

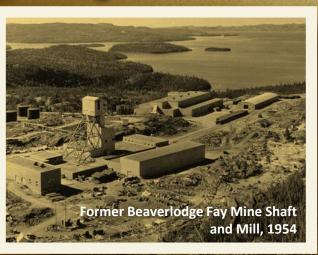




## **Request for Release of 20 Beaverlodge Properties from CNSC Licensing**

Commission Hearing October 2, 2019 CMD 19-H6.A





e-DOC (PPT) 5902480 e-DOC (PDF) 5996448







CMD 19-H6.A – Request for Release of 20 Beaverlodge Properties from Licensing

## Purpose

- Request for release of 20 Beaverlodge properties from CNSC licensing
  - Request regarding the transfer of 19 properties to Saskatchewan's Institutional Control Program (ICP)
  - Provide information on unrestricted release of 1 property from regulatory oversight
- Provide evidence on meeting performance objectives and indicators for all properties under consideration





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## **Presentation Outline**

- ICP in Saskatchewan
- Site overview and history
- Performance objectives and indicators
- Properties proposed for release
- Engagement and participant funding
- Conclusions and recommendations



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INSTITUTIONAL CONTROL PROGRAM IN SASKATCHEWAN



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## Institutional Control Program in Saskatchewan Background

- Government of Saskatchewan is unique in Canada in that it has established an ICP
- ICP has been in place since 2007
- First uranium properties in the ICP were 5 properties from the Beaverlodge Project in 2009
- CMD 18-M38 Overview of the Institutional Control Program for Decommissioned Mine and/or Mill Sites in Saskatchewan presented in October 2018



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## Institutional Control Program in Saskatchewan What is the ICP?

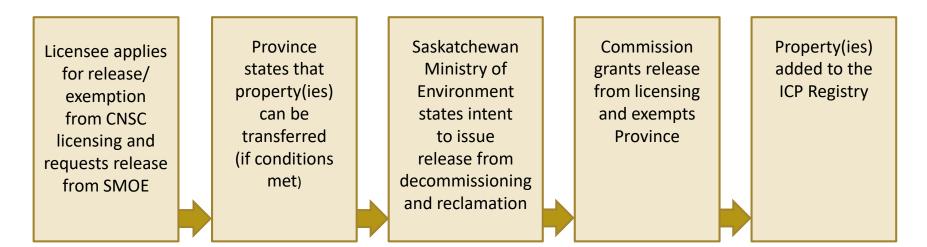
- ICP outlines a formal regulatory process for long-term property management by the Province
- Transfer of properties/facilities into ICP occurs after:
  - Decommissioning complete
  - Site is safe and stable
  - Sufficient funds in place for monitoring and maintenance and unforeseen events
  - $\sqrt{}$  Not regulated by any other level of government

## Process ensures only low risk properties enter ICP and remain low risk in ICP



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## Institutional Control Program in Saskatchewan Summary of Process



Canada



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# Institutional Control Program in Saskatchewan CNSC's Role

Province accepts into the ICP only post-decommissioned properties that are not licensed or are exempted from CNSC licensing (subsection 3(f) of *The Reclaimed Industrial Sites Regulations*)

## Legislative Authority

- Section 7 of the Nuclear Safety and Control Act
- Section 11 of the General Nuclear Safety and Control Regulations

Releases from licensing and exemptions only considered if properties are safe



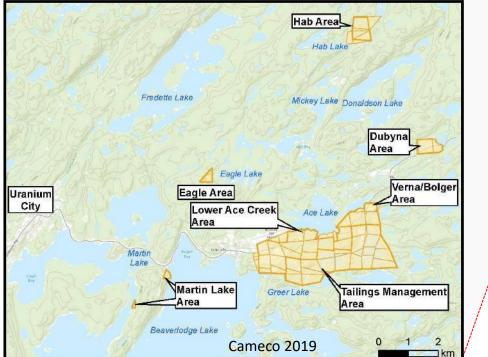
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## SITE OVERVIEW AND HISTORY



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# Site Overview Location of Beaverlodge Site







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## Site Overview **History**

### **Operated** (1952-1982)

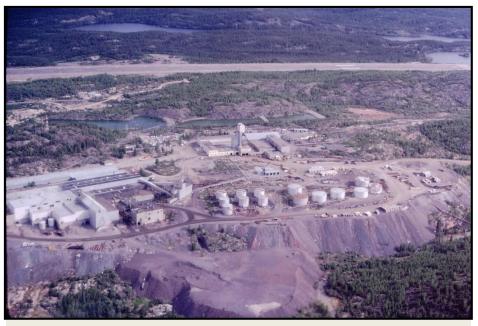
- Eldorado Nuclear Limited, a Federal Crown Corporation
- Past operations left historical environmental impacts

### Decommissioned (1982-1985)

- Approved by provincial and federal regulatory bodies
- All buildings and structures were removed

### Monitoring and Maintenance (1985-Present)

- 1988: Eldorado Nuclear Limited and Saskatchewan Mining and Development Corporation merged to form Cameco Corporation
- Cameco is planning to transfer the site back to the province through Saskatchewan's ICP



Former Beaverlodge Fay Mine and Mill, 1977



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# Site Overview Recent CNSC Licencing

#### **Licence Renewal**

- Commission decision on the exemption of 5 properties
- Commission issued a 3-year licence for Cameco to complete a feasibility investigation of remedial options

2009

2010

#### Annual Updates

- From 2009-2013, more than 20 studies completed and remedial options were selected
- CNSC staff reviewed and accepted the results of these studies and the proposed path forward

#### **Licence Renewal**

Commission accepted path forward and issued a 10-year licence for Cameco to implement and assess the success of the remedial options and continue to manage the site

#### Commission Update

- Defined performance objectives and measurable performance indicators
- Property by property timeline estimates for institutional control transfer eligibility

