



NUCLEAR WASTE
MANAGEMENT
ORGANIZATION

SOCIÉTÉ DE GESTION
DES DÉCHETS
NUCLÉAIRES

What NWMO has Done and What it has Heard From Canadians

Presentation 1 to the NWMO Elders' Forum

R. Anthony Hodge, Senior Advisor
Nuclear Waste Management Organization

Friday, August 26, 2005, Odawa Native Friendship Centre, Ottawa

What the NWMO Was Asked to do



The NWMO is responsible for reviewing the various alternatives for the long-term management of used nuclear fuel in Canada. It must recommend a strategy for Canada by November 15, 2005

What the NWMO Was Asked to do

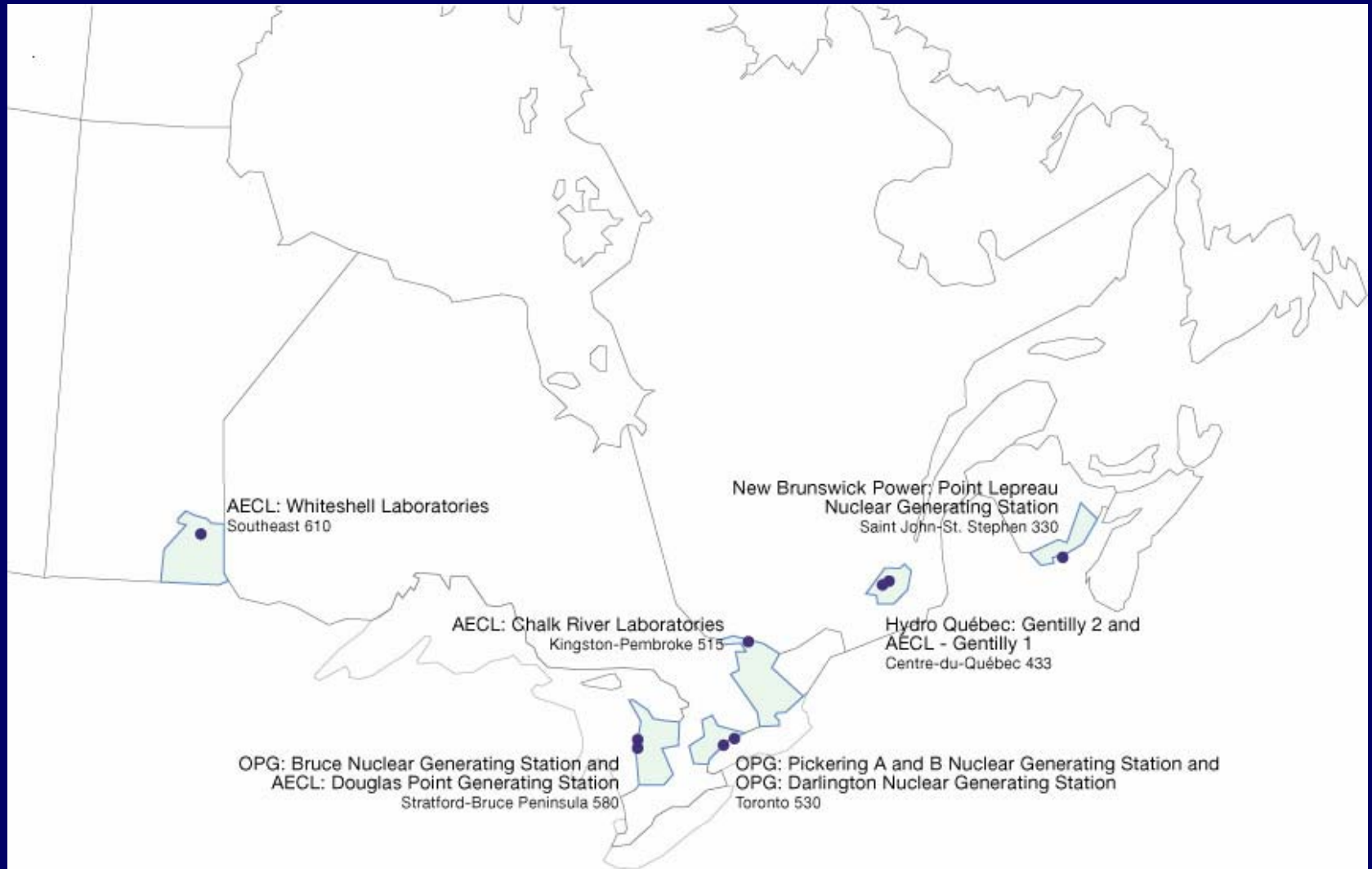
In its work, the NWMO is required to consult broadly with the general public including Aboriginal Peoples



