at the AUM Site include two possible claim markers and one empty grease can. The first item assumed to be a claim marker (claim-1) is represented by paint and a wooden sign 20 feet high on a rock face, just below a small hole in the rock face. The paint says “R+R” and just above that, wedged into a hole in the rock face, the wooden sign reads “R.-R.” The second item assumed to be a claim marker (claim-2) is a rock cairn just east of, and above, the tuffaceous sandstone outcrop. This cairn is approximately 3 feet high, 2 feet by 2 feet wide at the base, and 0.5 feet by 0.5 feet wide at the top. One rusted, empty grease can (grease-can1) was found west of the tuffaceous sandstone. There is no soil staining on the ground around it. The writing on the grease can says “Triangle Oil Co.”

2.6 BOREHOLES

There were no visible boreholes at this AUM Site.

2.7 RECLAMATION ACTIVITIES

No apparent reclamation activities have taken place at this AUM Site. The opening to the decline is filled with soil. None of the pits or piles have been reclaimed.

3.0 ARCHEOLOGICAL SITES

One possible archeological site (arcl-1) was found at the AUM Site (please see Table 1). It was a lithic scatter of chert located to the west of the Site, and stretching for a length of approximately 75 feet.

4.0 SITE GAMMA RADIATION READINGS

The background gamma radiation readings at the AUM Site were measured close to where the vehicle was parked, approximately 100 yards from the southern end of the AUM Site. The background gamma readings were measured at approximately 30 microroentgens per hour ($\mu\text{R/hr}$) at the ground surface, and 30 $\mu\text{R/hr}$ at 4 feet above the ground surface. Please see Table 2 for all of the gamma radiation readings taken at the AUM Site.

The gamma radiation readings at the AUM Site followed the tuffaceous sandstone outcrop that ran the length of the AUM Site. The highest reading was at location rad-5, which was recorded inside of an open cut (cut-1), and had readings of 240 $\mu\text{R/hr}$ at the ground surface, and 60 $\mu\text{R/hr}$ at 4 feet above the ground surface.

5.0 CURRENT LAND USES

5.1 HUMAN ACTIVITY AND RECREATIONAL SITE USE

No specific evidence of recent human activity was found on the AUM Site, but it is likely that this area is a popular hiking and rock hounding location. The nearby San Lorenzo Canyon is popular among college students from New Mexico Institute of Mining and Technology, and there are many tire tracks following all the arroyos throughout the entire canyon system.

Down an adjacent canyon, to the south of the AUM Site, a cable gate and a No Trespassing sign was encountered, suggesting private property. In front of this gate are many tire tracks (some traveled past the gate, others turned around at the gate) as well as foot prints from a large dog, and an old campfire ring, suggesting that this location is well traveled.

5.2 NEARBY RESIDENTIAL, COMMERCIAL AND INDUSTRIAL STRUCTURES

There are no residential, commercial, or industrial structures within a 1-mile radius of the AUM Site.

5.3 NEARBY DOMESTIC WELLS

There are no known domestic wells within a 1-mile radius of the AUM Site.

5.4 EVIDENCE OF GRAZING OR AGRICULTURE

There were no visible signs of grazing, no hoof prints, and the vegetation has not been overgrazed at the AUM Site.

5.5 EVIDENCE OF WILDLIFE

There was very little evidence of wildlife in the area. There were, however burrow holes visible, which could be home to rodents. Birds that may have been present near the AUM Site this time of year include Sandhill Cranes, Canadian Geese, Snow Geese, Ross Geese, many species of ducks, woodpeckers, sparrows, warblers, hawks and owls, although none were observed during the site visit.

6.0 VEGETATION

Scattered prickly pear (*Opuntia*) and cholla (*Cylindropuntia imbricate*) cacti were present throughout the AUM Site. Creosote (*Larrea tridentate*) was more common on the higher, rocky parts of the ridge. Juniper (*Juniperus*) trees were more common along the east facing slopes (mining activity occurred on the west-facing slope) of the region. Mesquite (*Prosopis*) and various types of grasses were also present throughout the AUM Site. Other small, unidentified woody shrubs and forbs were also present throughout the AUM Site (Carter, 1997).

7.0 POTENTIAL OFFSITE IMPACTS

7.1 EROSION

There is one notable erosional feature at the AUM Site, inside of one of the open cuts (cut-2). This cut was most likely originally dug using heavy equipment to a depth of around 3 feet and 30 feet long, and since the end of mining, the cut has become deeper due to water runoff.

7.2 ENVIRONMENTAL IMPACTS

There is no evidence of soil staining from chemicals potentially brought to the AUM Site, or from constituents present in the ore or waste rock. Gamma radiation levels at the AUM Site are not imminently dangerous to humans, livestock, or wildlife potentially present at the AUM Site.