#### Commission Decision

•Request for release of 20 properties

•Exempt province (19 properties) to enable transfer to ICP

•45 licensed properties remaining at Beaverlodge

2011

2012

### 2013

## 2014

#### 2019

12



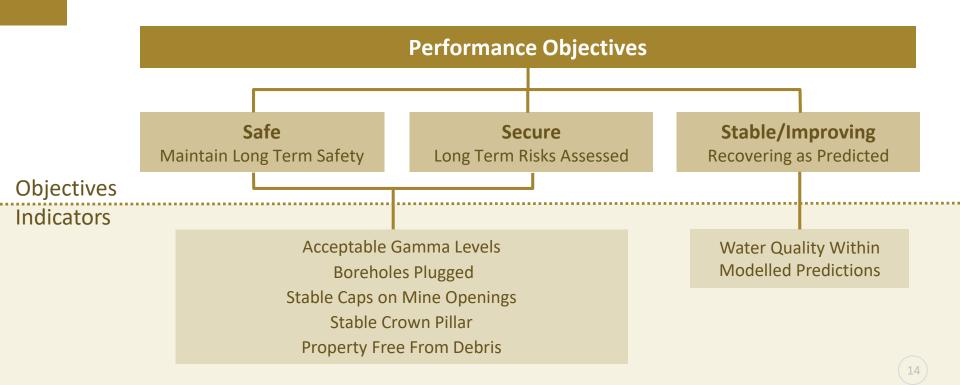
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## PERFORMANCE OBJECTIVES AND INDICATORS



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## Performance Objectives and Indicators

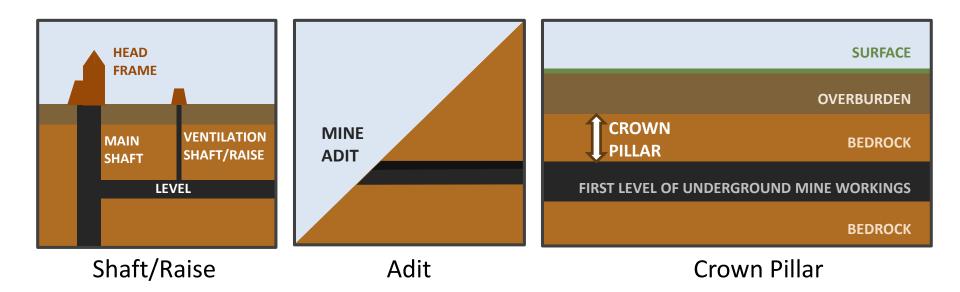






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# Performance Indicators Glossary





Commission Hearing, October 2, 2019 CMD 19-H6.A – Request for Release of 20 Beaverlodge Properties from Licensing

Performance Indicator Acceptable Gamma Levels

### Purpose

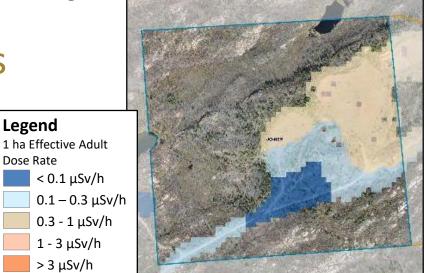
Reduce gamma exposure in accordance with as low as reasonably achievable (ALARA) principle

## **Regulatory Acceptance Criteria**

Reasonable use scenario demonstrating gamma levels at the site are acceptable

### Update

- 2014 site wide gamma scan completed
- 2015 radiation risk evaluation report submitted
- Reports accepted by CNSC staff
- Rescanning of newly disturbed areas completed as required
- Gamma radiation levels acceptable and doses predicted to be well below public dose limit (< 1 mSv/year)</li>



Gamma scan results for JO-NES property (Cameco 2018)

Gamma radiation levels for 20 properties acceptable and doses predicted to be well below public dose limit

lanada



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## Performance Indicator Boreholes Plugged

### Purpose

Prevent potential for groundwater outflow to the surface

### **Regulatory Acceptance Criteria**

All boreholes have been plugged at the time of transfer to institutional control

### Update

- All boreholes identified have been sealed
- Inspections completed on all 20 properties proposed for release
- CNSC staff will continue to verify that all boreholes on licensed properties are sealed during inspections

### Boreholes on 20 properties (if present) sealed



Beaverlodge borehole (undated photo)



Sealed borehole (CNSC June 2017)

## Canada



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## Performance Indicator Stable Mine Openings

### Purpose

Ensure long term safety of the site

### **Regulatory Acceptance Criteria**

Caps have been replaced and signed off by a qualified person

### Update

- Majority of stainless steel caps installed
- Updated performance indicator to include all mine openings (Stable Mine Openings)
- CNSC staff will continue to inspect remaining cap installations on licensed properties



Ace 130 raise cap installed in 2017 (CNSC May 2018)

All mine openings (if present) on 20 properties secure and safe

Canada



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## Performance Indicator Stable Crown Pillar

### Purpose

Ensure long term safety of the site

### **Regulatory Acceptance Criteria**

Crown pillar (CP) assessed, remediated if required, and signed off by a qualified person

### Update

- CP assessment completed in 2014, report prepared and accepted
- Remediation completed for Ace stope
- CP monitoring added to geotechnical inspection program
- CNSC staff will continue to verify that all boreholes on licensed properties are sealed during compliance inspections



Ace Crown Pillar Remediation (CNSC May 2018)

Crown pillars on 20 properties (if present) stable and low risk



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## Performance Indicator Site Free from Debris

### Purpose

Ensure removal of debris

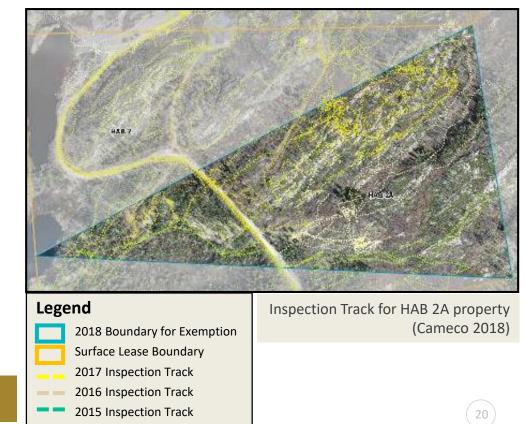
### **Regulatory Acceptance Criteria**

Site free of former mining debris at the time of transfer to institutional control

### Update

- Site wide inspection program completed from 2015 to 2017
- Evidence of inspections included in request for release
- CNSC staff will continue to review submissions and verify information through compliance inspections on licensed properties

