

Navajo Abandoned Uranium Mine

Site Screen Report

This form is for use at the site of abandoned uranium mines (AUM) located on Navajo Nation lands. Applicable sites include all mine and mine features that have or have not undergone reclamation by the Navajo Abandoned Mine Lands Reclamation Program, including features, adits, pits and waste piles. Applicable sites also include all AUM sites listed in the USEPA CERCLIS database, all sites listed in the 2008 AUM GIS Report issued by USACOE and USEPA, all AUM sites on allotment lands associated with the Navajo Nation, and any and all AUM sites not listed in any database located on Navajo lands. Reconnaissance of any sites located on lands adjacent to Navajo lands that may be impacting Navajo lands will need to be coordinated with the authorities appropriate to those lands.

The purpose of the form is to ascertain the status and location of the identified AUM site, and record all immediate site information associated with the mine site. Decisions and recommendations on what additional steps are needed will be provided on a separate document.

Mine Name: Montezuma No. 2
Mine IDs: 163, 165, 166

Navajo AUM Western Region

Prepared by:

Weston Solutions, Inc.

Contract: W91238-06-F-0083

20074.063.017.0020

August 2011

Part I Site Identification, Location and Status

Site Names and ID numbers as applicable

Mine ID: 163; 165; 166

Map ID: 163: W25
165: W26
166: W27

CERCLIS: NNN000909224

Navajo Abandoned Mine Land Reclamation Program: 163: NA-114aab
165: NA-114aaa
166: NA-0116

Local name / Aliases: Montezuma #2

Chapter and local area: Bodaway / Gap

County: Coconino **State:** Arizona

Lat/Long: 163: 35.923658336 N / -111.436876696 W
165: 35.921388021 N / -111.433835209 W
166: 35.9228075174 N / -111.426072417 W

Nearby road and highway: US-89 **Local Post Office:** Cameron, AZ

Surface Land Status: check one or more and provide ownership and contact information below

Tribal Trust Land	<input checked="" type="checkbox"/>	Public lands	<input type="checkbox"/>
Private	<input type="checkbox"/>	Tribal Fee Land	<input type="checkbox"/>
Bureau of Land Mgmt	<input type="checkbox"/>	Allotment	<input type="checkbox"/>
State	<input type="checkbox"/>	Fee land	<input type="checkbox"/>

Subsurface Mineral Rights:

No information on subsurface mineral rights ownership was found in the EPA/AUM Database.

Claim and operator information:

The mine surface land status is classified as Tribal Trust Land. Historical documents identified the operator of the mine as Kachina Uranium Corporation from 1956 to 1957. No additional historical ownership / lease information was identified in the EPA / AUM database.

Number of residential structures within 200 feet of mine: None

Part II Summary of Radiological Readings

Mine ID: 163

Highest gamma radiation measurement: 24,311 counts per minute (cpm)

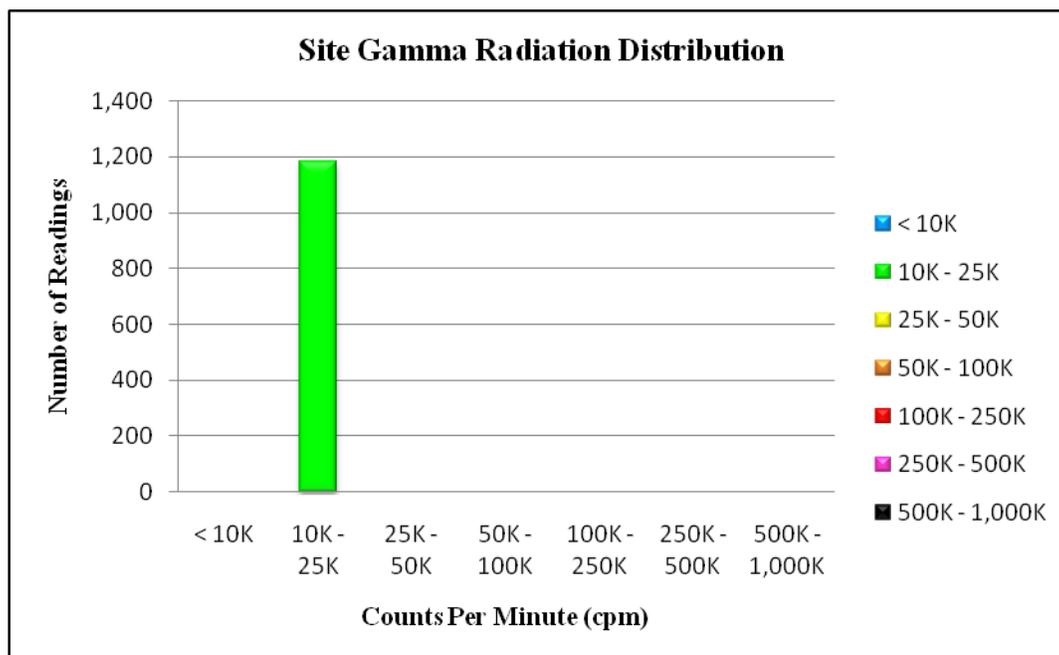
Background Average: 15,437 cpm **Two Times Background:** 30,874 cpm

Describe any other radiological measurements:

A total of 1,184 gamma radiation measurements were collected from the mine site, ranging from 10,843 cpm to 24,311 cpm. Measurements collected in the vicinity of the reclamation areas were found at a maximum level of approximately 25,000 cpm. The measurements are represented in Figures 1, 2, 3 and 4.

