

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: Monument No. 2

Mine IDs: 241, 521

Navajo AUM North Central Region

Prepared by:

Weston Solutions, Inc.

Contract: W91238-06-F-0083

20074.063.039.0020

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Part I Site Identification, Location and Status

Site Names and ID numbers as applicable

Mine ID: 241

Map ID: NC65

CERCLIS: NNN000909262

Navajo Abandoned Mine Land Reclamation Program: NA-0224

Local name / Aliases: Monument No. 2 Lease; Monument No. 2 Lease Amended; VCA's Mining Unit No. 66; Chee Nez No. 1; Monument #2; Monument #2 Supplement; Chee Nez No. 1

Chapter and local area: Kayenta

County: Apache

State: AZ

Lat/Long: 36.9412038568 N / -109.888670996 W

Nearby road and highway: Indian Route 6440

Local Post Office: Dennehotso, AZ

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

Tribal Trust Land

Public lands

Private

Tribal Fee Land

Bureau of Land Mgmt

Allotment

State

Fee land

Subsurface Mineral Rights:

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

Claim and operator information:

Historical documents identified the operator of the mine from 1943 to 1946 as Vanadium Corporation of America, and in 1947 as Atomic Energy Commission. No additional historical ownership / lease information was identified in the EPA / AUM database.

Number of residential structures within 200 feet of mine: None

Mine ID: 521

Map ID: NC66

CERCLIS: NNN000909262

Navajo Abandoned Mine Land Reclamation Program: NA-0204; NA-0225

Local name / Aliases: Monument No. 2 Lease; Monument No. 2 Lease Amended; VCA's Mining Unit No. 66; Monument #2; Monument #2 Supplement

Chapter and local area: Kayenta

County: Apache

State: AZ

Lat/Long: 36.9320710334 N / -109.884879908 W

Nearby road and highway: Indian Route 6440 **Local Post Office:** Dennehotso, 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:

Historical documents identified the operator of the mine from 1943 to 1967 as Vanadium Corporation of America, and from 1967 to 1968 as Foote Mineral Company. 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: 241

Highest gamma radiation measurement: 28,307 counts per minute (cpm)

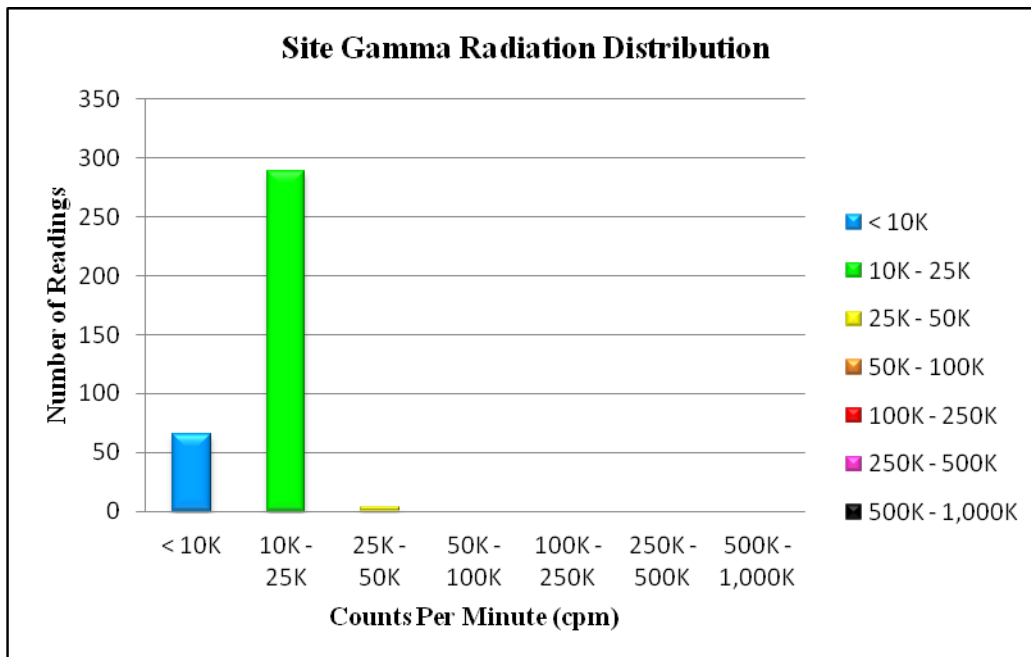
Background Average: 7,393 cpm **Two Times Background:** 14,786 cpm

Describe any other radiological measurements:

A total of 357 gamma radiation measurements were collected from the mine site, ranging from 8,055 cpm to 28,307 cpm. The measurements are represented in Figures 1, 2, 3 and 4.

