nwmo

NUCLEAR WASTE MANAGEMENT ORGANIZATION
SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

Implementing Canada's Plan for Used Nuclear Fuel

Canada-Romania Partnership in Nuclear Technologies

Derek Wilson

March 3, 2021

About the NWMO

- Formed in 2002 as required by *Nuclear Fuel Waste Act*
- Develop and implement a plan for the safe and long-term management of used fuel
- Funded by Canada's nuclear energy corporations
- Project lifecycle cost of almost $24B for a capacity of 5.4 million used fuel bundles
- Operate on a not-for-profit basis

Our mission is to develop and implement collaboratively with Canadians, a management approach for the long-term care of Canada's used nuclear fuel that is socially acceptable, technically sound, environmentally responsible, and economically feasible.

Adaptive Phased Management (APM)

APM emerged from dialogue with citizens and experts – best met key priorities

A Technical Method

- Centralized containment and isolation of used nuclear fuel in a deep geological repository
- Continuous monitoring
- Potential for retrievability
- Optional step of shallow underground storage*

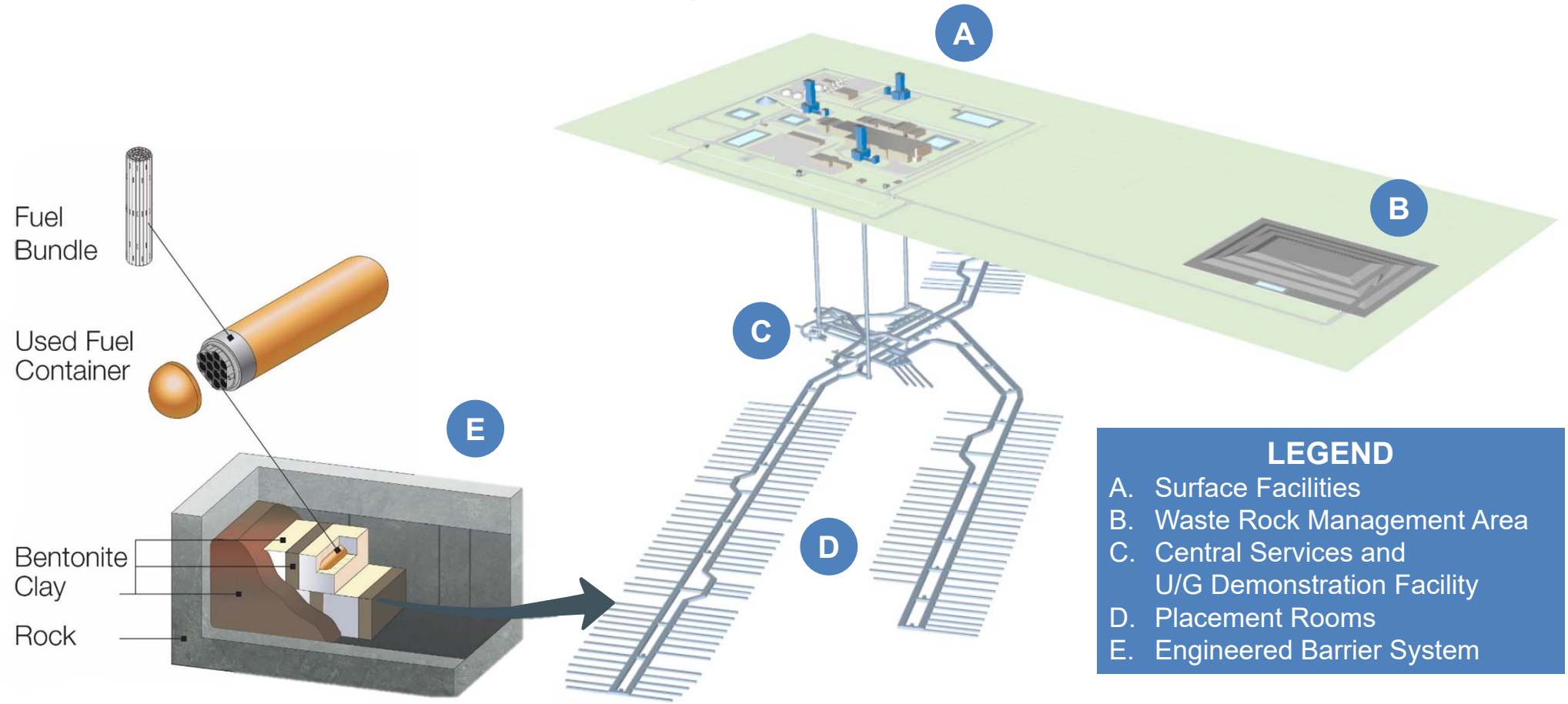
* Temporary shallow storage at the deep geological repository is optional and not currently included in the NWMO's implementation plan.