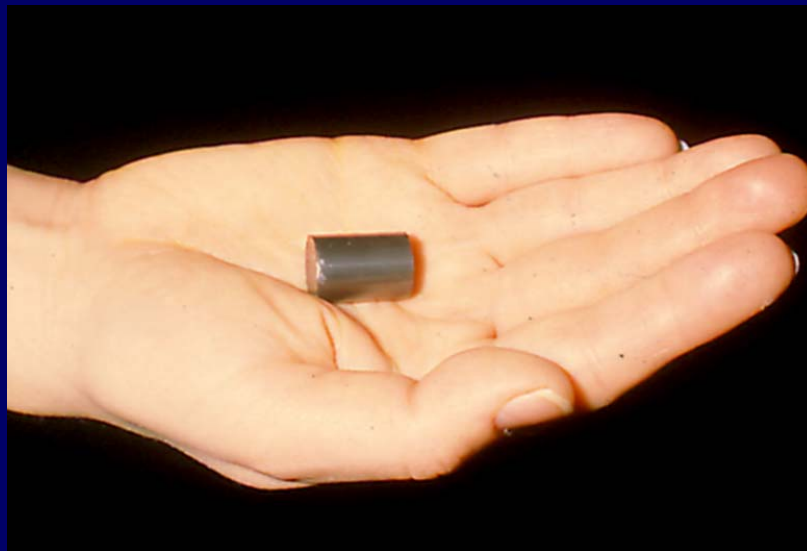
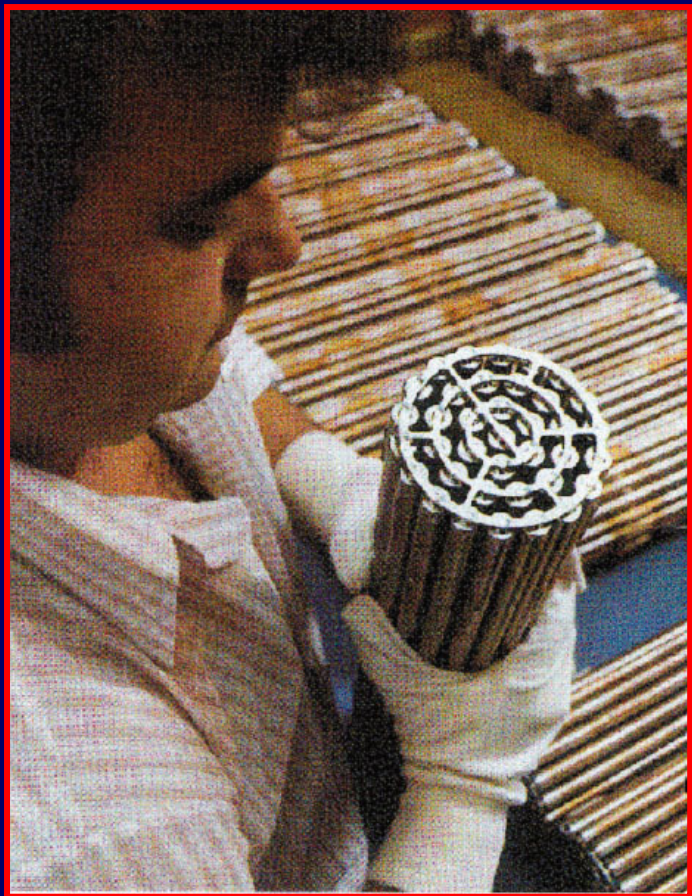
Alternatives Considered

- ❖ Leaving it where it is - storage at nuclear reactor sites
- ❖ Placing it deeply in rocks of the Canadian Shield (AECL Concept)
- ❖ Establishing a centralized facility and storing it either above or below ground
- ❖ Eleven other alternatives which have been set aside (three to be watched over time in case developments suggest a closer look)