Distribution Chart and Statistics:

Site Gamma Radiation Statistics	
Number of Readings	1,184
Minimum (cpm)	10,843
Maximum (cpm)	24,311
Mean (cpm)	15,430
Median (cpm)	15,306
Standard Deviation	1,680



Mine ID: 165

Highest gamma radiation measurement: 100,368 counts per minute (cpm)

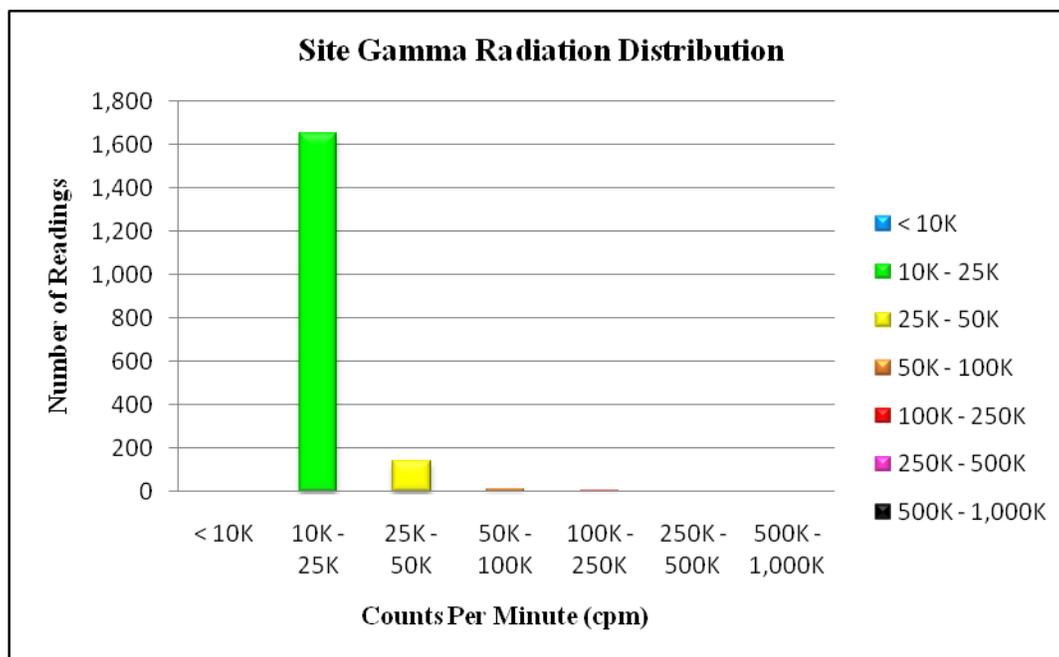
Background Average: 17,164 cpm **Two Times Background:** 34,328 cpm

Describe any other radiological measurements:

A total of 1,804 gamma radiation measurements were collected from the mine site, ranging from 14,505 cpm to 100,368 cpm. Measurements collected in the vicinity of the waste rock were found at a maximum level of approximately 50,000 cpm, and the reclamation areas of approximately 35,000 cpm. The measurements are represented in Figures 1, 2, 3, and 4.

Distribution Chart and Statistics:

Site Gamma Radiation Statistics	
Number of Readings	1,804
Minimum (cpm)	14,505
Maximum (cpm)	100,368
Mean (cpm)	20,211
Median (cpm)	18,809
Standard Deviation	6,040



Mine ID: 166

Highest gamma radiation measurement: 151,759 counts per minute (cpm)

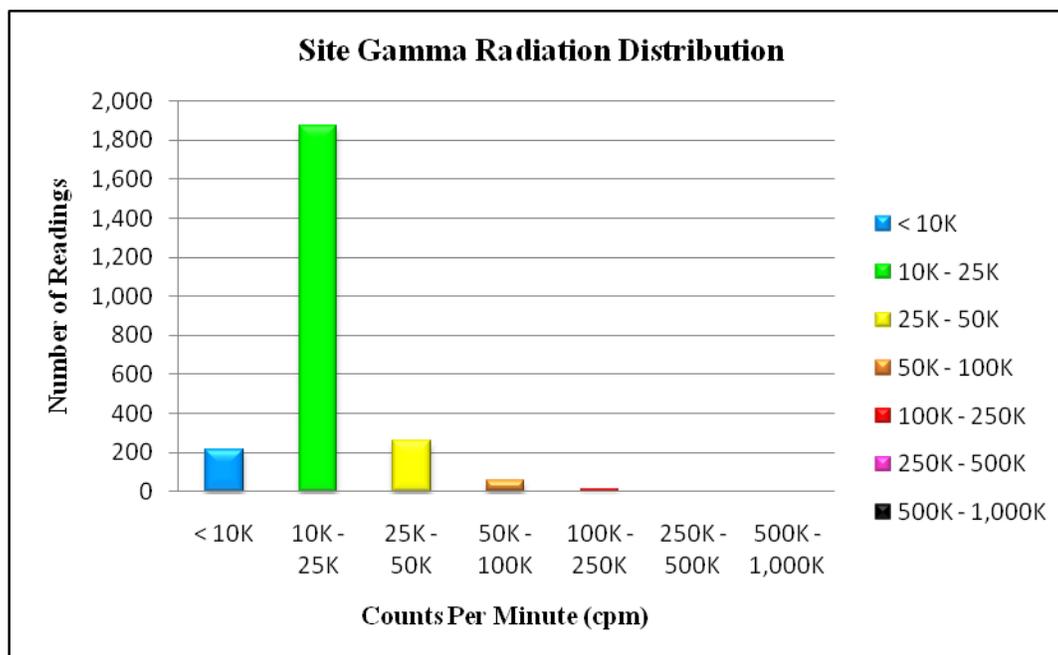
Background Average: 10,746 cpm **Two Times Background:** 21,492 cpm

Describe any other radiological measurements:

A total of 2,415 gamma radiation measurements were collected from the mine site, ranging from 7,762 cpm to 151,759 cpm. Measurements collected in the vicinity of the reclamation areas were found at a maximum level of approximately 150,000 cpm. The measurements are represented in Figures 1, 2, 5, and 6.