A Management System

- Flexibility in pace and manner of implementation
- Phased and adaptive decision-making
- Responsive to advances in technology, research, Indigenous Knowledge and societal values
- Open, inclusive, fair siting process – seek informed, willing host community
- Sustained engagement of people and communities throughout implementation

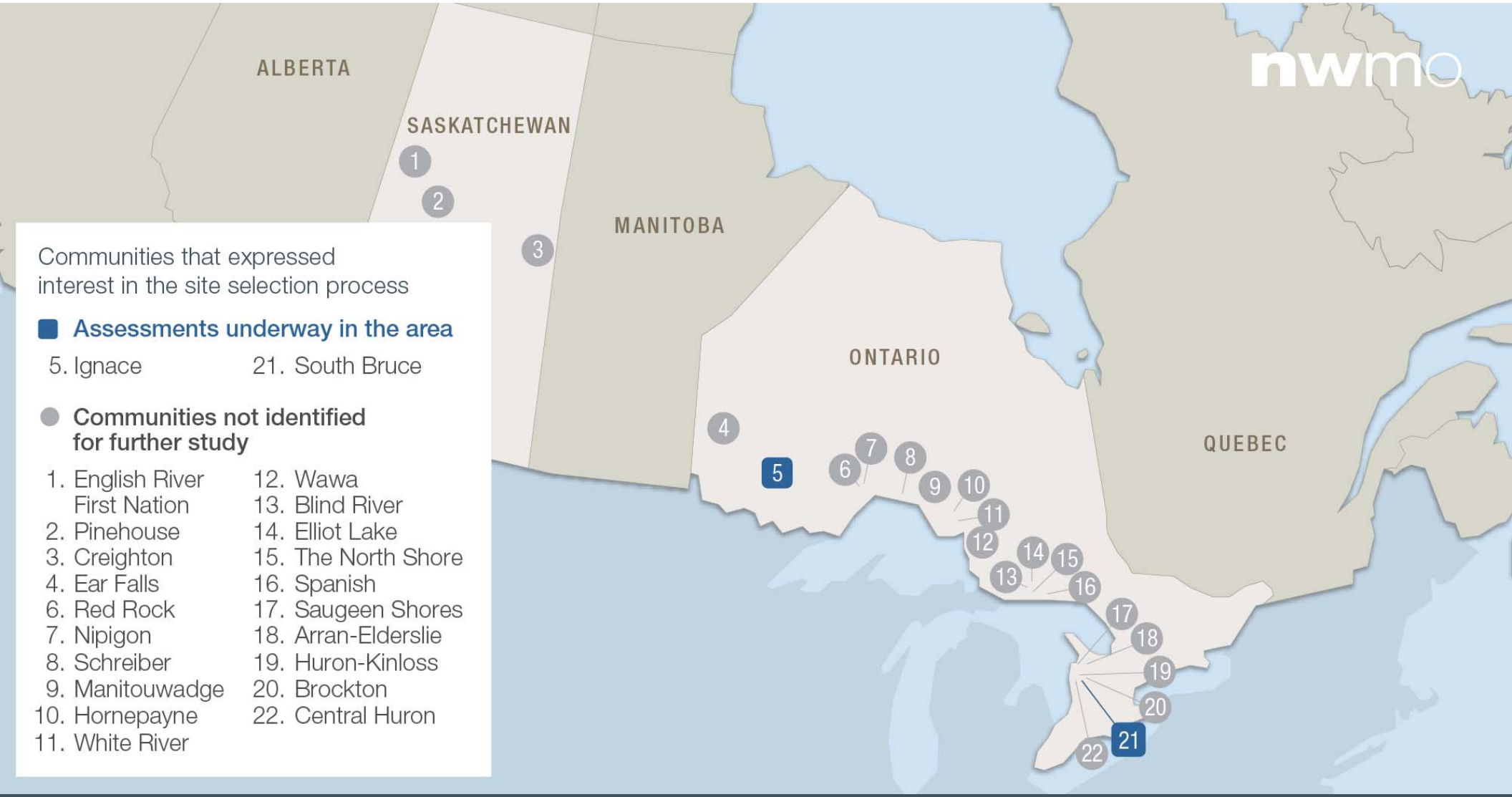
APM selected by Federal government June 2007