8.0 REFERENCES

- Anderson, Orin J., 1980. Abandoned or Inactive Uranium Mines in New Mexico. New Mexico Bureau of Mines and Mineral Resources Open File Report 148.
- Bruning, J. E., 1973. Origin of the Popotosa Formation, North-central Socorro County, New Mexico. Ph. D. dissertation, New Mexico Institute of Mining and Technology
- Carter, Jack L., 1997. Trees and Shrubs of New Mexico. Johnson Books; Boulder, CO.
- Daniel B. Stephens & Associates, Inc (DBSA), 2003. Socorro-Sierra Regional Water Plan. Prepared for: Socorro Soil and Water Conservation District, Socorro, New Mexico.
- McLemore, Virginia T. and William L. Chenoweth, 1989. Uranium Resources in New Mexico. New Mexico Bureau of Mines & Mineral Resources, Resource Map 18.

TABLES

**Table 1
Site Features**

**San Lorenzo – NM0254
Abandoned Uranium Mine Assessments**

Feature Name	Feature Type	Material	Activity	Associated Photo	Depth or Height (ft)	Width (ft)	Length (ft)	On Site?	Collapsed?	Open?	Associated Feature	Notes
arcl-1	prehistoric archeological	--	--	--	--	--	--	Yes	--	--	--	lithic scatter
claim-1	Claim Markers	--	--	Photo 5	--	--	--	Yes	--	--	--	spraypaint on rock face
claim-2	Claim Markers	--	--	Photos 1-3	3	2	2	Yes	--	--	--	rock cairn
decl-1	declines	--	--	Photos 9-10	--	--	--	Yes	No	No	rad-3	infilled decline
distrb-1	disturbance	--	--	Photo 12	--	--	--	Yes	--	--	rad-6	uranium bearing rocks broken scattered
fenc-1	fences	wire/metal	--	--	--	--	--	No	--	--	--	barbed wire
fnd-1	foundations	--	--	Photo 4	1	6	6	Yes	--	--	--	foundation and woodpile