Distribution Chart and Statistics:

Site Gamma Radiation Statistics	
Number of Readings	357
Minimum (cpm)	8,055
Maximum (cpm)	28,307
Mean (cpm)	14,251
Median (cpm)	13,611
Standard Deviation	4,092



Mine ID: 521

Highest gamma radiation measurement: 240,322 counts per minute (cpm)

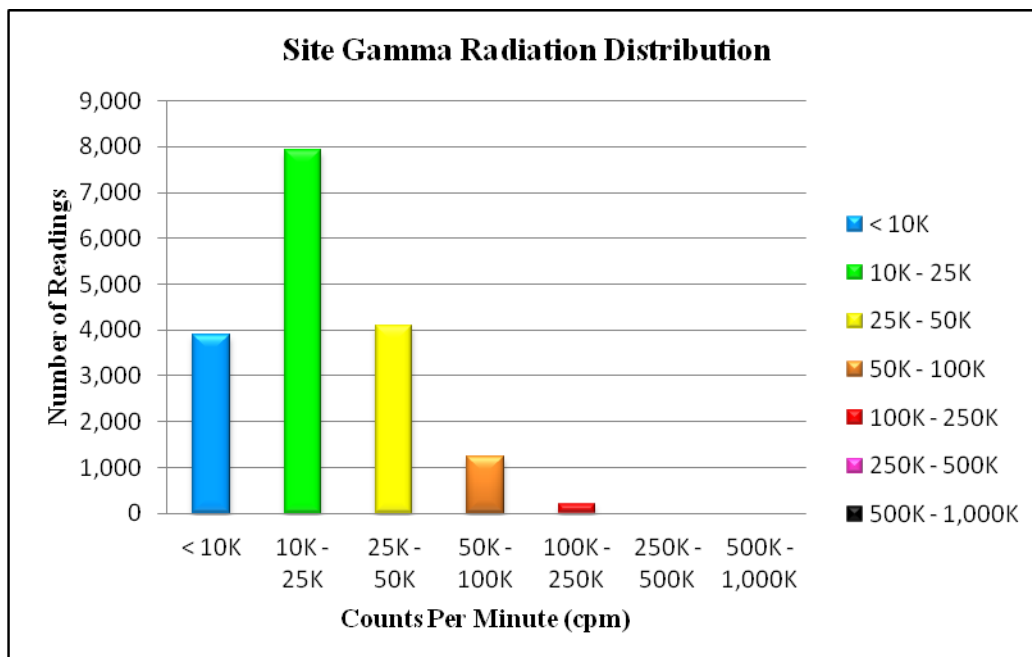
Background Average: 7,393 cpm **Two Times Background:** 14,786 cpm

Describe any other radiological measurements:

A total of 17,777 gamma radiation measurements were collected from the mine site, ranging from 4,158 cpm to 240,322 cpm. Maximum levels of approximately 240,000 cpm were found in the road area. The measurements are represented in Figures 1, 2, 3, 4, 5, and 6.

Distribution Chart and Statistics:

Site Gamma Radiation Statistics	
Number of Readings	17,777
Minimum (cpm)	4,158
Maximum (cpm)	240,322
Mean (cpm)	23,405
Median (cpm)	17,786
Standard Deviation	20,554



Part III Status of Reclamation and Mine Waste

Mine ID: 241

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-0224

NAMLRP Mine features: 1 Vertical

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:

Possible reclamation cap north of the site

Mine ID: 521

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: Yes

NAMLRP Project Number: NA-0204; NA-0225

NAMLRP Mine features: 2 Rim Strip / Pits; 5 Portals

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:

5 adits, all sealed and capped

Waste Piles:

Waste pile in the southwest part of the site

Pits:

None Observed

Shafts:

None Observed

Other Debris and Mine Features:

All mine features from topo have been capped including adit and open pits; elevated readings along road; berms have been constructed in at least three locations to limit runoff and overflow; structures have been constructed in the southern wash to capture

Part IV Site Observations and Environs

Mine ID: 241

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

0 to 200 feet: None Observed

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):

None

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: None Observed

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 Monument No. 2 (#241) mine site consists of an area of 2,628 m². The mine was identified as being operational from 1943 to 1969. While operational, the mine had a total reported production volume of 773,132 tons. No additional historical ownership / lease information was identified in the EPA / AUM database.

Mine ID: 521

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

0 to 200 feet: 50 ft W - Small wood structure / hut

200 feet to 0.25 mile: 250 ft W - Stone hogan

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: None Observed

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 Monument No. 2 (#521) mine site consists of an area of 717,285 m². The mine was identified as being operational from 1943 to 1969. While operational, the mine had a total reported production volume of 773,132 tons. No additional historical ownership / lease information was identified in the EPA / AUM database.

Part V Response Action Summary

Summary of Evaluation Factors:

Mine ID: 241

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?

No

Structures:

Were any structures observed within 200 feet of the mine?

No

Potential Drinking Water Sources:

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

No

Reclamation:

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

Yes

Mine ID: 521

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?