Distribution Chart and Statistics:

Site Gamma Radiation Statistics	
Number of Readings	2,415
Minimum (cpm)	7,762
Maximum (cpm)	151,759
Mean (cpm)	18,450
Median (cpm)	15,688
Standard Deviation	13,077



Part III Status of Reclamation and Mine Waste

Mine ID: 163

The following information was obtained from the Navajo Abandoned Mine Land Reclamation Program (NAMLRP) Point Features Database:

NAMLRP Status of the mine site: Reclaimed: Yes Waste Pile onsite: No

NAMLRP Project Number: NA-114aab

NAMLRP Mine features: 1 Rim Strip / Pit

The following information was obtained from field observations collected during the 2011 site screening:

Provide description and status of all mine sites and features at site. Include all waste piles, adits, pits and other features, and indicate whether they are open, closed, covered, capped, buried or unreclaimed. Indicate approximate size, shape and extent, including description of any reclamation caps. Note condition of all caps.

Observed reclamation work and status:

Adits:

None observed

Waste Piles:

None observed

Pits:

None observed

Shafts:

None observed

Other Debris and Mine Features:

Reclamation cap, 100' x 150' x 5', rocky red-brown rocks, down slope

Mine ID: 165

The following information was obtained from the Navajo Abandoned Mine Land Reclamation Program (NAMLRP) Point Features Database:

NAMLRP Status of the mine site: Reclaimed: Yes Waste Pile onsite: No

NAMLRP Project Number: NA-114aaa

NAMLRP Mine features: 1 Rim Strip / Pit

The following information was obtained from field observations collected during the 2011 site screening:

Provide description and status of all mine sites and features at site. Include all waste piles, adits, pits and other features, and indicate whether they are open, closed, covered, capped, buried or unreclaimed. Indicate approximate size, shape and extent, including description of any reclamation caps. Note condition of all caps.

Observed reclamation work and status:

Adits:

None observed

Waste Piles:

2 waste rock piles: Pile 1 - 15'dia x 1.5'h, light brown rock fragments; Pile 2 - 40' x 30' x 1', near ledge

Pits:

None observed

Shafts:

None observed

Other Debris and Mine Features:

Reclamation cap, 70'x40'x5', light brown small rock fragments

Mine ID: 166

The following information was obtained from the Navajo Abandoned Mine Land Reclamation Program (NAMLRP) Point Features Database:

NAMLRP Status of the mine site: Reclaimed: Yes Waste Pile onsite: No

NAMLRP Project Number: NA-0116

NAMLRP Mine features: 2 Rim Strip / Pits

The following information was obtained from field observations collected during the 2011 site screening:

Provide description and status of all mine sites and features at site. Include all waste piles, adits, pits and other features, and indicate whether they are open, closed, covered, capped, buried or unreclaimed. Indicate approximate size, shape and extent, including description of any reclamation caps. Note condition of all caps.

Observed reclamation work and status:

Adits:

None observed

Waste Piles:

None observed

Pits:

None observed

Shafts:

None observed

Other Debris and Mine Features:

Reclaimed area

Part IV Site Observations and Environs

Observed Residential Structures (number and human habitation status of structures at the following distances from the mine site):

0 to 200 feet: No residential structures were observed, but a collapsed stone Hogan was located on site #66

200 feet to 0.25 mile: None observed

Observed Public or Commercial Structures (schools, clinics, Chapter Houses, places of business and any other structures used by members of the community at the following distances from the mine site):

0 to 200 feet: None observed

200 feet to 0.25 mile: None observed

Levels measured around the perimeter(s) of the identified structure(s):

Background Levels

Observed Water Sources (number and type of wells and surface water sources that are potentially used for human consumption at the following distances from the mine site):

0 to 0.25 miles: None observed

0.25 miles to 4 miles: Seasonal tributary to Little Colorado River approximately 0.5 mi E of sites, Little Colorado River approximately 2 mi S of sites

Sensitive Environments (all sensitive environments located within visible range of the mine site, including: wetlands, endangered species, habitats and approximate locations of sites that may be under protection of the government of the Navajo Nation):

None observed

Known Site History (information from interviews with Chapter officials and residents and database review, includes: mine ownership, type of mining operation, period of operation, known amount of production, and any other information provided):

The Montezuma No. 2 mine claim consists of three separate mine sites (#'s 163, 165, 166) with a total combined area of 99,014.33 m². The mine was identified as being operational from 1955 to 1957. While operational, the mine had a total reported production volume of 193 tons. The mine surface land status is classified as Tribal Trust Land. Historical documents identified the operator of the mine as Kachina Uranium Corporation from 1956 to 1957. No additional historical ownership / lease information was identified in the EPA / AUM database.

Part V Response Action Summary

Summary of Evaluation Factors:

Accessibility:

Was the mine easily accessible to potential human activity?

Yes

Radiological Measurements:

Were any gamma radiation measurements collected at the mine greater than two times the site-specific background levels?

Yes

Waste Piles:

Were any unreclaimed waste piles observed at the mine with gamma radiation measurements greater than two times the site-specific background levels?

Yes

Structures:

Were any structures observed within 200 feet of the mine?

Yes

Potential Drinking Water Sources:

Were any potential drinking water sources observed within 4 miles of the mine?

Yes

Reclamation:

Was the mine reported to be previously reclaimed, or did the mine appear to be reclaimed?

