

Orthographic



RED ENGINEERING INC.

PORTLAND'S PREMIERE ALL-REDHEAD
ENGINEERING FIRM

Client
Engineer
Site
Title
Date
Project #

Farmer John
Ben Stabley
Farmer John's Farm
Uranium Mill Tailings Estimate
2023-08-13
630-252 Rev. B

Background

In early 2023, the Nuclear Regulatory Commission (NRC) and Environmental Protection Agency (EPA) discovered that Farmer John had been conducting a side business refining uranium ore into U3O8, also called "yellow cake." The byproduct of this process, the mill tailings, were stored on-site in stockpiles, three covered with plastic tarps and two uncovered.

Methods

Here, we present a cost estimate for disposal of these stockpiles of uranium mill tailings. To measure the approximate volume of each stockpile, a sUAS was flown over the site at a height of 23.1m capturing true color photographs. A total of 9 ground control points were established using a Bad Elf GPS unit. Processing was performed using Agisoft Metashape Pro to produce the volume estimates in cubic meters.

A figure of 1.874 short tons/m³ was used as the density of mill tailings [1]. A disposal cost rate of 75.49 USD/m³ was determined using the inflation-adjusted average per-unit clean up cost of 24 UMTRACA sites in the US as of 2000 [2].

Pile	Volume (m ³)	Weight (short tons)	Cost (USD)
1	214.5	402	\$16,194.87
2	66.3	124.3	\$5,006.80
3	103.3	193.6	\$7,798.49
4	22.1	41.4	\$1,669.23
5	46.4	86.9	\$3,501.38

Sources

[1] E. Landa and US Dept of the Interior, "Isolation of Uranium Mill Tailings and Their Component Radionuclides From The Biosphere--Some Earth Science Perspective," Geological Survey Circular, vol. 814, 1980, [Online]. Available: <https://pubs.usgs.gov/circ/1980/0814/report.pdf>

[2] Energy Information Administration, "Nuclear Decommissioning Title 1 Uranium Mills Summary Table." <https://web.archive.org/web/20041118214313/http://www.eia.doe.gov/cneaf/nuclear/page/umtra/title1sum.html> (accessed Jul. 25, 2023).

3D Perspective