### Debris on 20 properties removed





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## Performance Indicator Water Quality Within Modelled Predictions

### Purpose

Verify natural recovery and remedial options result in localized improvements in water quality

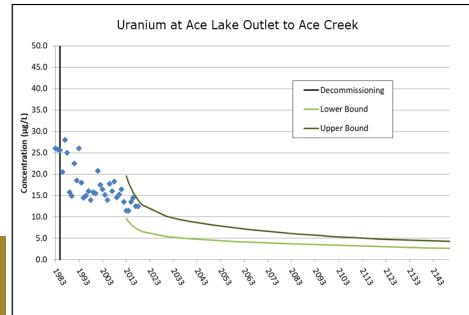
### **Regulatory Acceptance Criteria**

Water quality data is stable/improving

### Update

Water quality sample collection and comparison with predictions is ongoing

CNSC staff will continue to verify water quality trends in comparison to modelled predictions for licensed properties





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## **PROPERTIES PROPOSED FOR RELEASE**

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## Location of 20 Properties Proposed for Release

Eagle
-------

Eagle 1

Dubyna

JO-NES

### Verna/Bolger

- Bolger 2
- ACE 5

- HAB
  - HAB 3
  - HAB 6
  - EXC 2
  - HAB 2A
  - **Martin Lake**
  - RA 6
  - RA 9

- Lower Ace Creek
- ATO 26
- EXC ATO 26
- URA MC
- EXC ACE 1
- ACE 10
  - ACE 2
  - EXC ACE 3
  - URA 3
  - URA 5
  - EXC URA 5

HAB Area Legend Properties transferred to ICP Properties NOT transferred to ICP Consideran Natas Property Area Dubyna Area Eagle Area Verna/Bolger Area Lower Ace Creek Area Ace Lett discial state Tailings Management Area Martin Lake Area





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## **Comparison to Performance Indicators**

Area	Property	Performance Objectives/ Indicators								
			Stable / Improving	Release from Licensing						
		Acceptable Gamma Levels	Boreholes Plugged	Stable Mine Openings*	Stable Crown Pillar	Property Free from Debris	Water Quality Within Modelled Predictions	Release & Exempt Province from Licensing	Release without Exemption	Transfer to ICP
HAB <sup>1</sup>	НАВ З	$\checkmark$	√	n/a	$\checkmark$	$\checkmark$	n/a	√		$\sqrt{(\text{portion})}$
	НАВ 6	1	1	n/a	n/a	$\checkmark$	n/a	√		√ (portion)
	EXC 2	$\checkmark$	1	n/a	n/a	$\checkmark$	n/a		1	No
	НАВ 2А	$\checkmark$	1	1	√	$\checkmark$	n/a	1		$\checkmark$
Dubyna	JO-NES	$\checkmark$	1	1	√	$\checkmark$	n/a	1		√ (portion)
Verna/ Bolger	Bolger 2	$\checkmark$	n/a	n/a	n/a	$\checkmark$	n/a	1		$\checkmark$
	ACE 5	$\checkmark$	1	n/a	√	$\checkmark$	n/a	√		$\checkmark$
Eagle	Eagle 1	V	V	V	n/a	$\checkmark$	n/a	$\checkmark$		√ (portion)





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## Comparison to Performance Indicators (cont'd)

Area	Property	Performance Objectives / Indicators								
			:	Safe & Secure	9	Stable / Improving	Release from Licensing			
		Acceptable Gamma Levels	Boreholes Plugged	Stable Mine Openings*	Stable Crown Pillar	Property Free from Debris	Water Quality Within Modelled Predictions	Release & Exempt Province from Licensing	Release without Exemption	Transfer to ICP
Martin	RA 6	√	n/a	$\checkmark$	$\checkmark$	$\checkmark$	n/a	$\checkmark$		$\sqrt{(\text{portion})}$
Lake	RA 9	√	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	n/a	$\checkmark$		$\sqrt{(portion)}$
	ATO 26	$\checkmark$	n/a	n/a	n/a	$\checkmark$	n/a	$\checkmark$		√ (portion)
	EXC ATO 26	√	n/a	n/a	$\checkmark$	$\checkmark$	n/a	$\checkmark$		$\checkmark$
	URA MC	$\checkmark$	√ **	n/a	$\checkmark$	$\checkmark$	n/a	$\checkmark$		$\checkmark$
	EXC ACE 1	$\checkmark$	n/a	n/a	n/a	$\checkmark$	n/a	$\checkmark$		$\sqrt{(\text{portion})}$
Lower Ace Creek	ACE 10	$\checkmark$	n/a	n/a	n/a	$\checkmark$	n/a	$\checkmark$		√ (portion)
	ACE 2	$\checkmark$	n/a	n/a	$\checkmark$	$\checkmark$	n/a	$\checkmark$		$\checkmark$
	EXC ACE 3	$\checkmark$	n/a	n/a	$\checkmark$	$\checkmark$	n/a	$\checkmark$		$\checkmark$
	URA 3	√	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	n/a	$\checkmark$		√ (portion)
	URA 5	$\checkmark$	$\checkmark$	n/a	$\checkmark$	$\checkmark$	n/a	$\checkmark$		$\checkmark$
	EXC URA 5	$\checkmark$	$\checkmark$	n/a	$\checkmark$	$\checkmark$	n/a	$\checkmark$		$\checkmark$

\*\* Boreholes located adjacent to property were sealed



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## **HAB** Properties

#### **HAB 3**

- No mining disturbance
- Underground mine extends under small part of property
- Portion to ICP (monitoring)
- AN-5 monitoring station

#### HAB 6

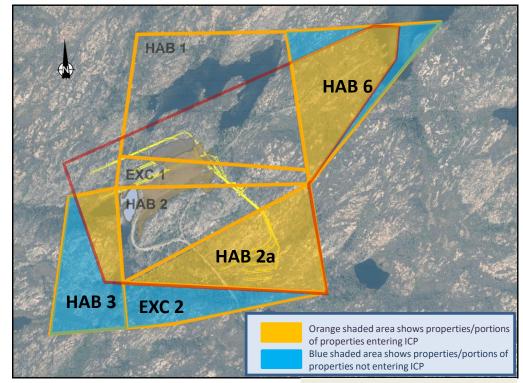
- No mining disturbance
- Trail composed of waste rock
- Portion to ICP (monitoring)