grease-can1	Land Use	--	Other	Photo 14	1.5	1	1	Yes	--	--	--	grease can
gate1	Land Use	--	Grazing	Photos 29-30	--	--	--	No	--	--	--	no trespassing sign
cut-1	Open Cuts	--	NA	Photo 7	2	10	50	Yes	--	--	rad-5	dozer cut
cut-2	Open Cuts	--	NA	Photo 8	5	5	30	Yes	--	--	--	eroded cut
pile-1	waste piles	rock	--	Photo 11	10	--	--	Yes	--	--	rad-4	dump 10 ft west of of incline
pit-1	exploration pits	--	inactive	Photo 6	5	--	--	Yes	--	--	rad-2	small prospect pit
pit-2	exploration pits	--	inactive	Photo 28	3	--	--	Yes	--	--	rad-15	200 ft north of access road

Notes:

-- No Information Available



Table 2
Gamma Radiation Survey Results

San Lorenzo – NM0254
Abandoned Uranium Mine Assessments

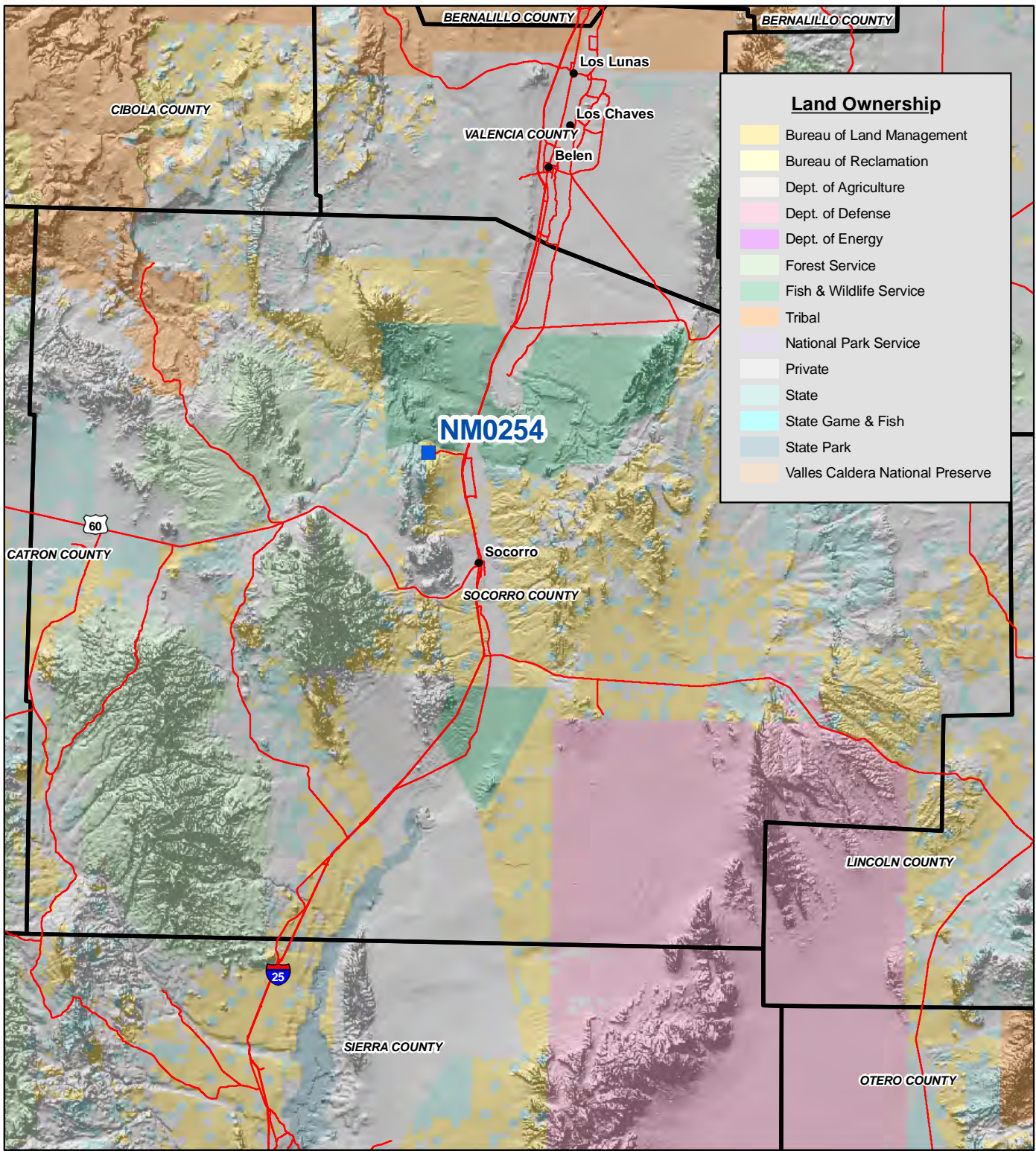
Reading ID	Reading at 0ft Above Ground (μR/hr)	Reading at 4ft Above Ground (μR/hr)	Associated Photos	Associated Features
background	30	30	none	none
rad-2	55	36	none	tuffaceous sandstone outcrop
rad-2	55	32	Photo 6	pit-1
rad-3	60	45	Photos 9-10	decl-1
rad-4	35	35	Photo 11	pile-1
rad-5	240	60	Photo 7	cut-1
rad-6	130	60	Photo 12	distrb-1
rad-7	26	26	none	tuffaceous sandstone outcrop
rad-8	30	26	none	tuffaceous sandstone outcrop
rad-9	90	50	none	tuffaceous sandstone outcrop
rad-10	48	40	none	tuffaceous sandstone outcrop
rad-11	45	41	none	tuffaceous sandstone outcrop
rad-12	80	34	none	tuffaceous sandstone outcrop
rad-13	70	34	none	tuffaceous sandstone outcrop
rad-14	80	34	none	tuffaceous sandstone outcrop
rad-15	60	38	Photo 28	pit-2