No

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 #241
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Photo 2	Mine Site #241 – Offsite tailings
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Photo 3

Mine Site #521

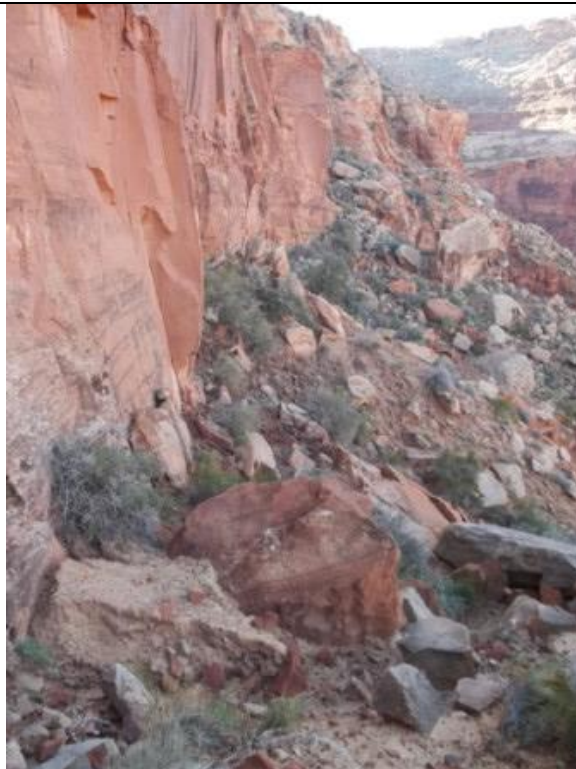


Photo 4

Mine Site #521



Photo 5

Mine Site #521



Photo 6

Mine Site #521



Photo 7

Mine Site #521



Photo 8

Mine Site #521



Photo 9

Mine Site #521



Photo 10

Mine Site #521 - Adit



Photo 11

Mine Site #521

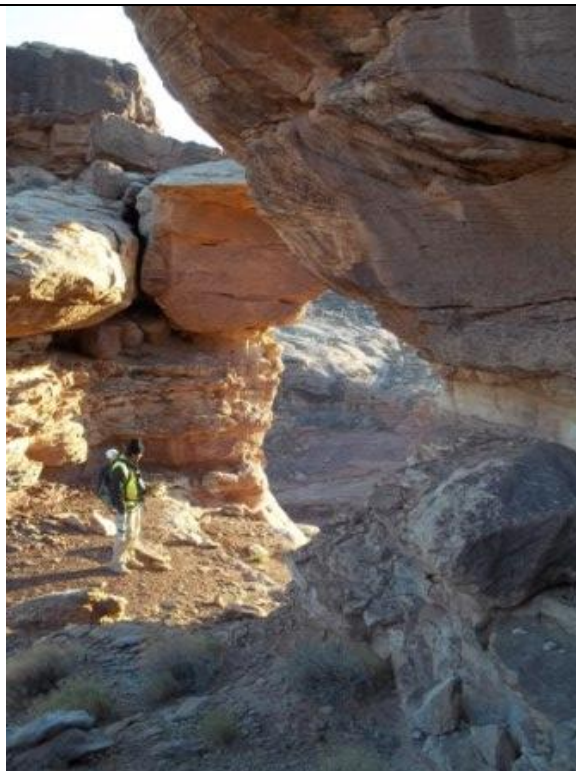


Photo 12

Mine Site #521