#### HAB 2A

- Backfilled raise with cap
- Underground mine extends under property
- Stable crown pillar
- Entire property to ICP (monitoring & maintenance of cap)

#### EXC 2

- No mining disturbance
- No transfer to ICP
- No exemption required



HAB Properties (Cameco 2019)

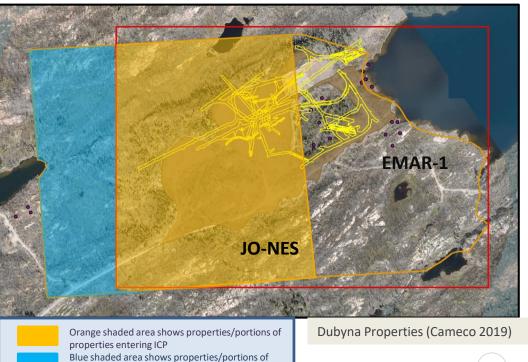


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## **Dubyna** Property

#### **JO-NES**

- Portion of backfilled open pit
- Waste rock
- Adit (entrance backfilled)
- Two ventilation raises with caps
- Portion of property to ICP (monitoring & maintenance of caps)



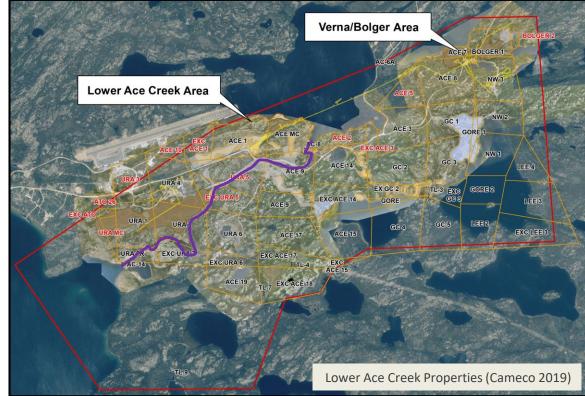
properties not entering ICP





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## Verna Bolger & Lower Ace Creek Properties





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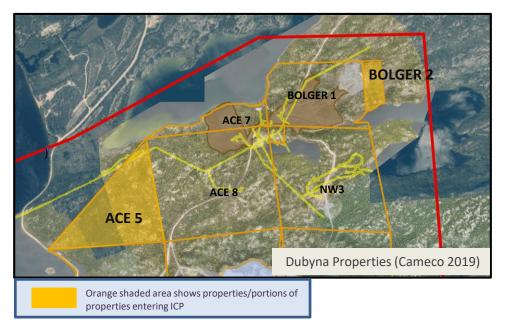
## Verna / Bolger Properties

#### Bolger 2

- Backfilled spur pit connected to main Bolger 1 open pit
- No underground workings
- Entire property to ICP (monitoring)

#### **ACE 5**

- No mining disturbance
- Portion of underground mine may extend under property at > 100 m depth
- Powerlines (removed)
- Entire property to ICP (monitoring)





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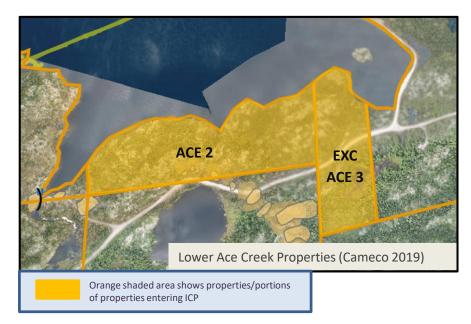
## Lower Ace Creek Properties

### EXC ACE 3

- No mining disturbance
- Portion of underground mine may extend under property > 91 m depth
- Entire property to ICP (no monitoring or maintenance)

#### **ACE 2**

- No mining disturbance
- Remediated spilled tailings on southern portion of property
- Portion of underground mine may extend under property > 91 m depth
- Entire property to ICP (monitoring)



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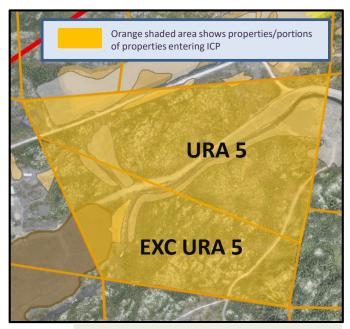
## Lower Ace Creek Properties

#### URA 5

- No mining disturbance
- Remediated spilled tailings on portion of property
- Portion of underground mine may extend under property at approximately 200 m depth
- Entire property to ICP (monitoring)

#### EXC URA 5

- Waste rock and remediated spilled tailings on eastern portion of property
- Portion of underground mine may extend under property approximately 200 m depth
- Entire property to ICP (monitoring)



Lower Ace Creek Properties (Cameco 2019)



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## Lower Ace Creek Properties

#### EXC ACE 1

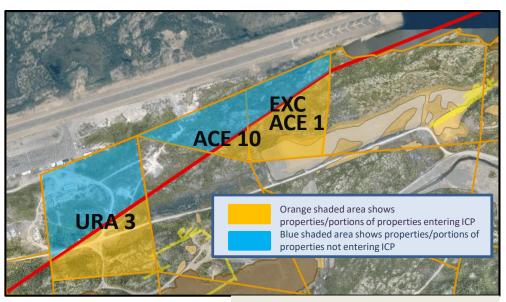
- No mining disturbance
- Remediated spilled tailings on southern portion of property
- Portion to ICP (monitoring)

#### **ACE 10**

- No mining disturbance
- Portion to ICP (due to ICP boundary for area)

#### URA 3

- No significant mining activities
- Raise with cap
- Underground mine extends under property
   > 45 m depth
- Portion to ICP (monitoring and maintenance of cap)



Lower Ace Creek Properties (Cameco 2019)



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## Lower Ace Creek Properties

#### ATO 26

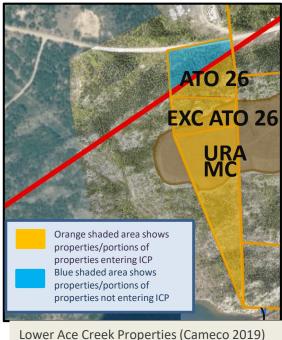
- No mining disturbance
- Buffer around known underground mine workings extends onto southern portion of property
- Portion to ICP (no monitoring or maintenance)