Notes:

All gamma readings at this Site were taken using a Ludlum 19 μR/Ratemeter.
μR/hr = microroentgens per hour

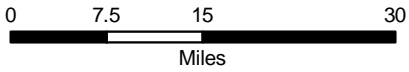
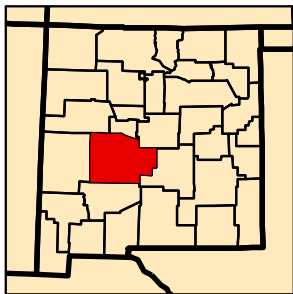


FIGURES



Land Ownership

- Bureau of Land Management
- Bureau of Reclamation
- Dept. of Agriculture
- Dept. of Defense
- Dept. of Energy
- Forest Service
- Fish & Wildlife Service
- Tribal
- National Park Service
- Private
- State
- State Game & Fish
- State Park
- Valles Caldera National Preserve

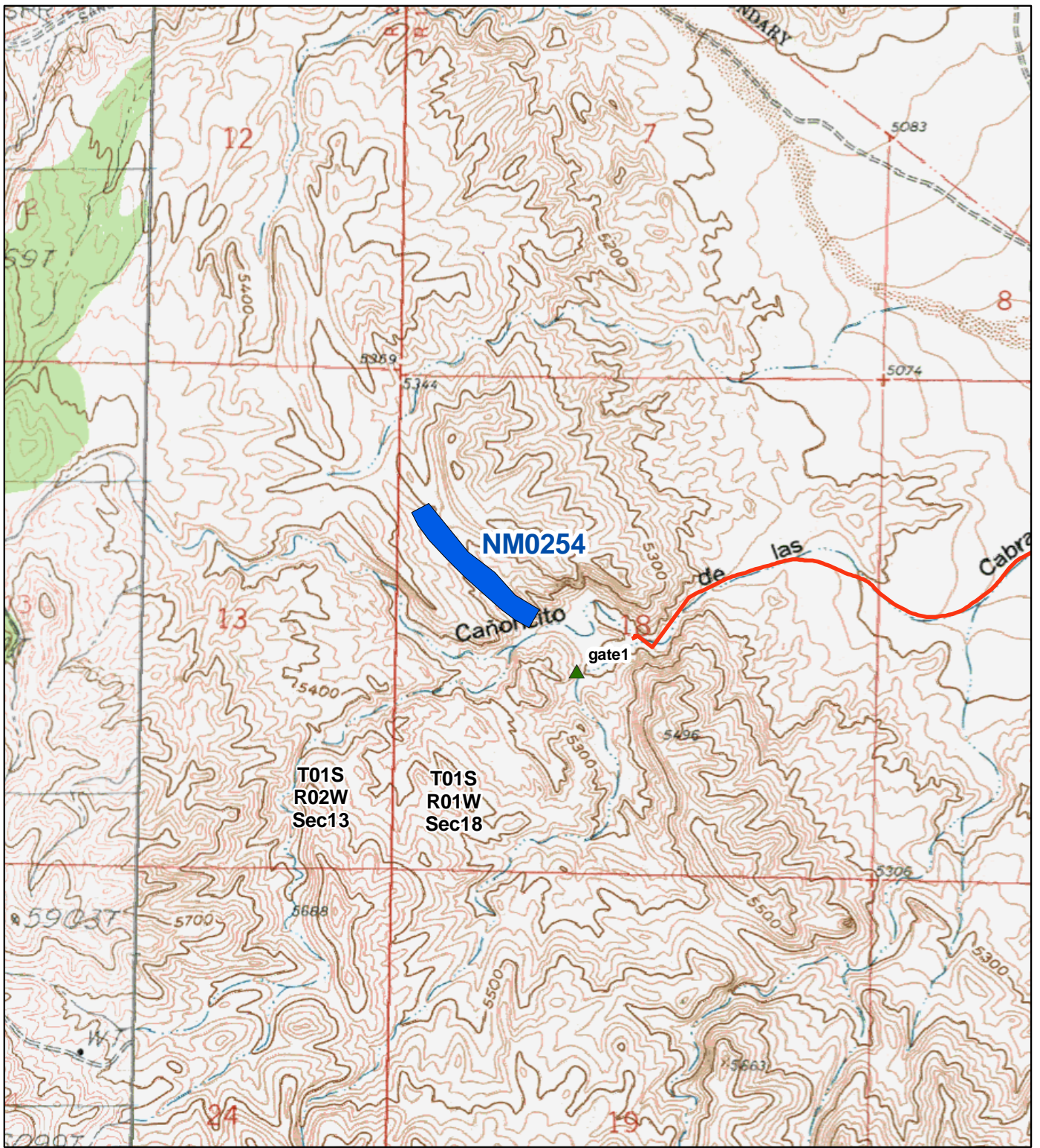


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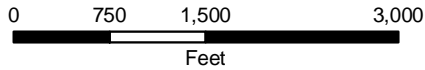
- AUM Location
- Road
- County Boundary

Figure 1
Site Location Map
NM0254-San Lorenzo
 Abandoned Uranium
 Mine Assessment





Map Source(s):
 U.S. Geological Survey 7.5-Minute
 Topographic Map
 -Lemitar, 1971
 -San Lorenzo Spring, 1985



Legend

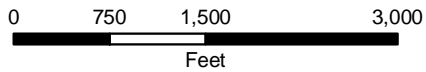
- ▲ Site Feature
- Access Road
- Approximate AUM Boundary

Figure 2
Topographic Map
NM0254-San Lorenzo
 Abandoned Uranium
 Mine Assessment





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



Legend





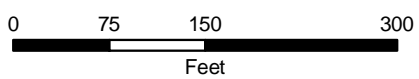
-  Site Feature
-  Access Road
-  Approximate AUM Boundary
-  Section Boundary

Figure 3
Aerial Photo
NM0254-San Lorenzo
 Abandoned Uranium
 Mine Assessment





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



Note: See Table 1 for Site Feature descriptions.

