Section 17 Projects: Old Church Rock Mine and Downwind Structures

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Navajo Superfund Program - Site Assessment

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Waste Regulatory Compliance Dept.
Navajo Nation
Environmental Protection Agency
Day After Heavy Rain

August 2, 2006
Flood mark

Waste Material:
Height: 8-12 feet
Length: 370 feet

Exposure Measurements:
65-110 µR/hr (bank)
30-65 µR/hr (sediment)

Background=12-15 microRoentgens per hour (µR/hr)
320 µR/hr

White Waste Material in Bank
(Stratum: 3’ thick & 30’ length)

Dry Ponds On-site
(unreclaimed)
Old Church Rock Mine

Settling (dry) Ponds

Former Ion Exchange Bldg.

Staging Area: closed shafts, offices, former stock piles, etc.

St. Hwy. 566
Scoping Survey done by Navajo Superfund Program
March 2007

Bureau of Land Management

Navajo Trust Land

SITE

Former Ion Exchange Building

Residences

Township 16 North, Range 16 West

Hwy. 566

Sec. 8

Sec. 9

Sec. 17

Sec. 16

State Land

Residence

Navajo Trust

Bureau of Land Management
Establishing Survey Grid Points Inside OCRM Site
Old Church Rock Mine
Site History

• Mined 1960-'62 by Phillips Petroleum Co.; Reopened 1976-'77 and 1979-'81 by United Nuclear Corporation (UNC)
• Underground mining (800 ft.- 900 ft. shafts) with on-site processing
• Ore production was 77,965 tons
• Uranium Resources Inc. (URI) now owns the subsurface mineral rights
Exposure Results (microRoentgens per hour)

Old Church Rock Mine Site
Counts per minute at Waist Level
Exposure Rate, uR/hr = (0.000656 X cpm) + 5.1.

Exposure Rate uR/hr Level Code
Area (inside perimeter Fence)
- Green is less than Background of 14.15
- Yellow is Above and up to Two times Background
- Red is Above Three times Background

Outside Perimeter Fence
- Green is less than Background of 14.15
- Yellow is Above and up to Two times Background
- Red is Above Three times Background

Arroyo
- Green is less than Background of 14.15
- Yellow is Above and up to Two times Background
- Red is Above Three times Background

Readings:
- In Arroyo:
  79% >2x background
- Inside the Compound:
  94% >2x background
- Outside the Fence Line:
  95% >2x background
Soil Activity Results (picoCurie per gram)

Readings:

In Arroyo
28% > UMTRCA std.

Inside the Compound
51% > UMTRCA standard

Outside the Fence Line
56% > UMTRCA standard
Community Concerns

- Radioactive contaminants being transported off-site by way of surface water and air
- Heavy metals in on-site dry ponds
- Still have mined ore rocks scattered in areas
- Residences are nearby and near a regional drainage (≈ mile downstream of site)
- Adjacent land used for agricultural purposes
Survey Area

Dug Pits

Dug pits with direct-push borings

Former ore pad storage area

Settling ponds

Old Church Rock Mine Shaft

Nearest Residence

17

Ion exchange building

Unnamed Arroyo

Puerco River
Soil bores carried out with a direct-push equipment (GeoProbe)
Twelve Pits Were Dug
Data Collected w/Ratemeter Connected to GPS Equipment
1962 Aerial Photo of OCRM Site and its vicinity
Results From Gamma Radiation Survey During May 2009
Associated Project: Radiological Survey Around Structures Downwind of Section 17

Residences east of Section 17 site, north and south of Highway N-11-49
July 6, 2006 – Visit to Section 17 by the New Mexico Environment Department
Just So Happened ... 60+ MPH Winds That Day
This event brought out the concern of windblown sand from Section 17 depositing at residences downwind.
Radiological Survey to check on soils around structures, primarily main residences, hogans, storage buildings, and sheds.
Reading collected every 10 feet over a 50-ft. length.