#### EXC ATO 26

- Waste rock on southern portion of property
- Portion of underground mine may extend under property at > 76 m depth
- Entire property to ICP (monitoring)

#### URA MC

- Waste rock on property
- Portion of underground mine extends under portion of property at approximately 91 m depth
- Entire property to ICP (monitoring)



Canada

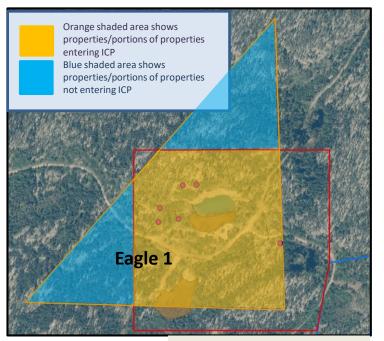


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## Eagle Area Property

### Eagle 1

- Backfilled open pit
- Flooded open pit (area of 2,000 m<sup>2</sup>, depth of 9 m), no water quality performance indicator for pit
- Surface uranium and radium-226 above guidelines but low risk
- Waste rock on property
- Portion of property to ICP (monitoring, including water quality samples)



Canada



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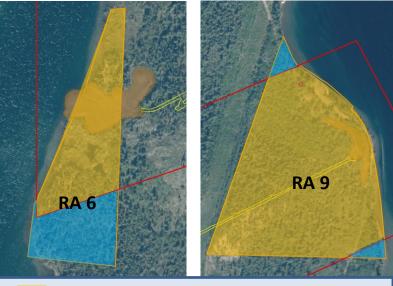
## Martin Lake Properties

### **RA 6**

- Adit to underground workings sealed with steel grate
- Waste rock on property
- Stable crown pillar
- Portion of property to ICP (monitoring and maintenance of adit closure)

#### RA 9

- Adit to underground workings backfilled with waste rock
- Waste rock on property
- Stable crown pillar
- Portion of property to ICP (monitoring)



Orange shaded area shows properties/portions of properties entering ICP Blue shaded area shows properties/portions of properties not entering ICP

Martin Lake Properties (Cameco 2019)





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## **Environmental Protection Review**

- CNSC staff performed an Environmental Protection Review under the Nuclear Safety and Control Act
- Project not on the project list and therefore no environmental assessment under the *Canadian Environmental Assessment Act*, 2012 was required

CNSC staff conclude there has been and will continue to be adequate provision for the protection of the environment as a result of the release of these properties





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# Long Term Monitoring, Maintenance and Reporting - ICP

- Monitoring and maintenance program proposed including funds for unforeseen events
- Monitoring costs of \$176,206 (2018 net present value) and unforeseen event amount of \$117,064 (2018 net present value)
- Government of Saskatchewan monitors and manages sites in ICP
- Reports on status of site in ICP published annually
- Site inspection reports initially produced every five years



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### ENGAGEMENT AND PARTICIPANT FUNDING





Commission Hearing, October 2, 2019 CMD 19-H6.A – Request for Release of 20 Beaverlodge Properties from Licensing

# Indigenous Engagement

- Beaverlodge site is situated within historic Treaty 8 (1899) as well as the Métis Nation-Saskatchewan - Northern Region 1
- CNSC staff identified First Nation and Métis groups which may have an interest in the proposed licensing decision

Athabasca Chipewyan First Nation (Treaty 8 Territory) Black Lake Denesuline First Nation (Treaty 8 Territory) Clearwater River Dene Nation (Treaty 8 Territory) Fond-du-Lac Denesuline First Nation (Treaty 8 Territory) Hatchet lake Denesuline First Nation Treaty 10 Territory) Métis Nation-Saskatchewan – Northern Region 1 Prince Albert Grand Council Ya'thi Néné Land and Resource Office



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# Participant Funding

Recipient	PFP funding awarded
Athabasca Chipewyan First Nation	\$19,525
Métis Nation - Saskatchewan	\$12,706
Saskatchewan Environmental Society	\$5,175
Ya'thi Néné Land and Resource Office	\$25,300
TOTAL	\$62,706



CNSC presentation, Uranium City (June 4, 2019)

CNSC's Participant Funding Program (PFP) is made available to Indigenous peoples, members of the public, and stakeholders Canada



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# CONCLUSIONS AND RECOMMENDATIONS





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# Conclusions

- All 20 properties proposed for release meet the applicable performance indicators and regulatory acceptance criteria
- Entry into ICP requires that the CNSC release these properties from licensing and exempt the government of Saskatchewan from CNSC licensing under the NSCA
- The ICP will provide sufficient regulatory oversight by a competent authority for those properties or parts of properties that require long-term monitoring and control
- Following entry into ICP, these properties will not pose an unreasonable risk to the health and safety of persons or the environment
- Monitoring and management of the remaining 45 properties continue to be conducted by licensee





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# **CNSC Staff Recommendations**

- Amend Waste Facility Operating Licence WFOL-W5-2120.0/2023 to remove 20 properties and update licence to the current CNSC standard format
- Exempt the government of Saskatchewan from CNSC licensing under the NSCA for the 19 properties, as presented, proposed for transfer to ICP





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# ANNEX 1 INTERVENTION COMMENTS





CMD 19-H6.A – Request for Release of 20 Beaverlodge Properties from Licensing

# Interventions

The following interventions are addressed

- CMD 19-H6.6 Saskatchewan Environmental Society
- CMD 19-H6.8 Ya'thi Néné Land and Resource Office
- CMD 19-H6.9 Athabasca Chipewyan First Nation
- CMD 19-H6.10 Métis Nation Saskatchewan



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# Intervention CMD 19-H6.6 Saskatchewan Environmental Society

#### Comment

1 Future Land Use Surveys of past and current use of specific land areas are used to evaluate public safety risk. We should expect populations to migrate northward in the future.

### **CNSC** Disposition

Once the properties are in the Institutional Control Program, use of the properties will be restricted through land use controls exercised by the government of Saskatchewan. The building of structures on the property, long term residence, etc. will be prevented through the controls in place under the Institutional Control Program. Occasion land use, including traditional use, is considered safe currently and into the future.