Reactor Site Locations in Canada



Fuel Bundle and Uranium Pellet



Water Pool Storage of Used Nuclear Fuel

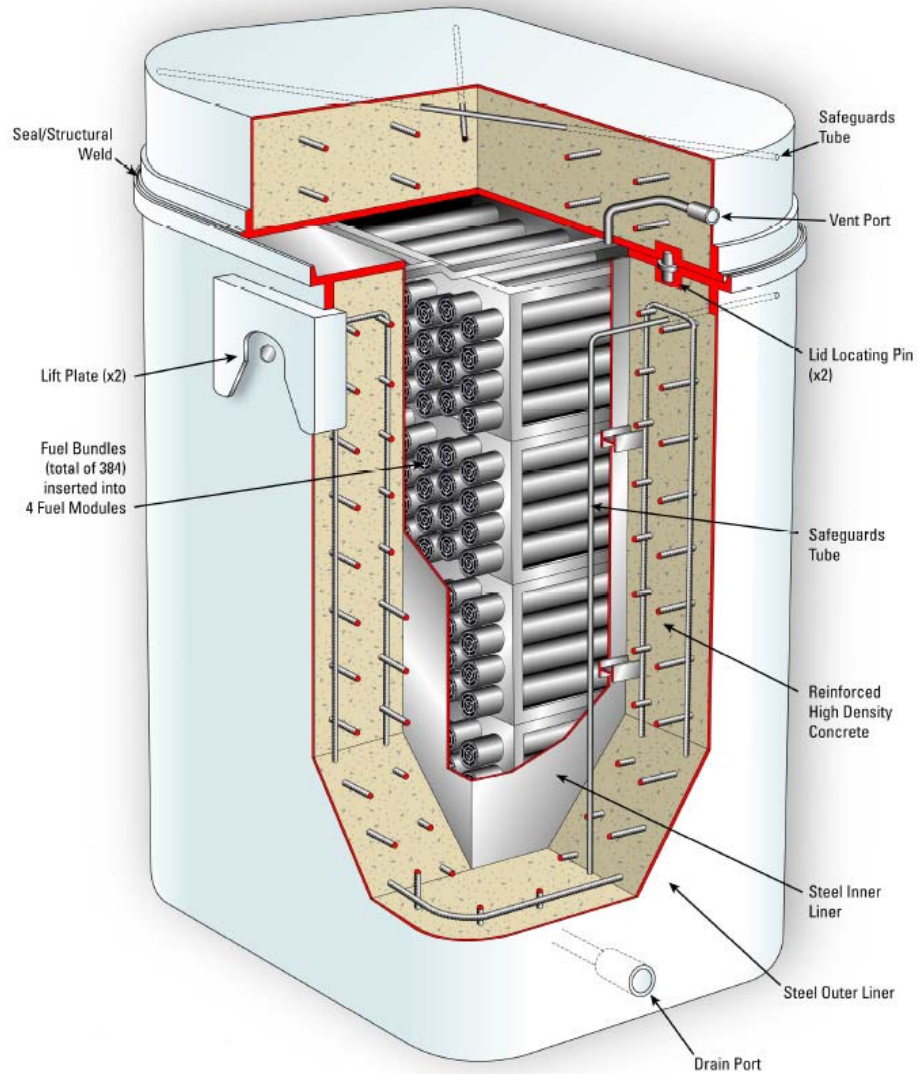


- Used nuclear fuel is initially very hot and highly radioactive
- Initially it is stored in water pools in reactor buildings for cooling and shielding
- After 7 – 10 years it can be transferred to dry storage

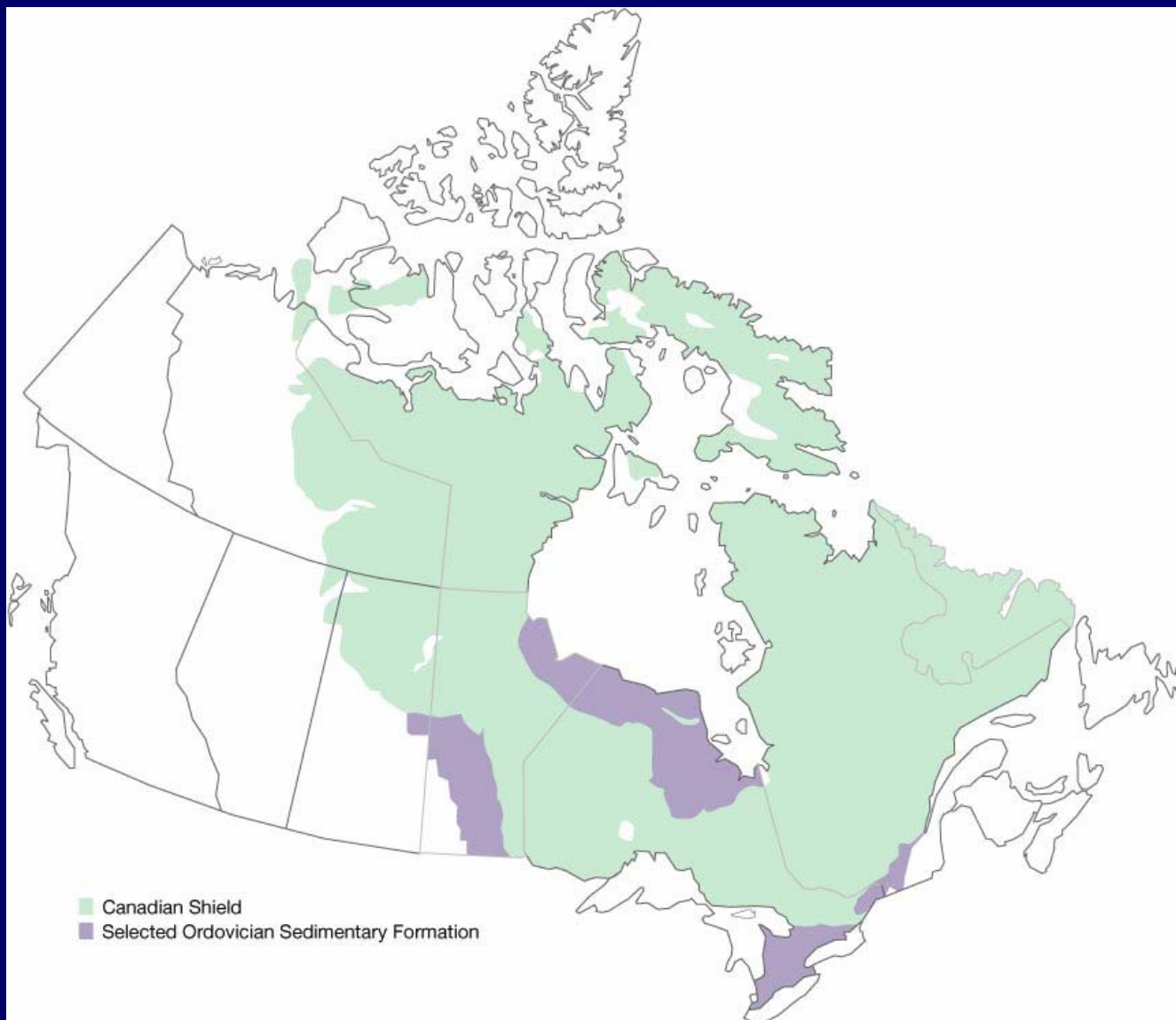
Dry Storage Cask (Pickering)