Photo 13

Mine Site #521 – Bermed area

Part VII Contact 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: _____

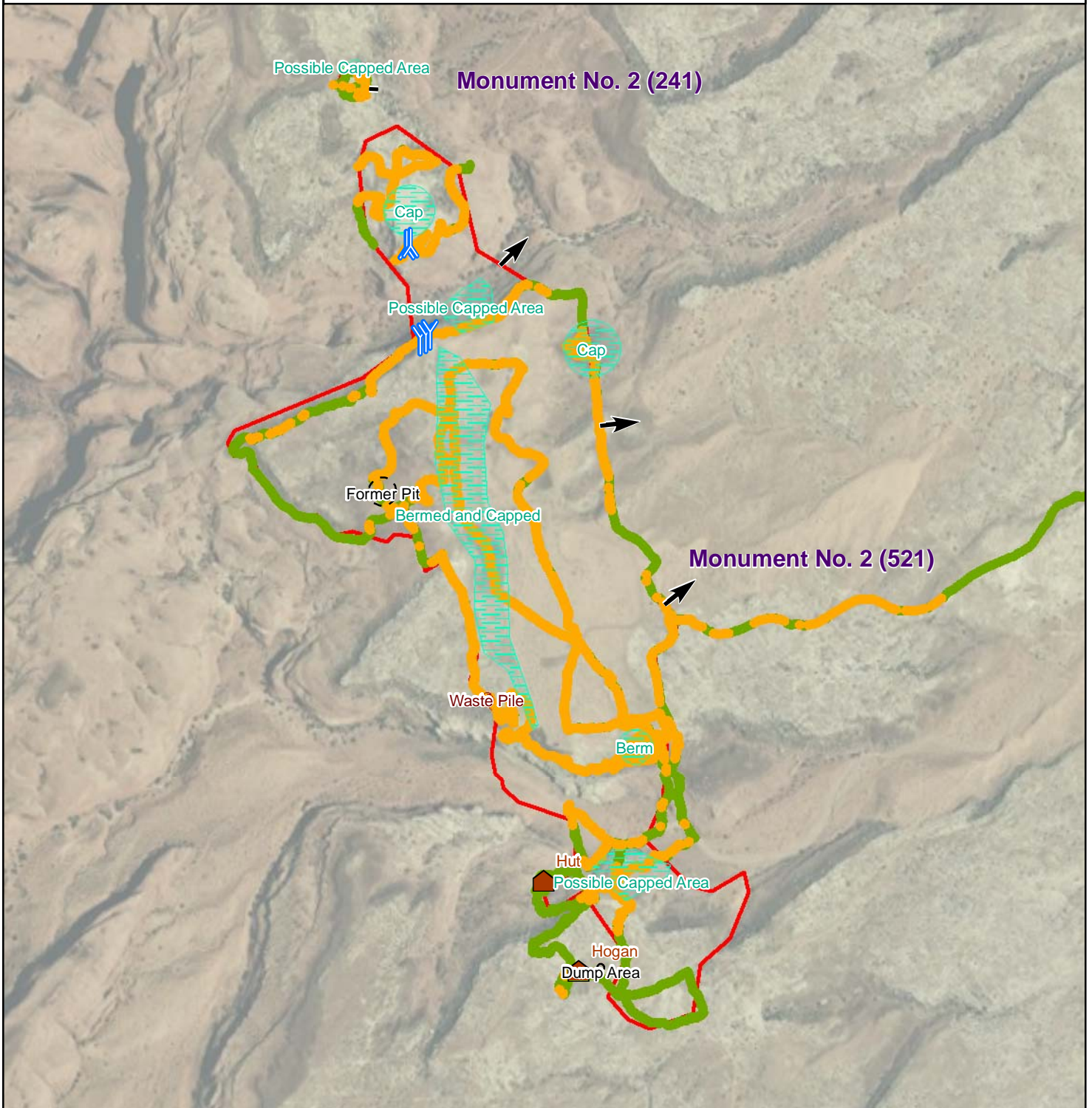
Title or official role (if any): _____

Telephone number: _____

Address: _____

Information provided: _____

**Figure 1 - Gamma Radiation Measurements, Above Two Times Background
Monument No. 2 (241, 521)
Kayenta Chapter, Navajo Nation**



Gamma Radiation Measurements

- <math>< 2X</math> Background
- $> 2X$ Background

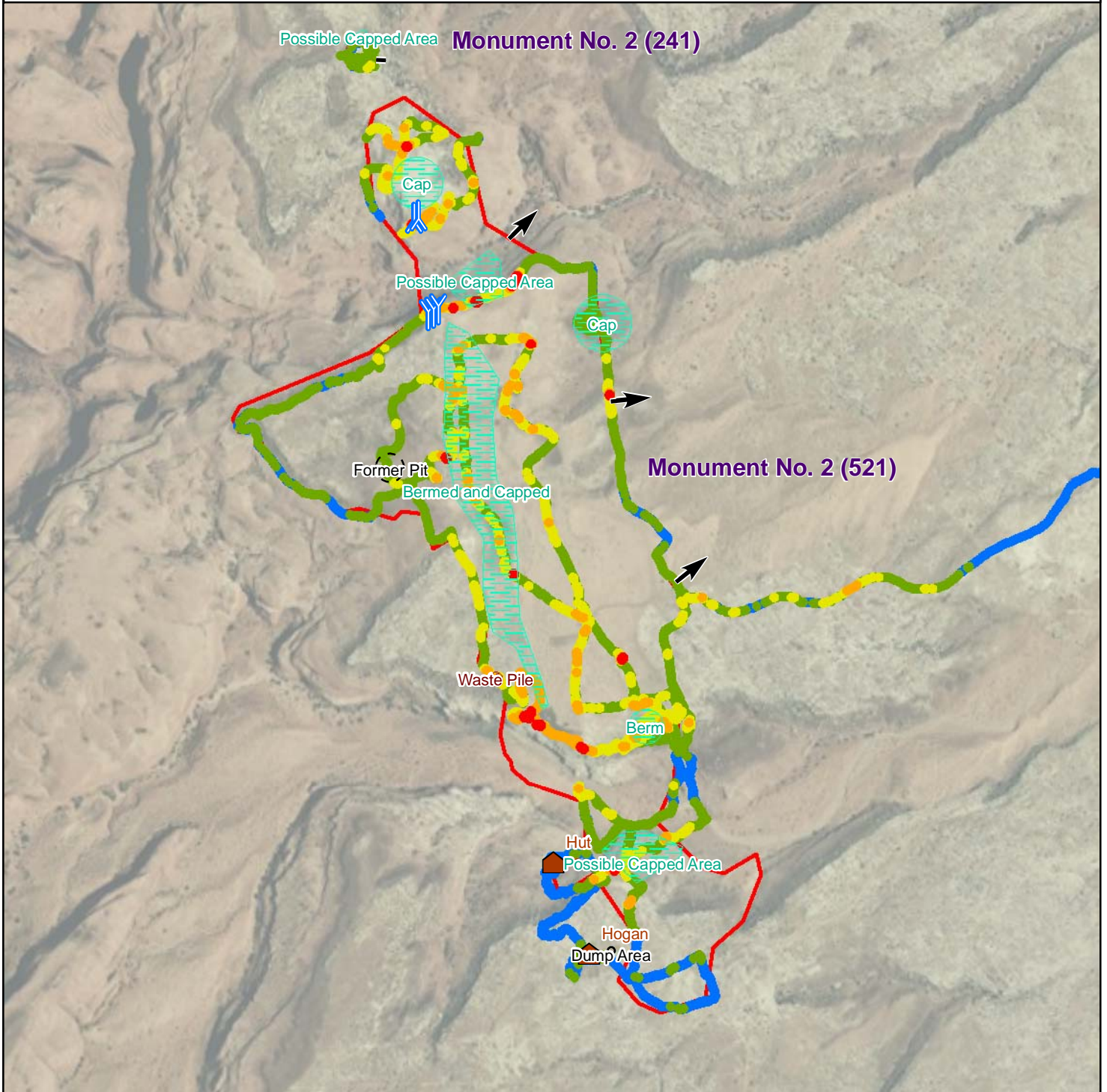
Measured as counts per minute (cpm)