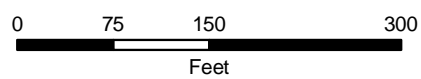
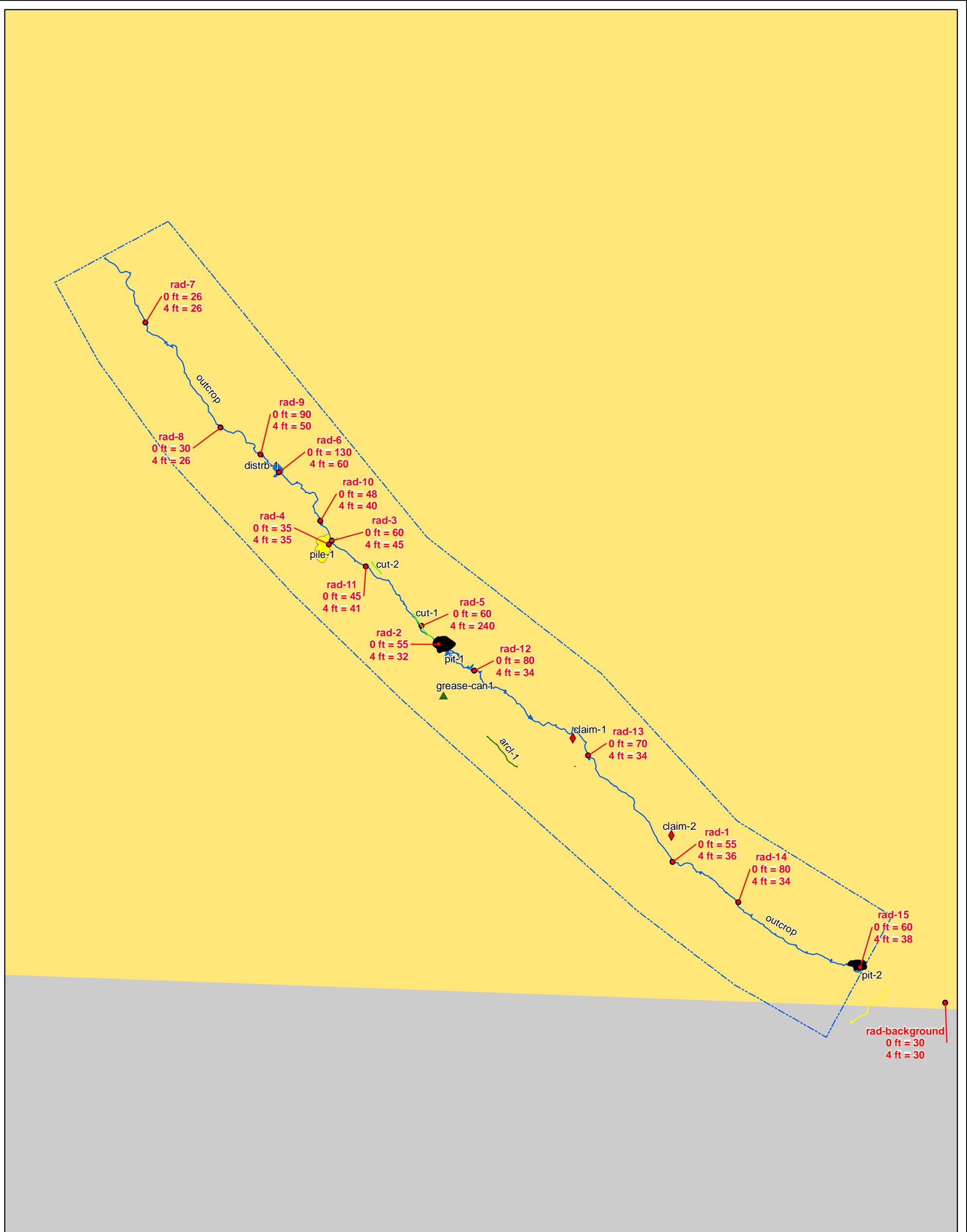


Legend

- Radiation Readings (µR/hr)
- ▲ Site Feature
- ◆ Claim Markers
- Approximate AUM Boundary

Figure 4a
Site Map on
Aerial Photo
NM0254-San Lorenzo
 Abandoned Uranium
 Mine Assessment





Note: See Table 1 for Site Feature descriptions.



Legend

● Radiation Readings ($\mu\text{R/hr}$)	Surface Ownership
▲ Site Feature	■ Bureau of Land Management
◆ Claim Markers	■ Private
⋮ Approximate AUM Boundary	

Figure 4b
Site Map with
Surface Ownership
NM0254-San Lorenzo
 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 will be provided in the final deliverable.



Photo 1 - Cairn (claim-2) on ridge east of mining activity, scale pole is 5 feet tall, looking north.



Photo 4 - Wood pile and foundation (fnd-1) just southeast of tuffaceous sandstone outcrop, looking south.



Photo 5 - Writing on rock face and a wooden sign wedged into a hole in the rock face, above the uranium-bearing rock formation; assumed to be a claim marker (claim-1).



Photo 6 - A shallow prospect pit (pit-1). The uranium bearing formation is just left of the scale pole.



Photo 7 - A shallow cut (cut-1), possibly a bulldozer cut. The rocks scattered to the left of the scale pole have radioactivity readings of 240 μ R/hr.



Photo 8 - A shallow cut (cut-2), possibly from a bulldozer, appears to have been deepened by erosion.