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# Intervention CMD 19-H6.6 Saskatchewan Environmental Society

#### Comment

2 Absence of Ecological / Wildlife Risks We are provided with no basis for assuming that residual contaminant levels will be insignificant to non-human organisms. This is particularly relevant for the various locations where tailings spills have been left uncovered *in situ*, this being justified on account of the contaminated area being difficult for people to access or because vegetation has become established. Neither of these factors will restrict access by animals, birds or insects. We did not find adequate reference to studies that would justify ignoring this issue.

### **CNSC** Disposition

As explained within CNSC staff's written CMD and this presentation, there have been numerous studies conducted for the Beaverlodge Project in order to develop the path forward report and to establish the performance indicators and regulatory acceptance criteria for the release of properties from licensing, however the CMD focuses on the criteria that was established and compares how the properties under consideration compare against the criteria. The risk from terrestrial wildlife exposure as a result of tailings was assessed by CNSC staff and the overall risk from such exposure has been determined to be low.

The potential health risks associated with traditional harvesting of country foods from local sources were evaluated as part of a two year country foods study initiated in 2010 by Cameco. The results from the study, which were reviewed and accepted by CNSC staff, were presented to Uranium City residents and the reports are available at the local library. The results indicate that traditional harvesting of country foods does not present health risks to Uranium City residents. This includes the consumption of fish from Lake Athabasca, Ace Lake, Crackingstone River, Dubyna Lake and Verna Lake. However, there is a healthy fish consumption guideline in place downstream of the Beaverlodge properties (such as Martin Lake and Beaverlodge Lake) and fish consumption should be limited from these waterbodies.

10



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# Intervention CMD 19-H6.6 Saskatchewan Environmental Society

#### Comment

3 Gaps in Inspection Tracks The accompanying maps of the tracks sometimes show areas where tracks are much further apart, e.g. 100 m. Given the apparent difficulty in carrying out a comprehensive visual inspection, what assumptions are made about the condition of the uninspected areas?

### **CNSC** Disposition

Prior to conducting the field surveys, Cameco completed a review of mining development records, plans, figures, etc. to locate mine structures such as shafts, raises, crown pillar locations, etc. and then verified the information in the field. Areas that can be walked were limited by geography (cliffs, water bodies, etc.) but all of these areas are considered unlikely to contain any mining related structures. CNSC and Saskatchewan Ministry of Environment staff also walk the properties as part of the inspection process. Recent inspections by both agencies focused on the 20 properties currently under consideration.



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# Intervention CMD 19-H6.6 Saskatchewan Environmental Society

#### Comment

4 Downstream Water Quality Monitoring In several cases no water monitoring is to be required before eventual transfer of all of the properties. In fact the wording is often ambiguous about an apparent gap in monitoring between transfer of a specific property and development of a regional monitoring program after all transfers take place. This is explained on the basis that a separate downstream water monitoring process will take place once all the properties are ready to be transferred. Should this not be established before a property is transferred?

### **CNSC** Disposition

Cameco is required to conduct water quality monitoring at the Beaverlodge site, including monitoring of all of those stations that have long term water quality predictions. The licensed monitoring program will continue and is independent of the current request to release properties from the licence.

In accordance with Cameco's Path Forward plan and the establishment of performance indicators and regulatory acceptance criteria, Cameco will be expected to meet water quality predictions at the established stations prior to the applicable properties being released from licensing.



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# Intervention CMD 19-H6.6 Saskatchewan Environmental Society

#### Comment

5 Crown Pillar Stability

Several of the properties are designated to have crown pillar stability monitored under the IC program. Will this be done simply by looking for subsidence (which would presumably indicate that a pillar has probably already collapsed), or is there some way that the condition of crown pillars can be inspected from the surface? What remedial action would be taken if it were found that a pillar was in poor condition? Most of the risk assessments say that there is a "low risk" of subsidence occurring; how is "low risk" defined in this context?

### **CNSC** Disposition

A crown pillar stability assessment was completed in 2014 and 2015 and the results of this assessment were reviewed and accepted by CNSC staff. The conclusion was that crown pillar collapse is not consider to be a risk for the Fay, Verna, and Martin Lake mine areas. Therefore no additional field investigation / characterization work is required for these sites.

For sites classified as low likelihood of subsidence the report states that no additional investigation/remediation is required. The properties under consideration were all considered low risk for crown pillar collapse.

Where surface subsidence is a higher risk (not the 20 properties under consideration) the surface has been covered by waste rock to fill any voids that may be caused by a crown pillar collapse (Lower Ace Creek area). Other areas (not the 20 properties under consideration) are also being monitored from surface for any signs of instability. The plan to monitor these crown pillars and manage any risks associated with their collapse will be evaluated and reported once an application to release the properties is received by the CNSC.

The unforeseen events fund can be used to address surface subsidence if necessary.



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#### Comment

6 Hydrological Information Gaps We repeat here the concern that we raised in our 2013 submission regarding the relicensing of the Beaverlodge site at that time. It is not clear that we know enough about the underground workings and the regional underground hydrology to be sure that any new exits to the surface will necessarily be close to the mine footprint. Nor can we know what timeframe is appropriate to assume for new pathways to be established. It would be appropriate now to provide an update of knowledge about the underground hydrology of the site, what has been learned since 2013.

### **CNSC** Disposition

There is no hydrogeological model for the Beaverlodge site, however in order to reduce the risks of groundwater outflow to the surface, CNSC required Cameco to seal all flowing boreholes. Due to the uncertainty regarding the effectiveness of this approach the boreholes were originally temporarily plugged to assess potential changes in groundwater seeps/outflow locations. After a review of surface effects, it was decided the all boreholes should be sealed. Inspections of the properties does not indicate new surface seeps or changes in water quality that would indicate new seeps.

Surface water quality monitoring is being conducted and is being compared to predictions and will continue to do so to ensure that water quality meets the predictions in the quantitative site model.