Average background 7,393 cpm

- Mine Site Boundary
- General Slope Direction
- Observed Reclamation Feature
- Observed Waste Rock
- Observed Structure
- Y Observed Adit



**Figure 2 - Gamma Radiation Measurements
Monument No. 2 (241, 521)
Kayenta 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

Average background 7,393 cpm

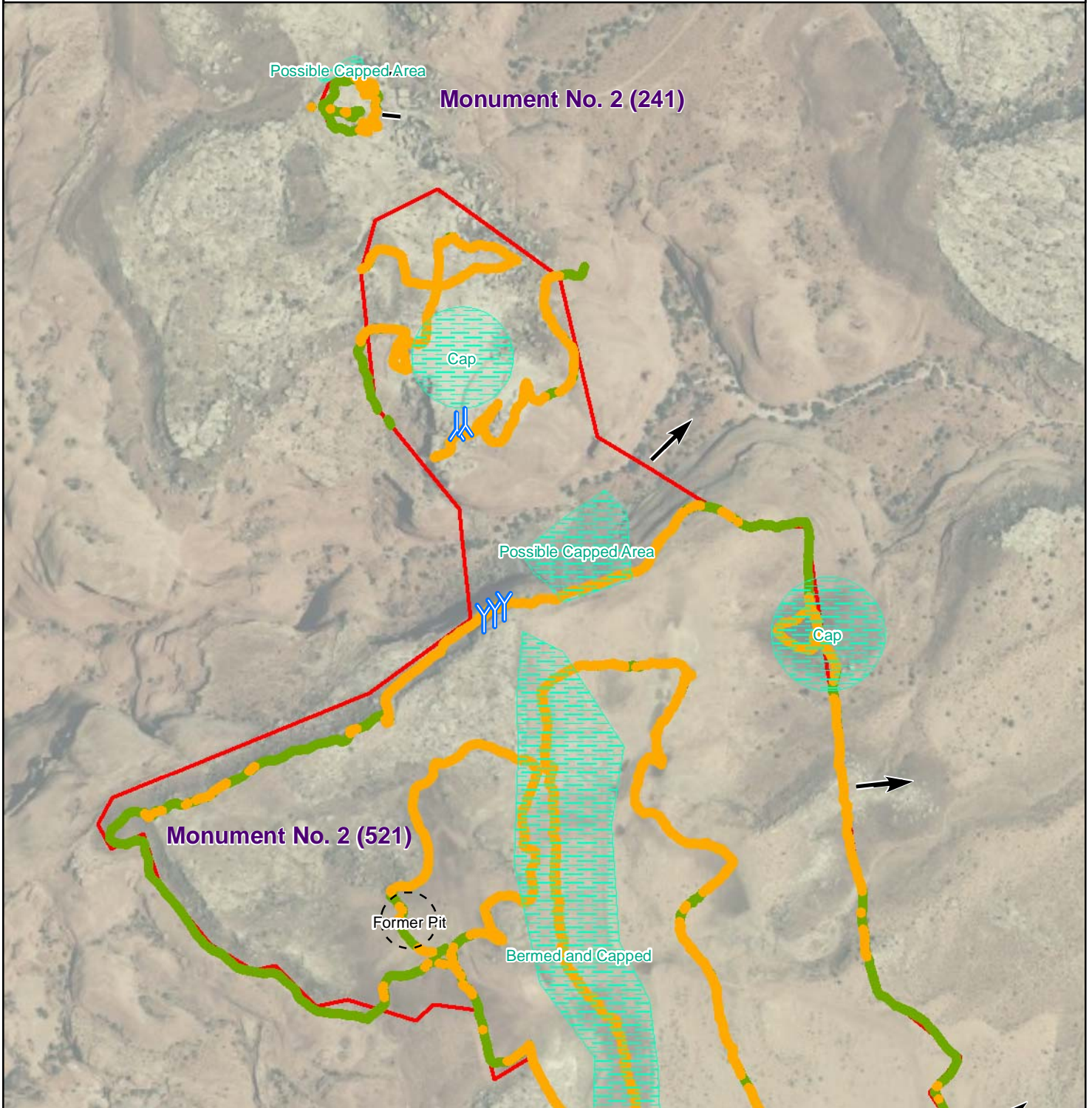
- ▭ Mine Site Boundary
- ➔ General Slope Direction
- ▨ Observed Reclamation Feature
- ▨ Observed Waste Rock
- 🏠 Observed Structure
- ⚡ Observed Adit