Yes

Part VI Photos



Photo 1: Mine Site #163



Photo 2: Mine Site #163; Reclamation area



Photo 3: Mine Site #165



Photo 4: Mine Site #165; Reclamation area



Photo 5: Mine Site #165; Waste rock



Photo 6: Mine Site #166;



Photo 7: Mine Site #166; Drainage



Photo 8: Mine Site #166; Drainage



Photo 9: Mine Site #166; Drainage



Photo 10: Mine Site #166; Hogan in southwest part of site

Part VII Contacts Reports and Information

Name: Eugene Esplain

Title or official role (if any): Navajo EPA Superfund Program

Telephone number: (928) 871-7331

Address: PO Box 2946, Window Rock, AZ 86515

Information provided: Lead Regulatory Agency

Name: _____

Title or official role (if any): _____

Telephone number: _____

Address: _____

Information provided: _____

Name: _____

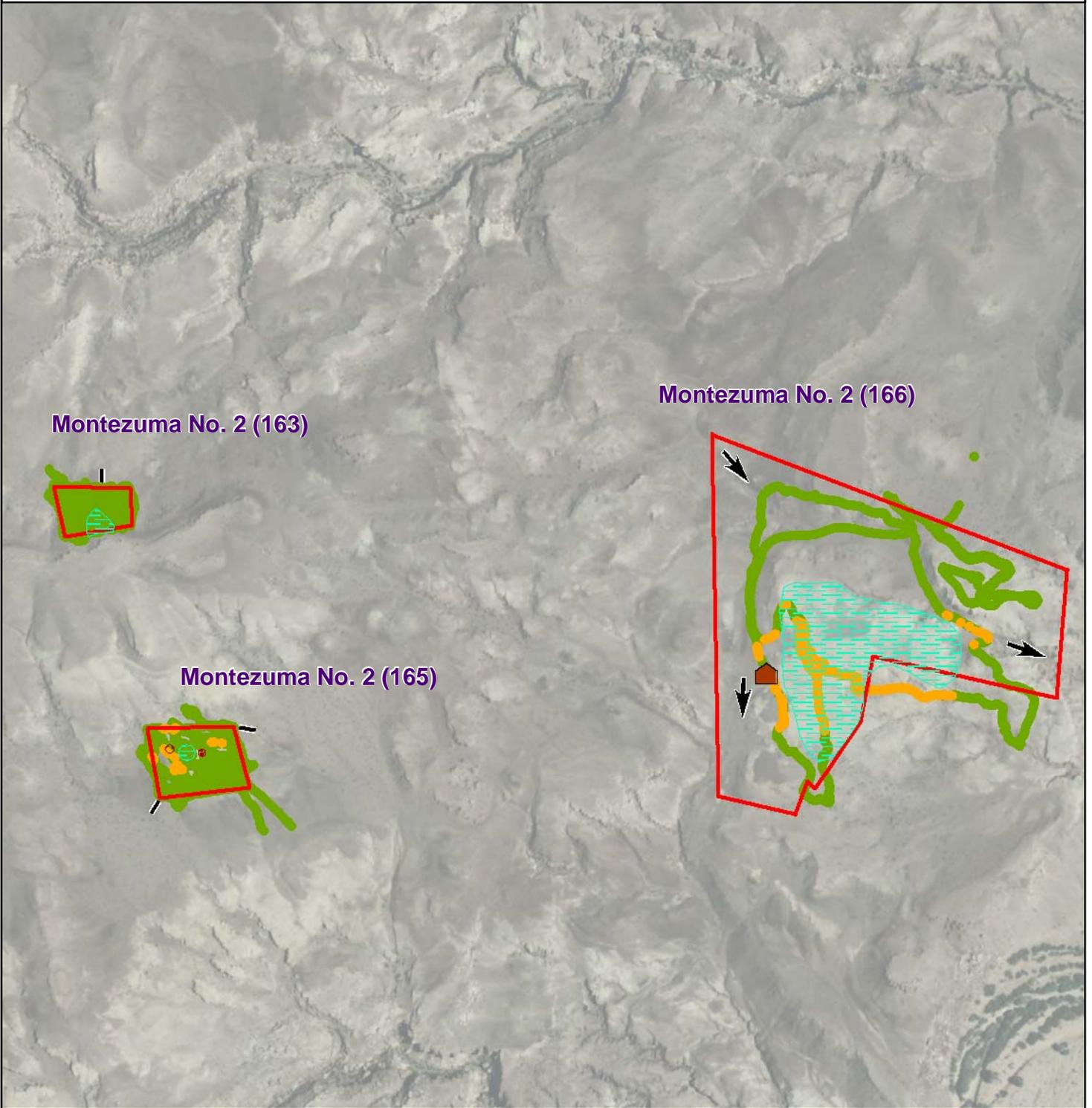
Title or official role (if any): _____

Telephone number: _____

Address: _____

Information provided: _____

**Figure 1 - Gamma Radiation Measurements, Above Two Times Background
 Montezuma No. 2 (163, 165, 166)
 Bodaway / Gap Chapter, Navajo Nation**



Legend

Gamma Radiation Measurements

- < 2X Background
- > 2X Background

Measured as counts per minute (cpm)

