

## **DEVELOPMENT OF THE END-STATE CRITERIA FOR THE CLOSURE OF THE WHITESHELL LABORATORIES**

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### **Abstract**

The Whiteshell Laboratories Closure Project (WLCP) involves the active decommissioning of an 4,375 hectare site, which includes approximately 1,400 hectares of Affected Lands which were impacted by activities over the past fifty-six (56) years of operations. The WL site includes a main campus with various Nuclear Facilities and non-nuclear buildings, a Waste Management Area (WMA) that stores all of the Low-Level Waste (LLW) and Intermediate-Level Waste (ILW) generated on-site, and an on-site Landfill. A critical aspect of the WLCP involves the definition of end-state criteria, which is being developed by Canadian Nuclear Laboratories in consultation with Atomic Energy of Canada Limited, the Canadian Nuclear Safety Commission and various public stakeholders.

The WL end-state and cleanup allocation defines the post-closure end-states, the post-closure land cleanup classification allocation, and the physical cleanup criteria that shall be met under the WLCP. The current proposed end-state involves the delineation of lands into four Land Use Categories (Agricultural, Residential/Parkland, Industrial and Casual Access), as well the establishment of Restricted Areas and Limited Development Areas. The end-state identifies specific release criteria for radiological and non-radiological contaminants of concern for each Land Use Category and identifies physical cleanup for facilities and infrastructure. A complicating factor for the end-state definition is the uncertainty for the future use of all or part of the site lands.

To meet the end-state criteria, remediation actions need to be assessed, planned, optimized and justified to ensure the actions are in the best interests of the stakeholders and the environment. The end result is always a balance between risks, costs, benefits and remediation viability. In alignment with the WL Environmental Assessment, the planning and execution of environmental remediation activities and/or the in-situ abandonment of infrastructure are based on :

- Nature and level of contaminants still present.
- Exposure pathways (workers and public).
- Potential environmental effects.
- Technical feasibility of remediation.
- Economic feasibility of remediation.
- Level of public concern.

This paper summarizes the proposed end-state for the WL site and provides a technical discussion on the methodologies used to develop the Land Use Categories and the end-state criteria for physical clean-up criteria and the release criteria for radiological and non-radiological contaminants.