Measured as counts per minute (cpm)






**Figure 3 - Gamma Radiation Measurements, Above Two Times Background
Monument No. 2 (241, 521)
Kayenta Chapter, Navajo Nation**



Gamma Radiation Measurements

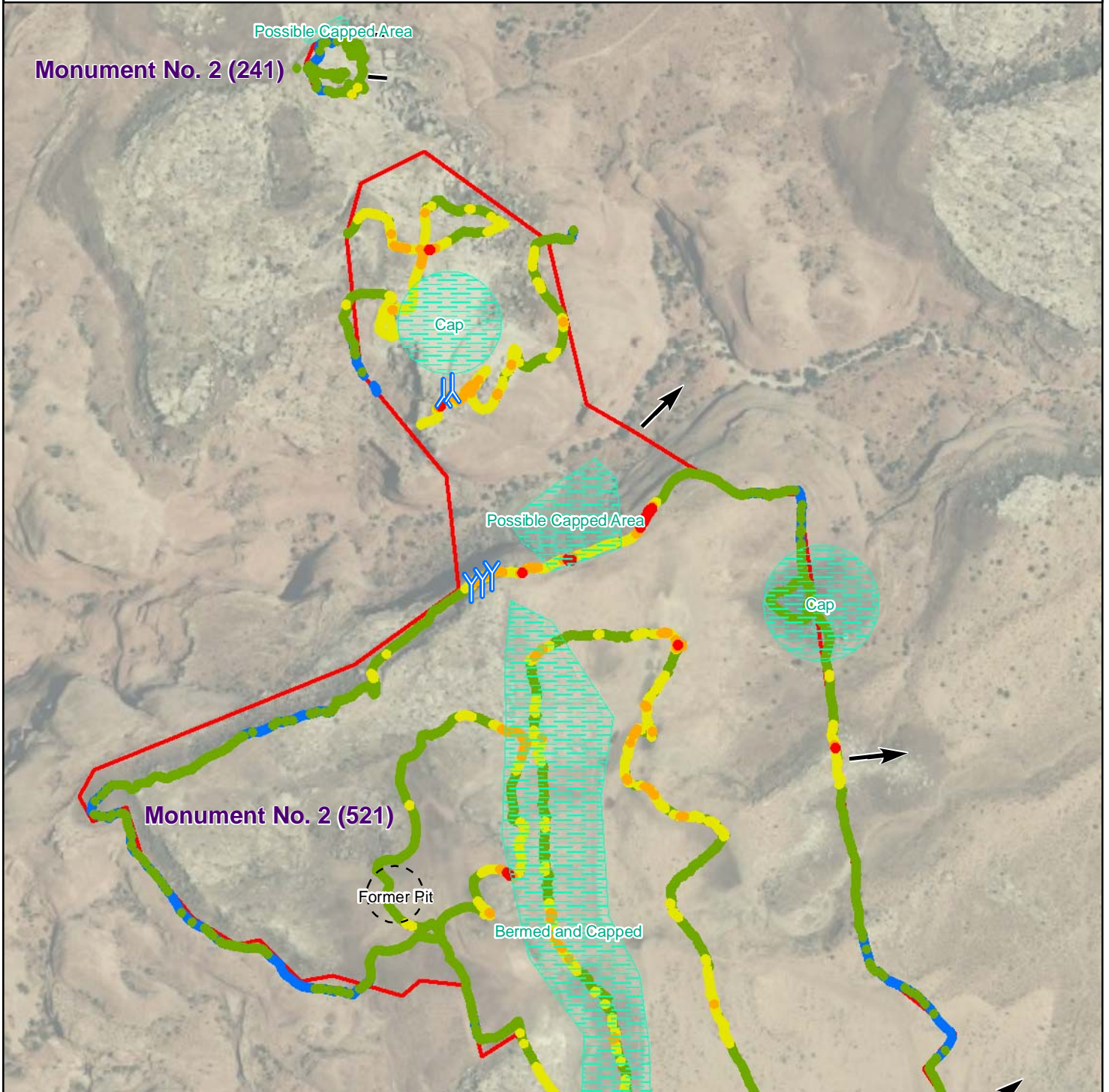
- < 2X Background
- > 2X Background

Measured as counts per minute (cpm)

Average background 7,393 cpm

- Mine Site Boundary
- General Slope Direction