Average background 14,449 cpm

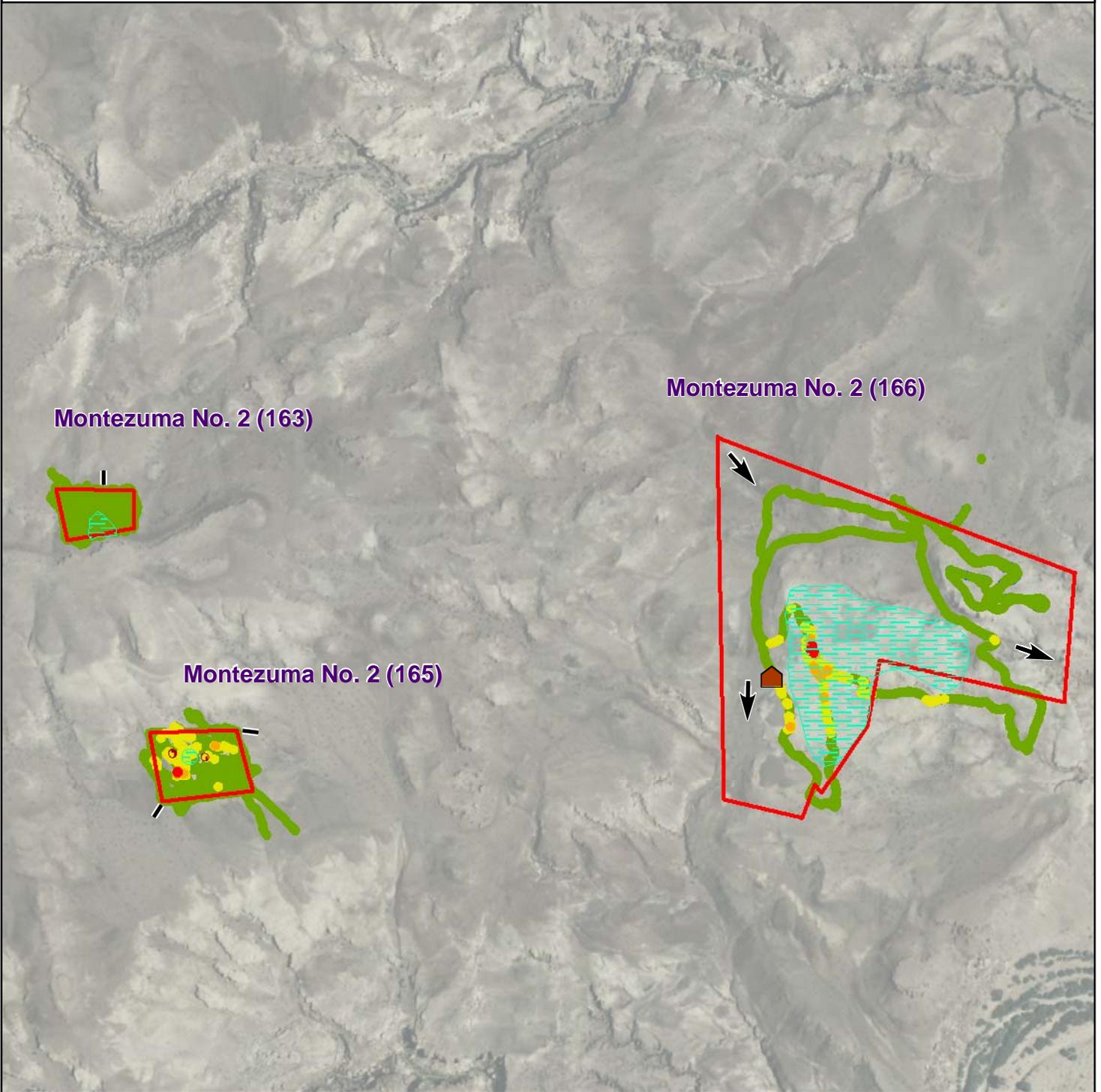
- Mine Site Boundary
- General Slope Direction
- Observed Reclamation Feature
- Observed Waste Pile
- Observed Structure
- Steep Grade







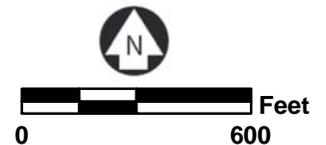
**Figure 2 - Gamma Radiation Measurements
Montezuma No. 2 (163, 165, 166)
Bodayay / Gap Chapter, Navajo Nation**