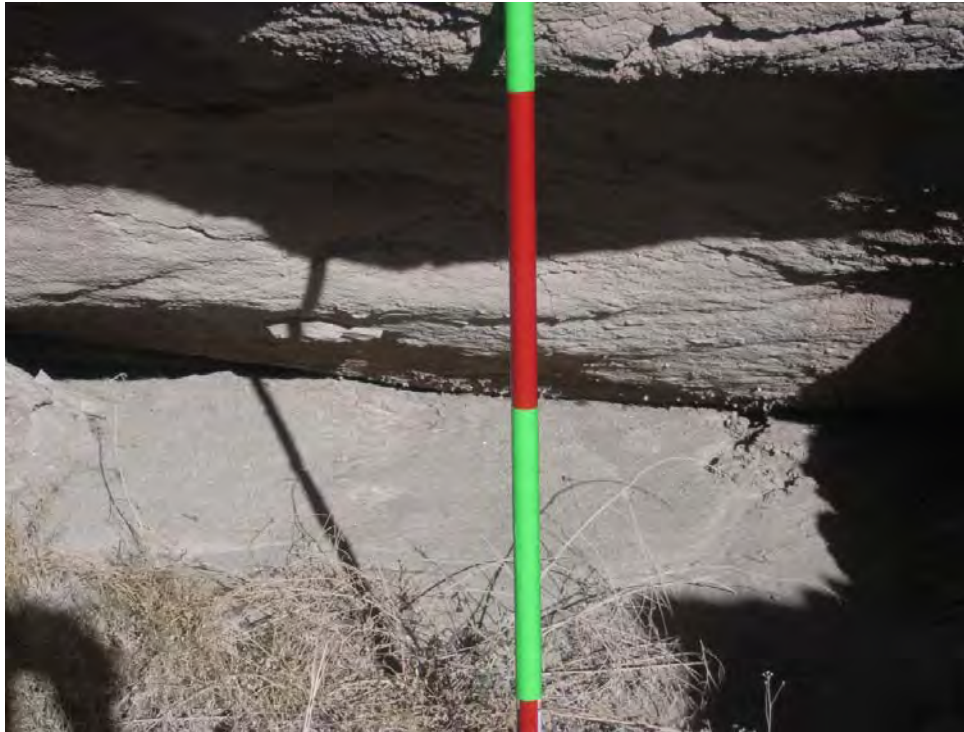


Photo 9 - Close up photo looking down into decline (decl-1), looking east.



Photo 10 - Full view of decline (decl-1).



Photo 11 - Waste rock pile (pile-1) extending from scale pole downwards to mesquite bush in foreground, looking east.



Photo 12 - Area of broken rocks and disturbed ground (distrb-1).



Photo 13 - Fault interpreted by INTERA to be the northern boundary of the AUM Site.



Photo 14 – Abandoned empty grease can (grease-can1) labeled “Triangle Oil Co.”



Photo 15 - Photo of AUM Site, looking north.



Photo 16 – Photo of AUM Site, looking east (also includes pit-1).



Photo 17 - Photo of AUM Site, looking south



Photo 18 - Photo of AUM Site, looking west. Polvadera Peak is in the background to the left.



Photo 19 - A uranium bearing layer lies immediately above a weather resistant chert layer, which juts out from the hillside.



Photo 20 – INTERA personnel at outcrop of uranium bearing tuffaceous sandstone.



Photo 22 - Candelabra Cholla (*Opuntia imbricate*).



Photo 23 - Grasses and creosote (*Larrea tridentate*).



Photo 24 – Creosote (*Larrea tridentate*).



Photo 25 - Juniper tree (*Juniperus*).



Photo 27 – Juniper trees were more common on the east-facing slope (left), mining activity occurred on the west-facing slope (right), looking north.



Photo 28 - A small exploration pit (pit-2) near the Cabra Canyon road. The scintillometer rests on the Uranium bearing tuffaceous sandstone.



Photo 29 - A gate, a no trespassing sign, tire tracks, and dog tracks on a side canyon south of the AUM Site suggest private property in the adjacent area, looking west.



Photo 31 - Dog tracks in the side canyon south of the AUM Site suggest a recreational land use for the area.



Photo 32 - Fire pit near the gate in the side canyon south of the AUM Site suggest a recreational land use for the area.



Photo 33 - Close up view of fire pit in canyon south of AUM Site



Photo 34 - Access to a trail approximately 30 feet east of gate and no trespassing sign in canyon south of AUM Site is blocked by cholla cacti and rocks.

APPENDIX B
FIELD NOTES

1 12/16/09 AEA Abandoned Uranium Mines

Site Name: NMO254, San Lorenzo

Objective: Site Assessment

Personnel: Amy Andrews - INTERA
Danny Bowman - INTERA
Rob Sengebush - INTERA

Equipment: Rental truck ^{rental AEA} ~~borrowed~~ Trimble
GeoXM (SN: 4712432334, PN: 60950-00,
IC: 1756A-612, 2005 Series), borrowed
Ludlum (SN: 175926, Model 19), rental
GPS camera (IC: 1441-500SEW), Ricoh
Caplio 500SE-W), backup digital
camera, backup GPS, cell phone amplifier,
and field laptop

900 Left office

1015 Arrived near the site. Stopped vehicle
and set up GPS to lead us to the
site.

1100 H+S meeting, Ludlum source checked
Background gamma radiation measured
at 0ft $\approx 30 \mu R/hr$, and 4ft $\approx 30 \mu R/hr$

1115 Back in vehicle, working our way
around the site to see if we can drive
up to it.

12/16/09 AEA Abandoned Uranium Mines 2

1130 Begin hiking to find site

Photo 1 cairn (no coordinates) on the way to mine
Photo 2 W $106^{\circ}59'16.54''$ N $34^{\circ}13'23.16''$
Photo 3 same as photos 2 + 3
Photo 4 wood pile + foundation
Photo 5 Claim 1, R-R sign
Photo 6 Pit 1
Photo 7 Cut 1
Photo 8 Cut 2
Photo 9 Decline 1, erosion into mine
Photo 10 Decline 1, full entrance
Photo 11 waste pile 1

(camera time is 1 hr back)

Photo 12 disturbance 1
N $34^{\circ}13'33.48''$ W $106^{\circ}59'24.27''$

Photo 13 fault - north end of site - boundary

1430

Site boundary is series of tracks, and
step out 100ft on either side of it.
Rad readings 7+ are on mineralized vein

1447 Photo 14 Grease can - Triangle Oil Co
Photo 15 Site Photo N from Pit 1
Photo 16 " " E " "
Photo 17 " " S " "
Photo 18 " " W " "

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Erosion is noted along what appears to have been a road, and is parallel to mineralized vein



Mineralized vein is white-grey tuffaceous sandstone, med-fine grain, 2 in thick. Agate is grey to reddish brown to black, 8-10 in thick, multi layer, pinching & swelling. Intermittent calcareous sandstone or limestone

Photo 19 Picture of outcrop

Photo 20 Personnel at outcrop

Photo 21 Personnel at outcrop

1505 Potential archeological site
Lithic scatter of agates

Tuffaceous sandstone appears to be the source of the gamma radiation.