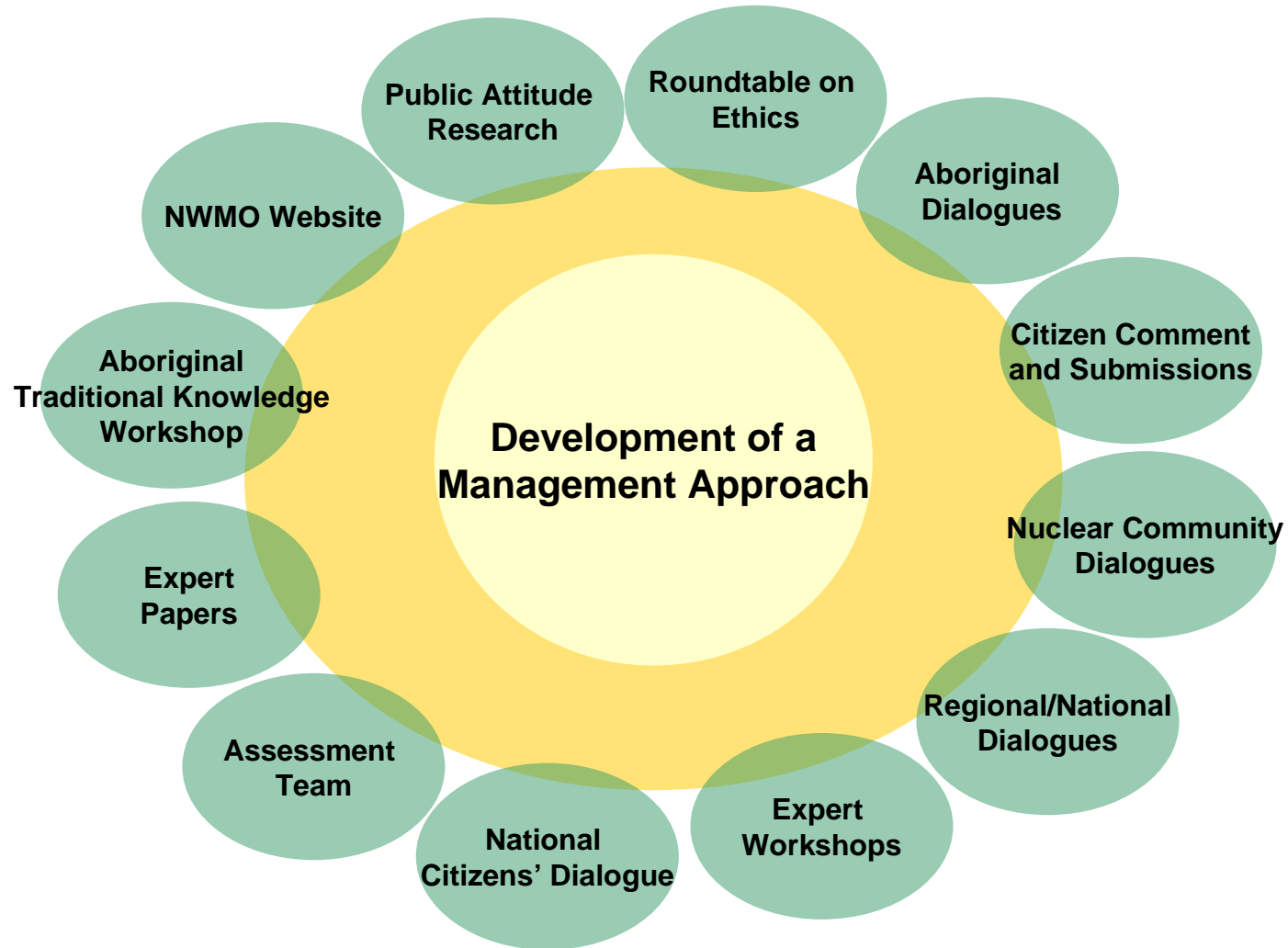
Dry Storage Container



Potentially Suitable Geologic Terrain for the “Deep” Storage Alternatives



A Diversity of Voices Have Been Sought Out Through A Range of Mechanisms



Aboriginal Dialogue - Goal

- ❖ To build the needed foundation for a long-term, positive relationship between NWMO and the aboriginal people of Canada

Aboriginal Dialogue – “National” Agreements

- ❖ Assembly of First Nations (AFN)
- ❖ Métis National Council (MNC)
- ❖ Inuit Tapiriit Kanatami (ITK)
- ❖ Congress of Aboriginal People (CAP)
- ❖ Pauktuutit Inuit Women’s Association
- ❖ Native Women’s Association of Canada (NWAC)