APM Conceptual Design



LEGEND

A. Surface Facilities
B. Waste Rock Management Area
C. Central Services and U/G Demonstration Facility
D. Placement Rooms
E. Engineered Barrier System



Communities that expressed interest in the site selection process

Assessments underway in the area

5. Ignace
21. South Bruce

Communities not identified for further study

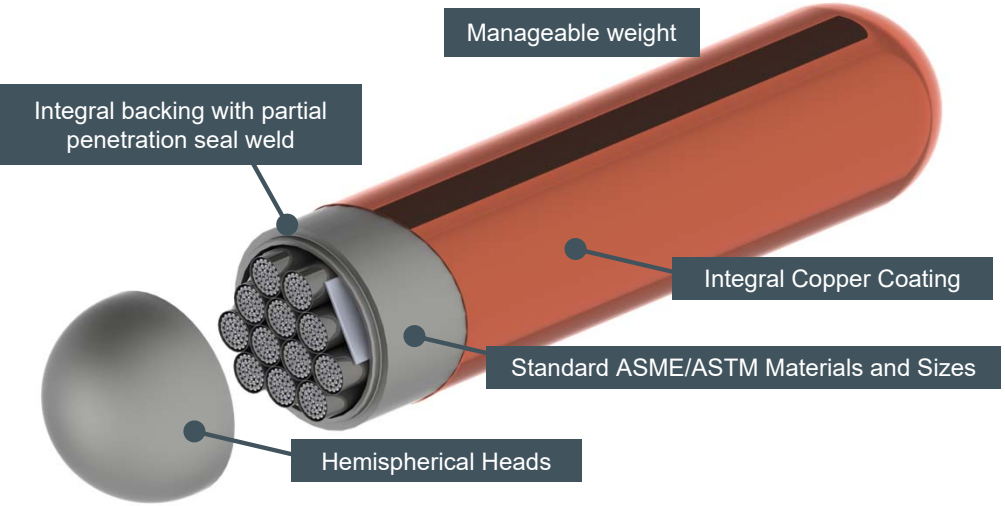
1. English River First Nation
2. Pinehouse
3. Creighton
4. Ear Falls
6. Red Rock
7. Nipigon
8. Schreiber
9. Manitouwadge
10. Hornepayne
11. White River
12. Wawa
13. Blind River
14. Elliot Lake
15. The North Shore
16. Spanish
17. Saugeen Shores
18. Arran-Elderslie
19. Huron-Kinloss
20. Brockton
22. Central Huron

Site Characterization at Potential Repository Site

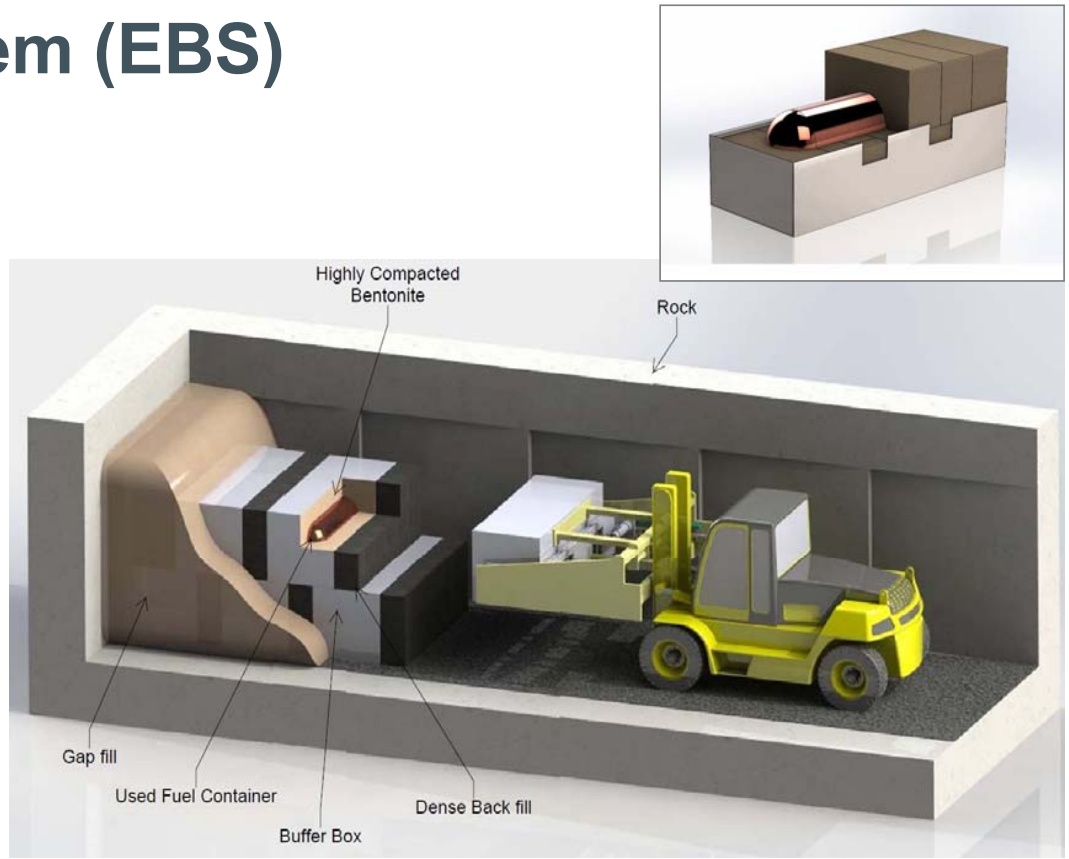
Site Characterization – Field Assessments