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# Intervention CMD 19-H6.6 Saskatchewan Environmental Society

#### Comment

**CNSC** Disposition

7 Calculation of Financial Guarantees There are four major factors that, at a minimum, cause anxiety for a non-economist in the discussion and calculation of the necessary financial guarantees. (Inflation rate, economic growth, and continuing financial assurance ) – Refer to Intervention for full text. Saskatchewan Ministry of Energy and Resources (SMER) confirm that all assumptions and financial estimates are correct prior to acceptance of any properties into the ICP. The Ministry of Finance is also involved in the review of the financial information, as required.

All costs associated with the management of the decommissioned Beaverlodge mine and mill site are paid by Canada Eldor Inc., a wholly-owned subsidiary of Canada Development Investment Corporation. Both Canada Eldor Inc. and Canada Development Investment Corporation report to the Federal Minister of Finance.

The approval of the funding mechanism for the unforeseen event financial assurance is up to SMER to accept, however it is important to note the federal Department of finance has stated that "Canada Eldor Inc. is an agent of the Crown in right of Canada for all purposes. It follows that any undischarged obligations and liabilities of Canada Eldor Inc. are the obligations and liabilities of the Crown in right of Canada. That will include Canada Eldor Inc.'s obligations and liabilities to decommission the Beaverlodge site and the expenses associated with possession, management and control of nuclear substances at that site". This commitment is independent from any funding arrangements associated with the remediation of the Gunnar and Lorado sites.

This assurance has been accepted by the CNSC for the current licence and the Province may also accept this assurance as well for properties transferred to the ICP for the unforeseen events financial assurance, rather than another mechanism, such as a letter of credit.



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Comment	CNSC Disposition
8 Maintenance of Long- Term Responsibility We need to consider the likelihood that future social and political changes could well make our present regulatory systems irrelevant or non-functional.	The Institutional Control Program is run by the government of Saskatchewan. The ICP, including the funding mechanisms, has been established in provincial legislation and has been set up to remain in place in perpetuity. Funds are collected as a condition of properties being accepted in the ICP, and these funds include monitoring, maintenance and funds for unforeseen events.





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#### Comment

#### HAB 3

-Water quality in Pistol Lake and monitoring requirements -Gaps in inspection tracks -How to inspect crown pillars

### **CNSC** Disposition

Water quality monitoring of Pistol Lake is continuing regardless of the current request to have the HAB 3 property released from the CNSC licence. When Cameco requests the three remaining properties at the HAB area be released, then a water quality monitoring program for Pistol Lake within the ICP will be submitted for review by both the province and CNSC.

The closure reports submitted by Cameco in support of their release to have the 20 properties released from licensing provides detailed tracks of the areas inspected. When conducting the surveys there were limitations on the areas walked due to the surface topography and features, examples include cliffs, marshes and lakes. In the HAB 3 property there was a low lying muskeg/wetland area that was not walked. As noted in the CMD no mining or milling activities took place on the property so there is little risk as a result not inspecting inaccessible areas.

Crown pillar collapse is low risk and therefore no follow-up or remediation required. However coordinates for the crown pillars will be provided to Saskatchewan Ministry of the Economy and visual monitoring of the relevant areas will be included in the site inspections conducted once the properties are in the ICP.



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another mechanism, such as a letter of credit.

#### **CNSC** Disposition Comment HAB 2A Several studies have been completed in order to assess the ecological risks associated with the Beaverlodge -Ecological risk are managed? Project, including the analysis of country foods, and preparation and submission of Status of the Environment reports, now referred to as Environmental Performance Reports, which include environmental risk assessments. -Costs for cap replacement However this information is not included in the CMD as the focus is whether the 20 properties meet the -Financial assurance and federal performance objectives and regulatory acceptance criteria. Cameco is required to prepare and submit government responsibilities Environmental Performance Reports, and environmental risk assessments on a five year basis, with the most recent being submitted in October 2018. The ICP has been established in provincial legislation and has been set up to remain in place in perpetuity. Funds are collected as a condition of properties being accepted in the ICP, and these funds include monitoring, maintenance and funds for unforeseen events. The approval of the funding mechanism for the unforeseen event financial assurance is up to the Province of Saskatchewan to accept, however it is important to note the federal Department of finance has that "Canada Eldor Inc. is an agent of the Crown in right of Canada for all purposes. It follows that any undischarged obligations and liabilities of Canada Eldor Inc. are the obligations and liabilities of the Crown in right of Canada. That will include Canada Eldor Inc.'s obligations and liabilities to decommission the Beaverlodge Site and the expenses associated with possession, management and control of nuclear substances at that site". This assurance has been accepted by the CNSC for the current licence and the province may also accept this assurance as well for properties transferred to the ICP for the unforeseen events financial assurance, rather than



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Comment	CNSC Disposition
JO-NES -Risks from elevated gamma	JO-NES JO-NES property meets the regulatory acceptance criteria.
radiation areas	The property meets the province of Saskatchewan's decommissioning guidance documents and the results of the gamma scan along with the gamma risk evaluation have been reviewed by CNSC staff and found to be acceptable.
BOLGER 2 -Future land use changes increasing gamma risk	BOLGER 2 Once the properties are in the ICP, use of the properties will be restricted through land use controls exercised by the government of Saskatchewan. The building of structures on the property, long term residence, etc. will be prevents through the ICP controls. Occasional land use, including traditional use, is considered safe now and into the future.
- Why not radiation monitoring for waste rock	The ICP inspections will include monitoring for gamma radiation, and based on the monitoring report for the 5 properties transferred to the ICP in 2009 will include the inspection tracks to verify that those areas requiring inspection were indeed inspected.
	Visual observations of waste rock will be conducted as part of the ICP monitoring to look for any indications of leaching, although considered low risk.





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Comment	CNSC Disposition
URA MC -Groundwater seeking alternate route	URA MC Inspections have been completed on the property by CNSC staff; no surface seeps have been observed and all flowing boreholes have remained sealed. Surface water quality monitoring is being conducted and is being compared to predictions and will continue to do so to ensure that water quality meets the predictions in the quantitative site model.
ACE 10 - Gaps in inspection tracks	ACE 10 The closure reports submitted by Cameco provide detailed tracks of the areas inspected. When conducting the surveys. there were limitations on the areas walked due to the surface topography and features, examples include cliffs and waterbodies. As noted in the CMD, no mining or milling activities took place on the property. There is little risk as a result of not inspecting inaccessible areas.