It does not appear that this site was a dwelling.

Vegetation includes mesquite, grass - probably gramma, creosote bush, juniper

Soil is sandy gravel w/ many cobbles, little to no organic matter

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Abandoned Uranium Mines⁴

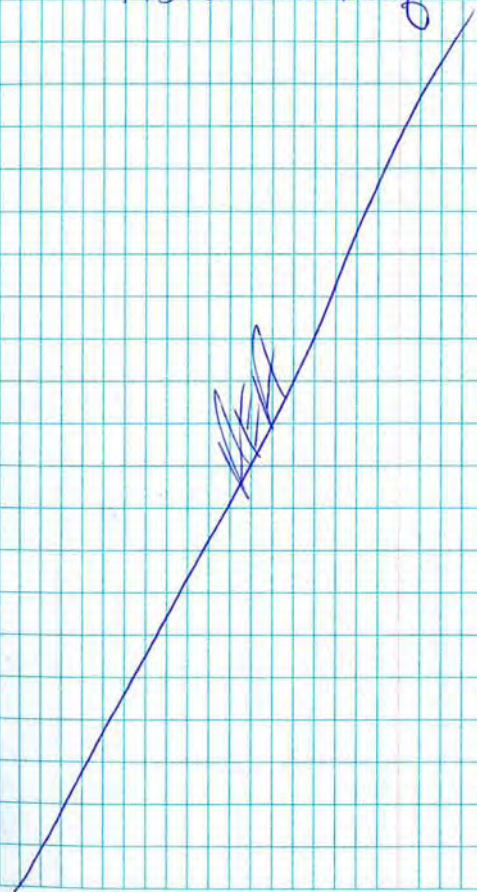
Photos 22 - 27 plant pictures

Photo 28 pit 2

fence line present between pit 2 and arroyo/road

1550 finished tracking site boundary, back at truck, went down adjacent dirt road to GPS gate + no trespassing sign

1600 Offsite to Abq



Abandoned Uranium Mine Site Assessment
Field Checklist

12/16/09 REA
NM0254

Please answer the following questions:	Yes/No	Size or Distance from edge of Site (feet)	GPS Location	Take Picture (number)	Radiation Readings (minimum 10 locations) ($\mu\text{R/hr}$)
Check gamma meter with known source (before you leave the office)	✓				0 ft:
					4 ft:
Measure background gamma radiation readings	✓				0 ft: $\sim 30 \mu\text{R/hr}$
					4 ft: $\sim 30 \mu\text{R/hr}$
Put a detailed description with sketch of the site in the log book		Rad 7 = 0ft = 26, 4ft = 26 Rad 8 = 0ft = 30, 4ft = 26 Rad 9 = 0ft = 90, 4ft = 50 Rad 10 = 0ft = 48, 4ft = 40 Rad 11 = 0ft = 45, 4ft = 41 Rad 12 = 0ft = 80, 4ft = 34			0 ft:
					4 ft:
Are there any waste piles?	Pile 1 disturb 1	3 yd ³ of waste material 5' x 15'			pile 1 = 35 0 ft: dist 1 = 130
					pile 1 = 35 4 ft: dist 1 = 60

strike N30W
dip 40°NE

Rad 13 = 0ft = 70, 4ft = 34
Rad 14 = 0ft = 80, 4ft = 34
Rad 15 - pit 2

Abandoned Uranium Mine Site Assessment
Field Checklist

12/16/09 AEA
NMD254

Please answer the following questions:	Yes/No	Size or Distance from edge of Site (feet)	GPS Location	Take Picture (number)	Radiation Readings (minimum 10 locations) (μ R/hr)
Are there any mine adits?					0 ft:
					4 ft:
Are there any mine shafts?					0 ft:
					4 ft:
Are there any exploration pits?	PIT 1 PIT 2	10ft N-S, 8ft E-W 6ft deep 3ft deep, 10ft N-S, 8ft E-W			PIT 1: 55 0 ft: PIT 2: 60
					PIT 1: 32 4 ft: PIT 2: 38
Are there any mine-related buildings or foundations?	FND 1	6' x 6'			0 ft:
					4 ft:

Land use - grease can 1
claim 2 - cairn at beginning of site
land use - gate 1, down adjacent dirt road, NO TRESPASSING sign
human evidence includes fire pit + dog prints