Seismic Source

Engineered Barrier System (EBS)



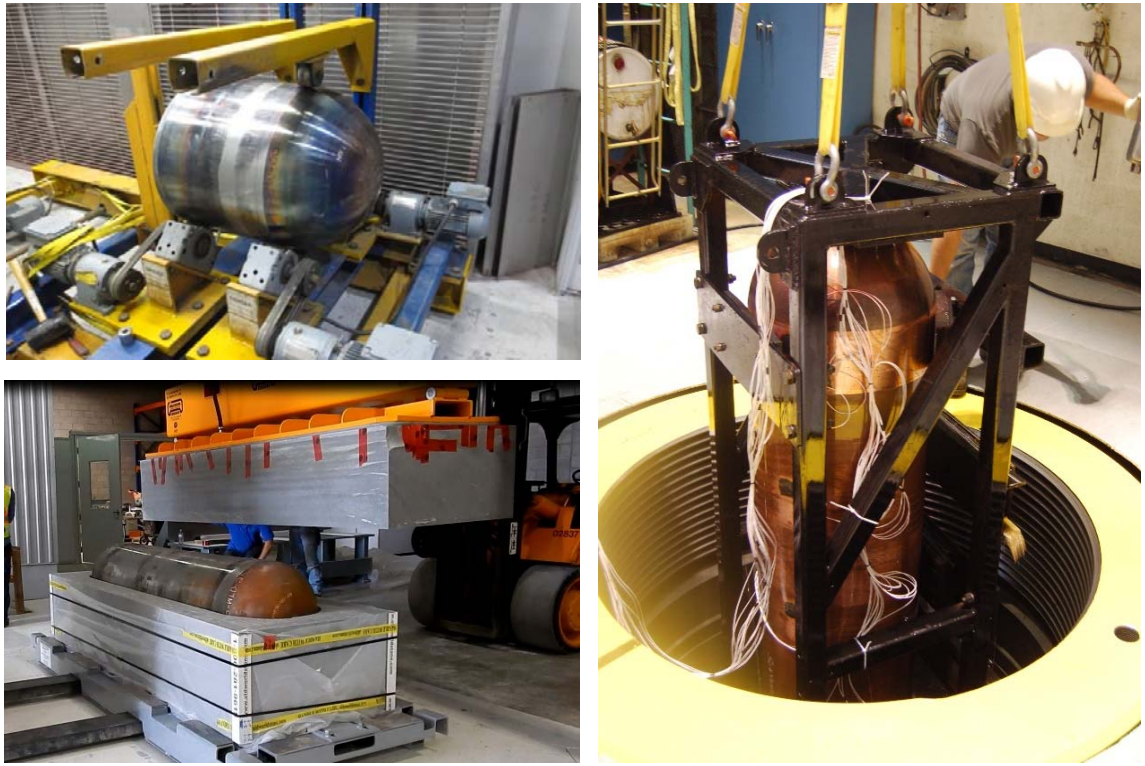
Used Fuel Container



Multi-barrier EBS design

Proof Testing and Equipment Fabrication

Robust Equipment and Tooling



Prototype Fabrication and Testing

International WM Organizations

POSIVA
SÚRAO
KORAD KOREA RADIOACTIVE WASTE AGENCY
ONDRAF
ANDRA
NUMO 原子力発電環境整備機構
nagra
Radioactive Waste Management
SKB

Canadian Universities

ROYAL MILITARY COLLEGE OF CANADA
YORK UNIVERSITÉ UNIVERSITY
Carleton UNIVERSITY
uOttawa
UNIVERSITY OF TORONTO
RYERSON UNIVERSITY
UNIVERSITY OF WATERLOO
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