Gamma Radiation Measurements

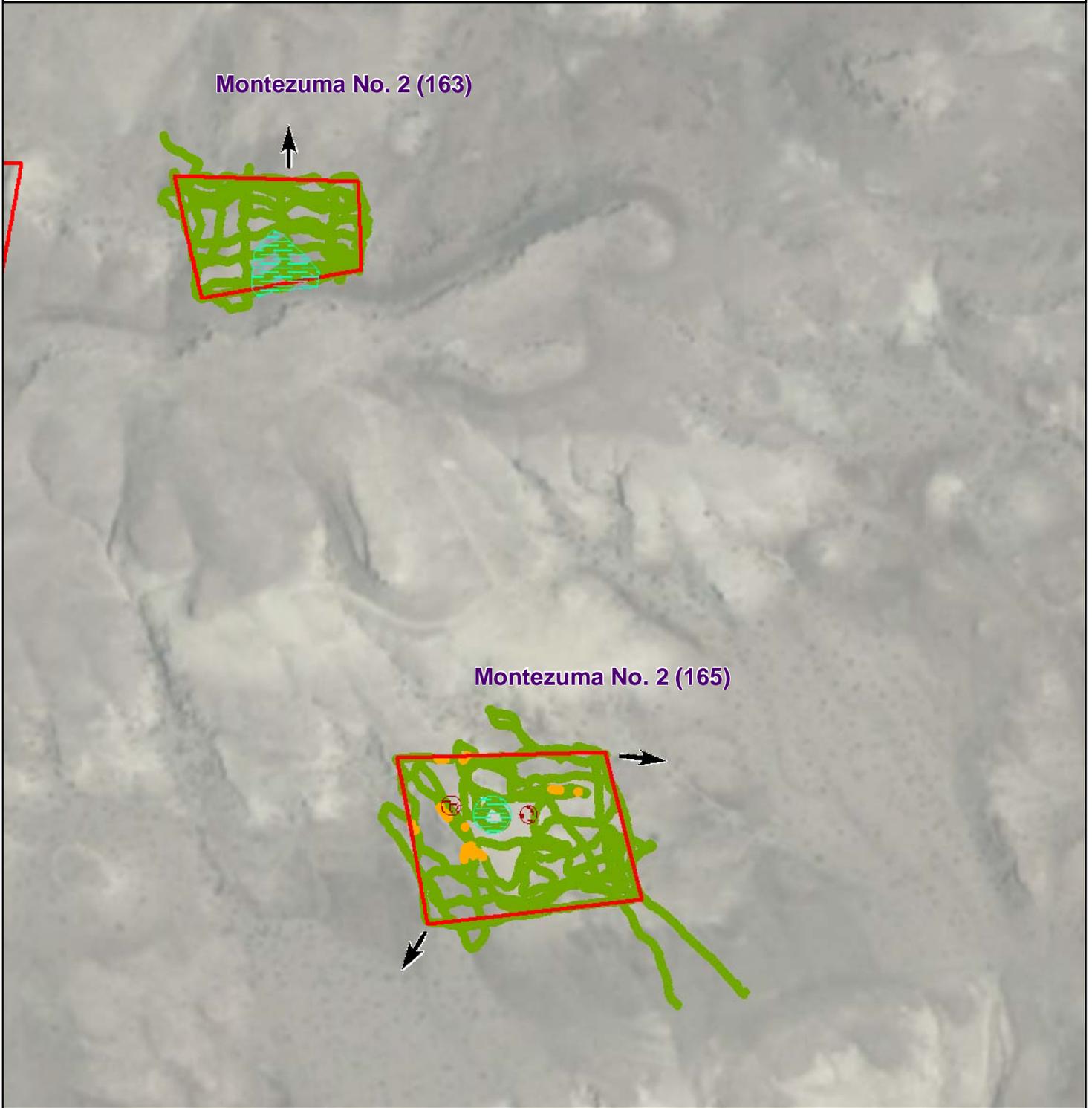
- 0 - 10,000 cpm
- 10,000 - 25,000 cpm
- 25,000 - 50,000 cpm
- 50,000 - 100,000 cpm
- 100,000 - 250,000 cpm
- 250,000 - 500,000 cpm
- 500,000 - 1,000,000 cpm

-  Mine Site Boundary
-  General Slope Direction
-  Observed Reclamation Feature
-  Observed Waste Pile
-  Observed Structure
-  Steep Grade



Measured as counts per minute (cpm) Average background 14,449 cpm

**Figure 3 - Gamma Radiation Measurements, Above Two Times Background
Montezuma No. 2 (163, 165)
Bodaway / Gap Chapter, Navajo Nation**



Legend

Gamma Radiation Measurements

- < 2X Background
- > 2X Background

Measured as counts per minute (cpm)

Average background 16,301 cpm

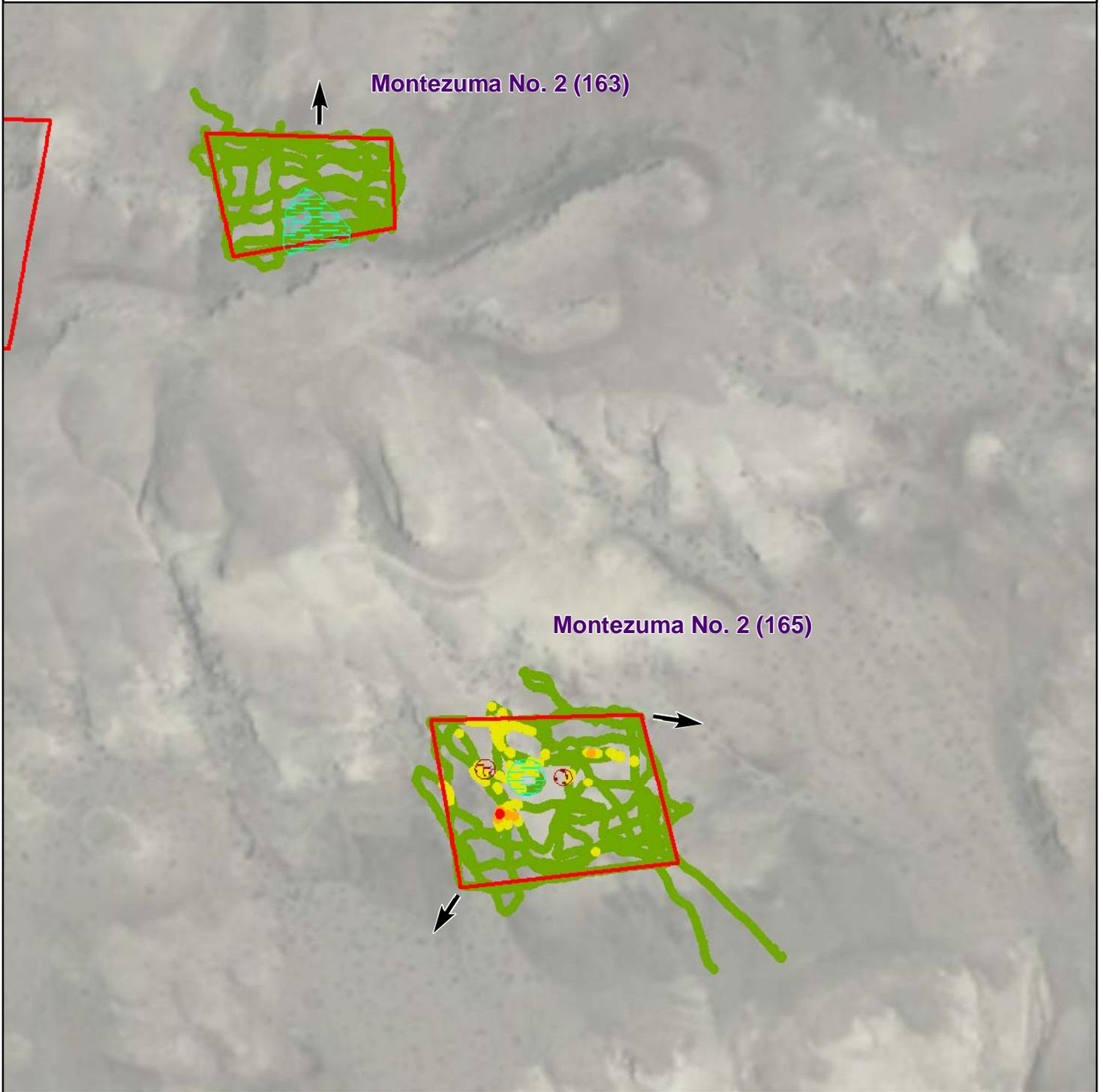
- Mine Site Boundary
- General Slope Direction
- Observed Reclamation Feature
- Observed Waste Pile
- Observed Structure
- Steep Grade