Aboriginal Dialogue – Regional/Local Agreements

- ❖ Ontario Métis Aboriginal Association (OMAA)
- ❖ Northern Saskatchewan Local Dialogues
 - ➔ Sakitawak Metis Society – Métis, First Nations, community representatives, and uranium mining Companies
 - ➔ La Ronge Community Dialogue
- ❖ Eabametoong First Nation, Fort Hope, Ontario
- ❖ East Coast First People's Alliance (ECFPA), New Brunswick
- ❖ The Western Indian Treaty Association (WITA)
- ❖ The Atlantic Policy Conference of First Nation Chiefs (APCFNC)
- ❖ The Union of New Brunswick Indians (UNBI)
- ❖ The Federation of Saskatchewan Indian Nations (FSIN)

Aboriginal Dialogue – Other Activities

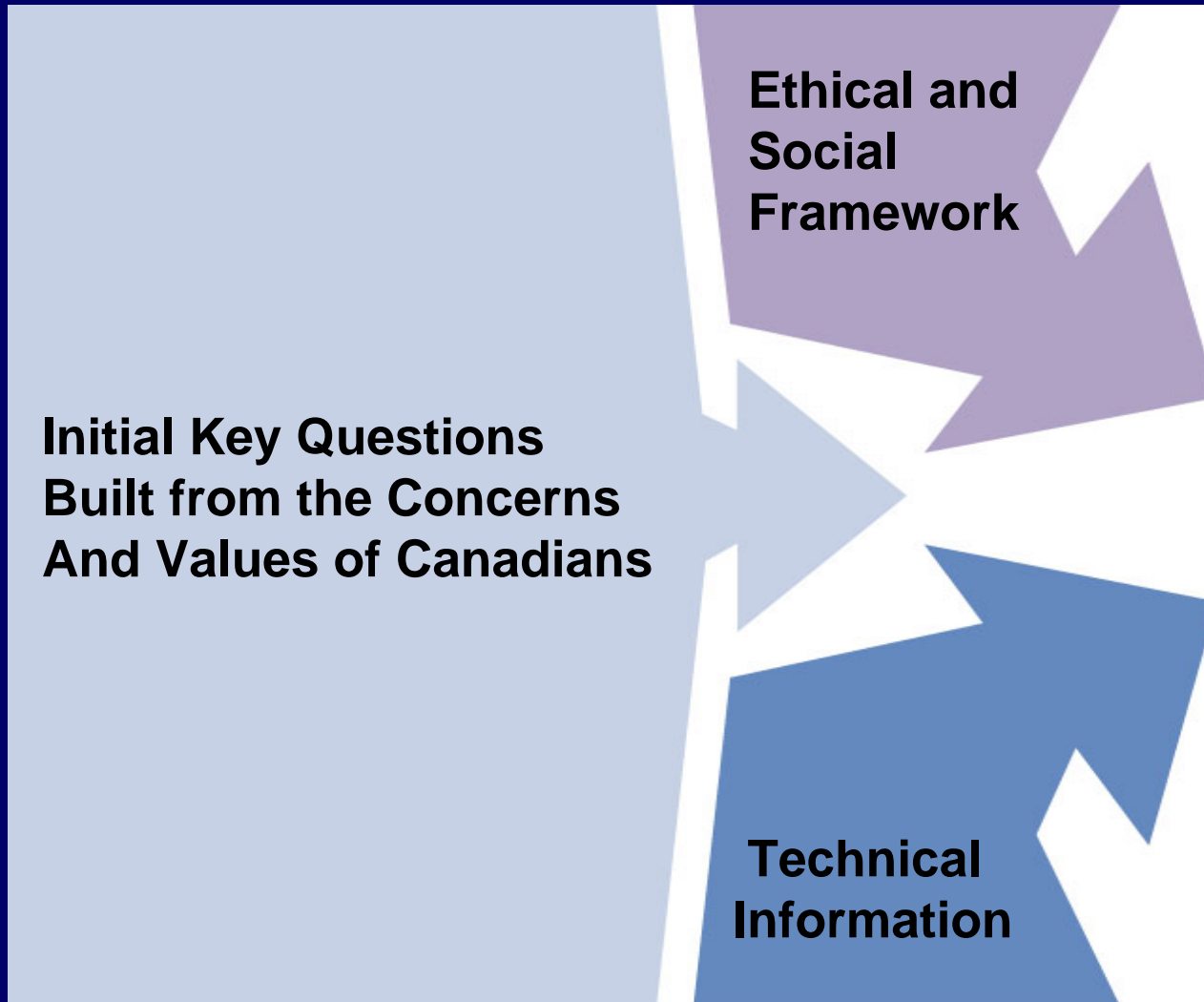
- ❖ Aboriginal involvement in NWMO activities
 - Advisory Committee
 - Scenarios Team
 - Ethics Round Table
 - Regional Dialogues
- ❖ Early Outreach
- ❖ Traditional Knowledge Workshop, 24-25 September 2003
- ❖ Youth Dialogue, Northern Saskatchewan 4 August 05
- ❖ Elders' Forum, 25 – 27 August 05