- Observed Reclamation Feature
- Observed Waste Rock
- Observed Structure
- Observed Adit

**Figure 4 - Gamma Radiation Measurements
Monument No. 2 (241, 521)
Kayenta 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 Rock
- 🏠 Observed Structure
- Observed Adit

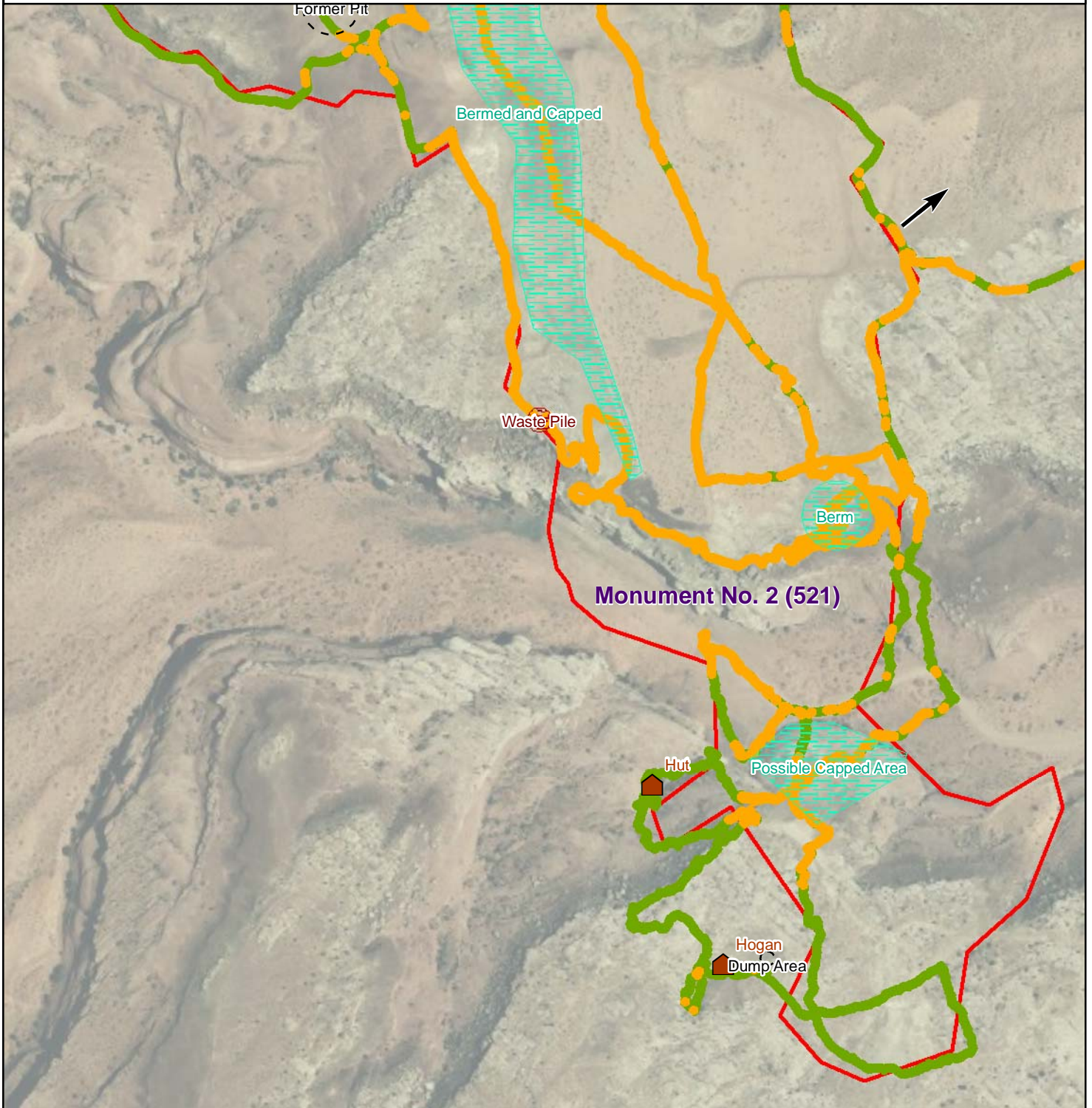
N

0 500 Feet

WESTON SOLUTIONS

Average background 7,393 cpm Measured as counts per minute (cpm)