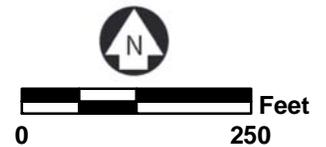
**Figure 4 - Gamma Radiation Measurements
Montezuma No. 2 (163, 165)
Bodaway / Gap Chapter, Navajo Nation**



Gamma Radiation Measurements

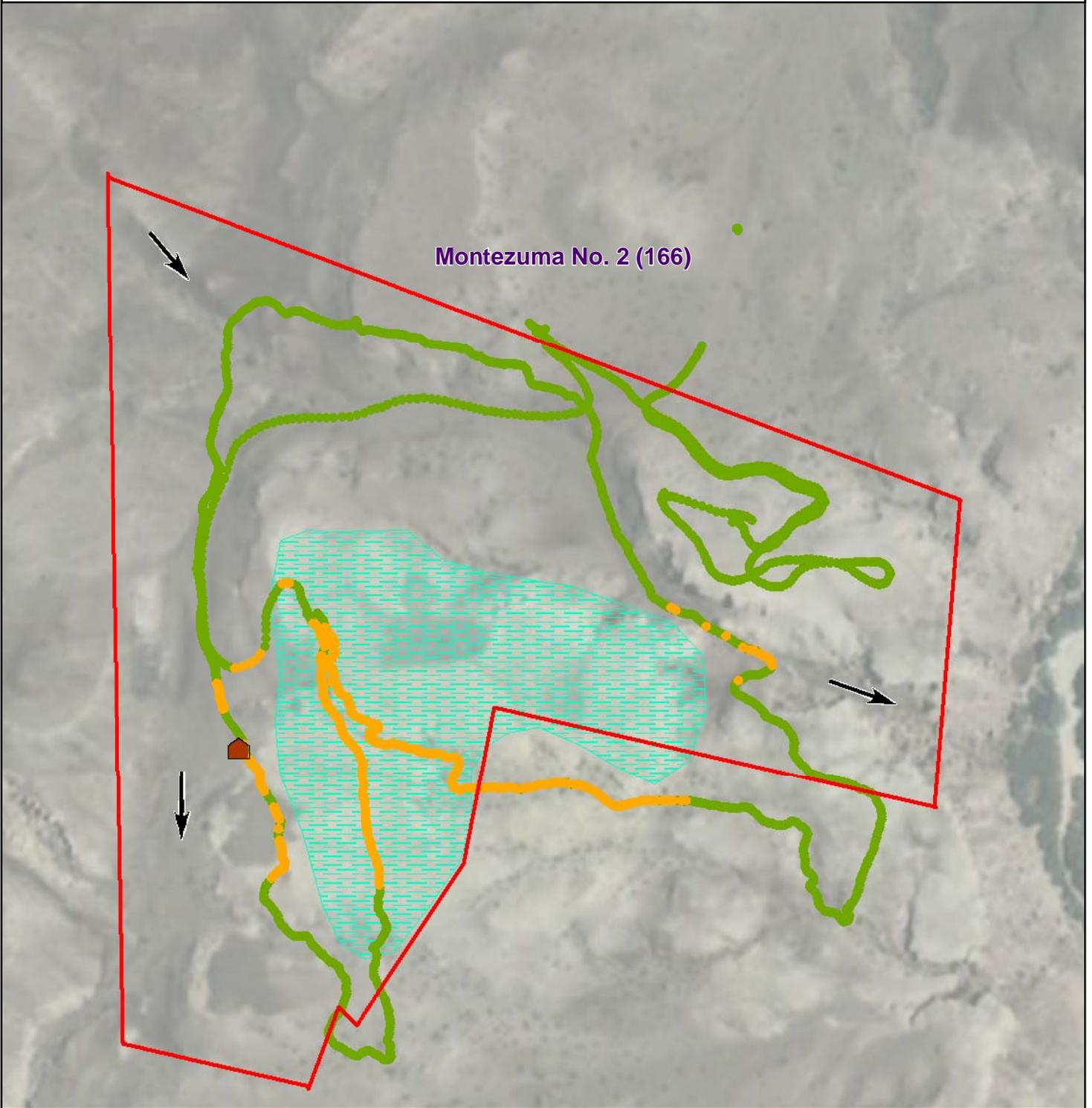
- 0 - 10,000 cpm
- 10,000 - 25,000 cpm
- 25,000 - 50,000 cpm
- 50,000 - 100,000 cpm
- 100,000 - 250,000 cpm
- 250,000 - 500,000 cpm
- 500,000 - 1,000,000 cpm