Aboriginal Dialogue - Looking Ahead

- ❖ Emphasis on dialogue at the local level involving those who may be directly affected by siting or transportation processes



Building a Way to Compare/Assess the Alternatives



Key objectives to be “best” met by the “best” management strategy

What we Heard: Key Citizen Values

- ❖ ***Safety from harm to people and the environment is the overarching requirement***
- ❖ ***We have a responsibility to ourselves and to future generations to deal with the problems we create***
- ❖ ***We need to build in a capacity to respond to new knowledge***
- ❖ ***We have a duty to use all resources with care and to conserve – leaving a sound legacy for future generations***

What we Heard: Key Citizen Values

- ❖ Governments are ultimately accountable – but ***citizens, experts, and stakeholders must be involved in decision-making; honour and respect must be shown*** be all
- ❖ We need to continue to ***invest in informing citizens and in increasing knowledge***
- ❖ The ***best decisions reflect broad engagement and many perspectives*** – we all have a role to play

What we Heard: Ethical Principles

- ❖ ***Respect for Life*** – in all its forms; minimization of harm to people and other sentient creatures; respect for people and cultures
- ❖ ***Respect for future generations*** – of people, other species and the biosphere as a whole
- ❖ ***Justice across groups, regions, and generations; fairness*** – to everyone affected and particularly minority and marginalized groups
- ❖ ***Sensitivity to differences*** in values and interpretation that different individuals and groups bring to the dialogue

What we Heard:

Key Assessment/Design Factors

- ❖ **Fairness.** *To ensure fairness (in substance and process) in the distribution of costs, benefits, risks and responsibilities within this generation and across generations*
- ❖ **Public Health and Safety.** *To ensure public health and safety.*
- ❖ **Worker Health and Safety.** *To ensure worker health and safety.*
- ❖ **Community Well-being.** *To ensure community well-being.*

What we Heard:

Key Assessment/Design Factors

- ❖ **Security.** *To ensure security of facilities, materials, and infrastructure.*
- ❖ **Environment.** *To ensure environmental integrity.*
- ❖ **Economic Viability.** *To design and implement a management approach that ensures economic viability of the waste management system, while simultaneously contributing positively to the local economy.*
- ❖ **Adaptability.** *To ensure a capacity to adapt to changing knowledge and conditions over time.*

What has the NWMO Heard through the Aboriginal Dialogues?

Many insights/concerns are consistent with the broader public dialogue:

1. the highest priority concern is for ***safety and security for people and the environment***



What has the NWMO Heard through the Aboriginal Dialogues?

2. a close second concern is for the ***fairness in the distribution of costs, benefits and responsibilities***
3. many see the ***need for a discussion of energy policy***; they articulate a desire to reduce energy use in general and nuclear energy in particular thus limiting the ongoing production of used nuclear fuel in the first place; some argued that waste reduction seen in this way should be considered within the NWMO mandate
4. many argued for ***review of the complete cycle of nuclear materials*** from mining through long-term management of all associated wastes

What has the NWMO Heard through the Aboriginal Dialogues? (cont'd)

5. **waste importation is not acceptable** to most Aboriginal people; some expressed a fear that NAFTA would force Canada to accept waste from the United States
6. **research is needed** on: the nature of the hazard, alternative energy sources, ways of getting more energy out of the waste and/or ways of reducing the hazard, Traditional Knowledge and its application in this case



What has the NWMO Heard through the Aboriginal Dialogues? (cont'd)

Other concerns reflect a uniquely Aboriginal perspective:

1. **Consultation.** the NWMO-supported dialogue does not consist of “consultation” as required by the law.
2. **Fairness in the Distribution of Costs, Benefits, Risks, and Responsibilities.**
 - Populated areas vs. “remote,” North vs. south; urban vs. rural;
 - Is a particular concern that economic leverage will be used to unfairly persuade and economically-depressed Aboriginal community to accept the waste trading short-term gain for long-term problems.

What has the NWMO Heard through the Aboriginal Dialogues? (cont'd)

- 3. *Trust.*** Many are suspicious of government, the nuclear industry, the power utilities, the NWMO, and the dialogue; however, some wish to find a way forward based on mutual respect, and take part in finding the needed strategy
- 4. *Recognition of Aboriginal Rights, Treaties, and Land Claims*** is an essential step in building the needed trust; NWMO should express a formal commitment to this.



What has the NWMO Heard through the Aboriginal Dialogues? (cont'd)

5. *Aboriginal Traditional Knowledge and Wisdom* is essential to apply to NWMO's work as an equal partner with "western science."



What has the NWMO Heard through the Aboriginal Dialogues? (cont'd)

- 6. *Responsibility.*** Some argue that because the decision to create the waste in the first place was not theirs, responsibility to address the issue is not theirs. Others articulate an overarching responsibility to play a part in protecting people and the environment.
- 7. *Ongoing Engagement.*** Overwhelming call for ongoing engagement – particularly at the community level.