Abandoned Uranium Mine Site Assessment
Field Checklist

12/16/09 AEA
NMD254

Please answer the following questions:	Yes/No	Size or Distance from edge of Site (feet)	GPS Location	Take Picture (number)	Radiation Readings (minimum 10 locations) (µR/hr)
Are there any other visible mine features?	vein 1 cut 1 cut 2 decl 1	29' deep x 10' x 5' 5' exposes buff sandstone dipping East 30° strike N 25° W 3' wide 30' x 5' deep 8' wide, 3' high, 7' deep			vein 1 = 55 - rad 1 0 ft: cut 1 = 20 decl 1 = 60 1 = 36 - rad 1 4 ft: cut 1 = 60 decl 1 = 45
Has any visible reclamation work been done at the site? (bat gates, revegetated piles, etc)					0 ft: 4 ft:
Are there any signs of human activity or recreational use in the area? (vehicle tracks, camp fires, etc.)					0 ft: 4 ft:
Are there any residential, commercial or industrial structures nearby?					0 ft: 4 ft:

Abandoned Uranium Mine Site Assessment
Field Checklist

12/16/09 AEA
NM0254

Please answer the following questions:	Yes/No	Size or Distance from edge of Site (feet)	GPS Location	Take Picture (number)	Radiation Readings (minimum 10 locations) (μ R/hr)
Are there any visible domestic wells nearby?					0 ft:
					4 ft:
Are there any visible boreholes nearby?					0 ft:
					4 ft:
Are there any visible archeological sites nearby?	arch 1				0 ft:
					4 ft:
Take a minimum of 4 photographs (north, south, east, and west)					0 ft:
					4 ft:

Abandoned Uranium Mine Site Assessment
Field Checklist

12/16/09 AEA
NM0254

Please answer the following questions:	Yes/No	Size or Distance from edge of Site (feet)	GPS Location	Take Picture (number)	Radiation Readings (minimum 10 locations) (μ R/hr)
Replicate any photos from the Anderson Report					0 ft:
					4 ft:
Take pictures of all the different types of vegetation present					0 ft:
					4 ft:
Are there any bare spots, evidence of vegetation die off, or grazing?					0 ft:
					4 ft:
Describe the general condition of the soils present (sand, clay, etc.)					0 ft:
					4 ft:

**Abandoned Uranium Mine Site Assessment
Field Checklist**

12/16/09 AEA
NM0254

Please answer the following questions:	Yes/No	Size or Distance from edge of Site (feet)	GPS Location	Take Picture (number)	Radiation Readings (minimum 10 locations) (μ R/hr)
Document any evidence of wind, water, or other erosion					0 ft:
					4 ft:
Describe the current apparent land use					0 ft:
					4 ft:
Is there any evidence of grazing, cattle, sheep, horses, or other agricultural sites? Document corrals, fences and related structures					0 ft:
					4 ft:
Describe any visible impacts that may have spread contamination off site (arroyos, storm flow, wind, or sheet erosion) DO NOT FOLLOW THESE FEATURES OFF SITE					0 ft:
					4 ft:

**Abandoned Uranium Mine Site Assessment
Field Checklist**

12/16/09 AEA
NM0254

Please answer the following questions:	Yes/No	Size or Distance from edge of Site (feet)	GPS Location	Take Picture (number)	Radiation Readings (minimum 10 locations) (μ R/hr)
Identify roads, water courses, terrain, and significant topographic features in the immediate area, and add them to the site sketch in the log book					0 ft:
					4 ft:

List of Site Features

Rad-1 0ft:55 4ft:36

Fnd-1 - foundation + woodpile

claim-1 - spraypaint on rock face, wood sign in rock crack R.+R.

~~rad-2~~

rad-2 0ft:55 4ft:32 near pit-1

cut-1 - 2ft deep dozer cut

cut-2 - 5ft deep ~~cut~~ erosional cut

decl-1 - infilled decline

pile-1 - dump 10ft west of incline

rad-3 - 0ft:60 4ft:45 , decl-1

rad-4 - 0ft:35 4ft:35 pile-1

distrib-1 - u bearing rocks broken + scattered

rad-6 0ft:130 4ft:60ft distrib-1

site boundary-1

rad-7 0ft:26 4ft:26

site bou-2

rad-8 0ft:30 4ft:26

site boun-3

rad 9 0ft:90 4ft:50

sit bo - 4

rad 10 0ft:48 4ft:40

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					Subject: <u>12/16/09 AEA</u>
					Site <u>NM0254</u>
					Gate No. <u>NM0254</u> Sht. <u>8</u> of <u>9</u>

site bou-5

rad-11 0ft: 45 4ft: 41

site bou-7

pit-1 - small prospect pit, 5ft deep

site bou-8

grease-can 1

site bou-10

rad-12 0ft: 80 4ft: 34

site bou-10

and-1 - prehistoric lithic scatter

rad-13 0ft: 70 4ft: 34

site bou-11

claim-2 - rock cairn

site bou-12

rad-14 0ft: 80 4ft: 34

site bou-13

pit-2 3ft deep exploration pit, 200ft N of road

rad 15 0ft: 60 4ft: 38

fenc-1 barbed wire fence

Rev.	Orig.	Date	Chkd.	Date	Client/Project: <u>Abandoned Uranium Mines</u>
					Date <u>12/16/09</u> AEA
					Subject: <u>12/16/09 AEA</u>
					Site <u>NM 0254</u>
					Gale. No.: <u>NM 0254</u> Sht. <u>8</u> of <u>9</u>