The Rum Jungle U-Cu Project : A Critical Evaluation of Environmental Monitoring and Rehabilitation Success.

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The Rum Jungle uranium-copper project operated for about 20 years until 1971, located south of Darwin, Northern Territory, and included several open cut mines, waste rock dumps, copper heap leach pile and processing mill. Waste rock was dumped in piles adjacent to each mine. From 1954-61, liquid wastes (~1 ML/day) and tailings were discharged to adjacent lowlands, flowing 1 km west into the East Branch of the Finniss River. The tailings settled out over an area of 35 hectares but proved to be highly erodible. From 1961 tailings were discharged to mined out open cuts as well as sluice dams built on the Finniss to try and mitigate water quality impacts by dilution with wet season rains. The ore and waste rock averaged ~3% sulfides and the site remained a major source of acid mine drainage to the Finniss River – leading to the death of all flora and fauna for 10 km downstream, a significantly lower biodiversity for a further 15 km and a total of 100 km^2 of the Finniss River floodplain being heavily impacted. A major rehabilitation project was undertaken over 1983-86 and involved relocation of above ground tailings and the Cu heap leach pile to Dyson's open cut, construction of multi-layered soil covers over Dyson's open cut and all waste rock dumps, treatment of polluted waters as well as revegetation and aesthetic works. The history of environmental impacts from Rum Jungle is presented, critically reviewing the available monitoring data and the effectiveness of rehabilitation. There remain key gaps in understanding the site and the success of its rehabilitation, especially with respect to issues such as groundwater contamination and groundwater–surface water interaction which have yet to be investigated. The implications for uranium minesite rehabilitation and acid mine drainage generally are discussed.

Conference Topics :
Waste rock piles; Tailings; Long-term monitoring of abandoned uranium mining environments