In Summary – Applying What we Heard to the Assessment of Alternatives:

- ❖ The three technical methods required for study by law have distinct strengths and limitations
- ❖ ***No one method perfectly addresses all of the values and objectives that are important to Canadians including the Aboriginal community***

The NWMO Draft Recommendation: Adaptive Phased Management

Adaptive Phased Management

centralized containment and isolation of Canada's used nuclear fuel deep underground; at all times, used fuel is monitored, retrievable, safe and secure.

With a Three-Part Phased Implementation Strategy

- ❖ Phase 1 (say 0 – 30 years)
- ❖ Phase 2 (say 30 – 60 years)
- ❖ Phase 3 (say 60 – 300 years)

Key Characteristics of the Fourth Option

1. Is based on centralized storage, eventually deep underground
2. Facilitates continuous monitoring and retrievability until future generations decide otherwise

Key Characteristics of the Fourth Option (cont'd)

3. Uses a long-term process of phased implementation that:
 - entrenches citizen involvement and genuine choice
 - is based on sequential decision-making that provides the opportunity for society to assess the wisdom of proceeding with each step
 - facilitates continuous learning and the flexibility needed to adapt to changing environmental and societal conditions

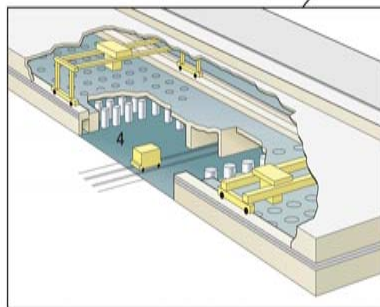
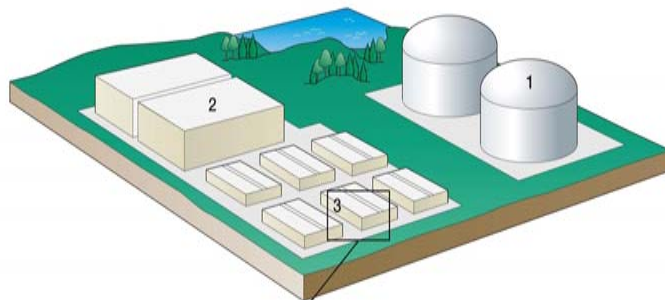
Key Characteristics of the Fourth Option (cont'd)

- 4. Commits** this generation of Canadians to take the first steps
- 5. Is rooted in the values and ethics of Canadians** as best as we can ascertain

Phase 1 - First 30 years (approximately)

Preparing for Central Used Fuel Management

- ❖ Continue Dialogue; develop siting process
- ❖ Used nuclear fuel remains safely stored at reactor site locations
- ❖ Continue R&D in repository technology
- ❖ **Select** site for central facility
- ❖ Complete Environmental Assessment & obtain Site Licence
- ❖ Build an underground research facility
- ❖ **Decide** (Y/N) to build a shallow underground storage facility at the central site (while developing deep repository)

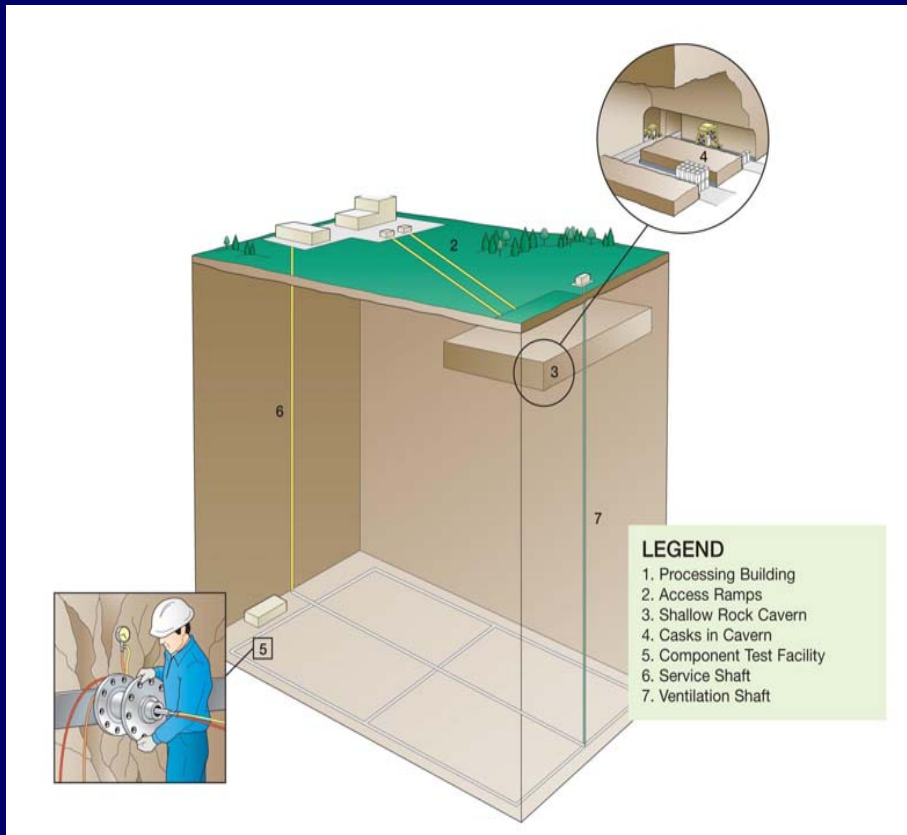


LEGEND

- 1. Nuclear Generating Station
- 2. Processing Building
- 3. Storage Buildings
- 4. Casks in Storage