**Figure 5 - Gamma Radiation Measurements, Above Two Times Background
Monument No. 2 (241, 521)
Kayenta Chapter, Navajo Nation**



Gamma Radiation Measurements

- < 2X Background
- > 2X Background

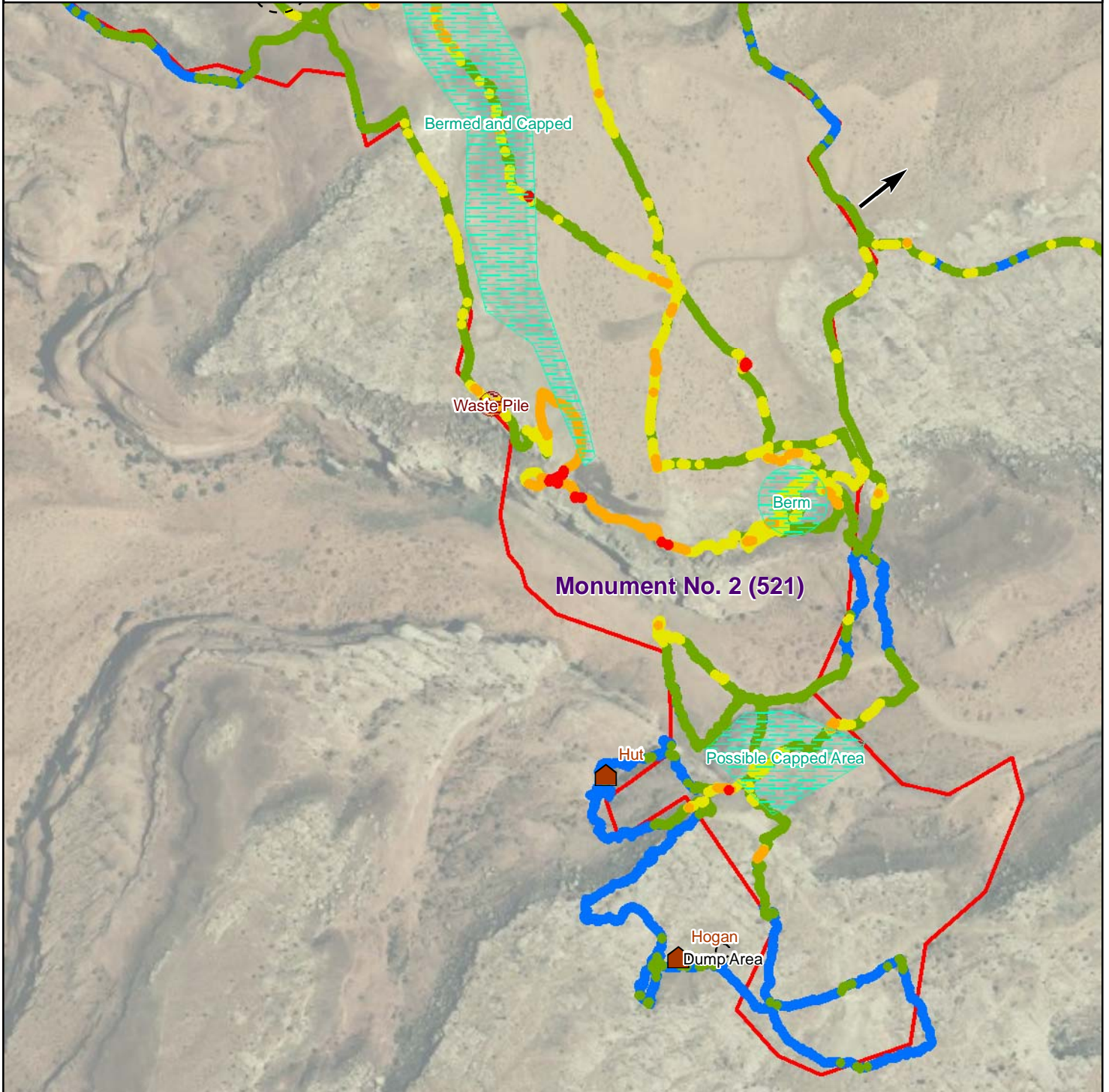
Measured as counts per minute (cpm)

Average background 7,393 cpm

- Mine Site Boundary
- General Slope Direction
- Observed Reclamation Feature
- Observed Waste Rock
- Observed Structure
- Observed Adit



**Figure 6 - Gamma Radiation Measurements
Monument No. 2 (241, 521)
Kayenta 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 Rock
- 🏠 Observed Structure
- Observed Adit



0 500 Feet



Average background 7,393 cpm

Measured as counts per minute (cpm)