- Mine Site Boundary
- General Slope Direction
- Observed Reclamation Feature
- Observed Waste Pile
- Observed Structure
- Steep Grade



Measured as counts per minute (cpm) Average background 16,301 cpm

**Figure 5 - Gamma Radiation Measurements, Above Two Times Background
 Montezuma No. 2 (166)
 Bodaway / Gap Chapter, Navajo Nation**



Legend

Gamma Radiation Measurements

- < 2X Background
- > 2X Background

Measured as counts per minute (cpm)

Average background 10,746 cpm

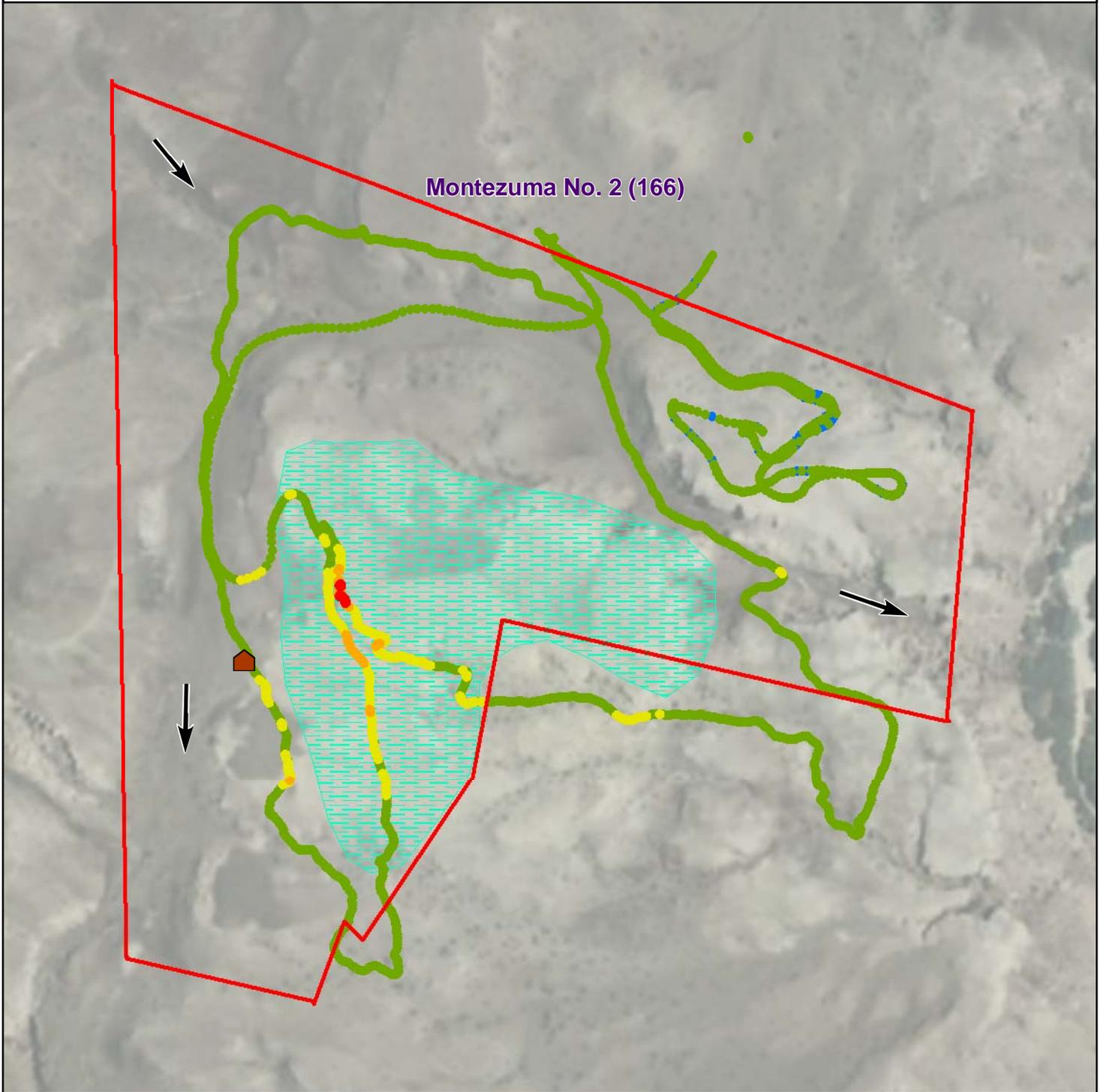
- Mine Site Boundary
- General Slope Direction
- Observed Reclamation Feature
- Observed Waste Pile
- Observed Structure
- Steep Grade







**Figure 6 - Gamma Radiation Measurements
Montezuma No. 2 (166)
Bodaway / Gap Chapter, Navajo Nation**



Gamma Radiation Measurements

- 0 - 10,000 cpm
- 10,000 - 25,000 cpm
- 25,000 - 50,000 cpm
- 50,000 - 100,000 cpm
- 100,000 - 250,000 cpm
- 250,000 - 500,000 cpm
- 500,000 - 1,000,000 cpm

- Mine Site Boundary
- General Slope Direction
- Observed Reclamation Feature
- Observed Waste Pile
- Observed Structure
- Steep Grade



Measured as counts per minute (cpm) Average background 10,746 cpm