Phase 2 - 30 to 60 years (approximately)

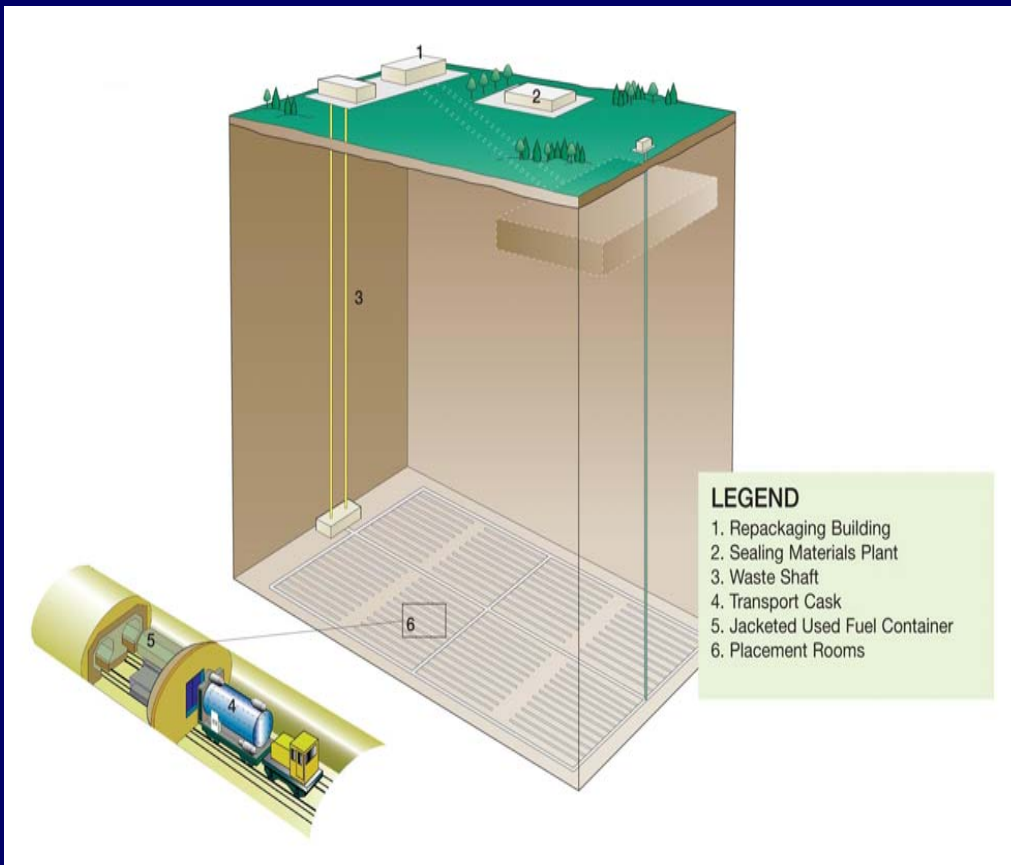
Central Storage and Technology Demonstration



- ❖ Continue Dialogue
- ❖ Transport used fuel from reactor sites (if central storage facility built)
- ❖ Obtain Operating Licence for shallow underground storage
- ❖ Confirm suitability of site & demonstration of long-term isolation technology
- ❖ Complete final design & safety analysis needed for licensing deep repository and associated facilities
- ❖ **Decide** when to construct deep geologic repository

Phase 3 - 60 to several hundred years

Long-Term Containment, Isolation and Monitoring



- ❖ Continue Dialogue
- ❖ Transfer used fuel from storage to surface for repackaging
- ❖ Place used fuel in deep repository
- ❖ Continue monitoring used fuel
- ❖ Used fuel remains accessible for retrieval, if required
- ❖ Future society will **decide** when to close & decommission deep repository & continue postclosure monitoring

What Does Adaptive Mean?

It means that there is an explicit built in capacity to:

- learn continuously;***
- periodically review the overall direction; and***
- adjust that direction according to new knowledge, conditions, and values***

Key Implementation Issues

- ❖ ***Institutions and governance***; accountability and transparency; NWMO to be implementing agency
- ❖ ***Financial surety*** – trust funds
- ❖ ***Establishing a site*** – willing host community where technical and scientific criteria are met; where community support is demonstrated, and where the aspirations of people are respected
- ❖ ***Four province focus***: Ontario, Quebec, New Brunswick, and Saskatchewan; though others may express interest
- ❖ ***Citizen engagement***, continuing collaboration and ongoing role in decision-making

In Summary

1. ***Unique time dimension*** – longer than recorded history
2. Pre-eminent requirement to ensure **safety and security for people and the environment**
3. ***Sustainability in action*** – social acceptability, technical soundness, environmental responsibility, economic feasibility
4. ***Citizen engagement*** - collaborative approach