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# Intervention CMD 19-H6.6 Saskatchewan Environmental Society

#### Comment

### **CNSC** Disposition

#### EXC ACE 1

- Residual tailings
- -Why not radiation monitoring for waste rock
- -Gaps in inspection tracks

### EXC ACE 1

A detailed decommissioning plan was reviewed and accepted by the regulatory agencies and a number of years of follow-up monitoring has been conducted to verify that the decommissioning was successful. The risk associated with former spilled tailings sites has been assessed and deemed to be low risk. This included gamma radiation scans and gamma radiation risk evaluation using information on site usage by Uranium City residents.

The ICP inspections will include monitoring for gamma radiation, and based on the monitoring report for the 5 properties transferred to the ICP in 2009, will include the inspection tracks to verify that those areas requiring inspection were indeed inspected. Visual observations of waste rock will be conducted as part of the ICP monitoring to look for any indications of leaching, although they are considered low risk.

The closure reports submitted by Cameco in support of their request to have 20 properties released from the CNSC licence provide detailed tracks of the areas inspected. When conducting the surveys there were limitations on the areas walked due to the surface topography and features, examples include cliffs and waterbodies. As noted in the CMD no mining or milling activities took place on the property. There is little risk as a result of not inspecting inaccessible areas.





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CNSC Disposition
ACE 2 The ICP inspections will include monitoring for gamma radiation, and based on the monitoring report for the 5 properties transferred to the ICP in 2009, will include the inspection tracks to verify that those areas requiring inspection were indeed inspected.
Cameco is required to conduct water quality monitoring at the Beaverlodge site, including monitoring of all of those stations that have water quality predictions. The approved monitoring program will continue and is independent of the current request to release properties from the licence.





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Comment	CNSC Disposition
EAGLE 1 - Risks from flooded open pit - Adequacy of cover and	EAGLE 1 The flooded pit will be monitored under the ICP, including water quality of the pit and indications of surface connectivity.
monitoring	The flooded pit has a limited surface recharge area and has been assessed as a low risk and is expected to remain so.
	All areas of elevated gamma radiation which were rescanned in order verify the adequacy of the cover.
	Please note that the ICP inspections will include monitoring for gamma radiation, and based on the monitoring report for the 5 properties transferred to the ICP in 2009, will include the inspection tracks to verify that those areas requiring inspection were indeed inspected.
RA and RA9	RA6 and RA 9 Water quality monitoring of Beaverlodge and Martin lakes is within the environmental monitoring program for the Beaverlodge site.
-No water quality monitoring -Record retention - Elevated gamma	Licensees will be required to provide detailed records to SMER and this information, along wit the schedule for any maintenance will be maintained by SMER.
	The two properties meet the regulatory acceptance criteria.





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Comment	CNSC Disposition
URA 3 - Replacement of shaft cap	URA 3 The ICP is managed by the government of Saskatchewan. The ICP, including the funding mechanisms, has been established in provincial legislation and has been set up to remain in place in perpetuity. Funds are collected as a condition of properties being accepted in the ICP, and these funds include monitoring, maintenance and funds for unforeseen events.
URA 5 -Risk to wildlife from tailings	Spilled tailings at the Beaverlodge site are not considered a primary food source for wildlife. Therefore, exposure to high levels of metals and radionuclides in the tailings is unlikely. Should wildlife consume vegetation growing in these areas or inadvertently come in contact with these tailings there will be very limited exposure to metals and radionuclides. Due to the unpalatability (and low nutritional value) of tailings to wildlife, further exposure will be unlikely due to avoidance behaviour of the animals. The overall risk from such exposure to spilled tailings, therefore, is low. Ace Creek passes through a portion of the property. Water quality monitoring of Lower Ace Creek has demonstrated that the property is not negatively impacting water quality within Lower Ace Creek.





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# Intervention CMD 19-H6.6 Saskatchewan Environmental Society

#### Comment

### **CNSC** Disposition

#### EXC URA 5

- -Clarify between foreseen and unforeseen events and maximum failure events
- Residual tailings

### UXC URA 5

The ICP is managed by the government of Saskatchewan. The unforeseen events fund is the amount established in legislation (and is joint fund for all sites in the ICP), however it will take a number of years before SMER feels the fund is of a sufficient amount and therefore a financial assurance, which is property specific, is required for the foreseeable future. A maximum failure event is used for this financial assurance.

The residual tailings sites were included in the remedial options analysis completed by Cameco and were confirmed to be low risk and therefore additional remediation was not recommended.

Spilled tailings at the Beaverlodge site are not considered a primary food source for wildlife. Therefore, exposure to high levels of metals and radionuclides in the tailings is unlikely. Should wildlife consume vegetation growing in these areas or inadvertently come in contact with these tailings there will be very limited exposure to metals and radionuclides. Due to the unpalatability (and low nutritional value) of tailings to wildlife, further exposure will be unlikely due to avoidance behaviour of the animals. The overall risk from such exposure to spilled tailings, therefore, is low.

Ace Creek passes through a portion of the property. Water quality monitoring of Lower Ace Creek has demonstrated that the property is not negatively impacting water quality within Lower Ace Creek.



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# Intervention CMD 19-H6.8 Ya'thi Néné Land and Resource Office

#### Comment

#### Recommendations

- Provide more than a 30-day period for the submission review from when the CMD is issued to when interveners have to submit.
- 2. All First Nations and communities of the Athabasca Basin are to be included in discussion and consultation concerning the properties at Beaverlodge.

### **CNSC** Disposition

- The CNSC follows the Rules of Procedure, established by the Commission. Further discussion on this matter should be referred to the Secretariat. CNSC staff are always willing to assist in the review process wherever possible. CNSC staff had a teleconference and met with Ya'thi Néné Land and Resource (YNLR) Office personnel, answered questions and provided additional supporting documentation.
- 2. The CNSC is committed to meaningfully engaging Indigenous groups who have an interest in CNSC regulated facilities and activities. CNSC staff identified the Athabasca Dene communities and YNLR as having potential interest in this hearing. CNSC sent letters of notification in April 2019 to each community, informing them of the receipt of the application for the proposed licence amendment, including the availability of participant funding to facilitate participation in the hearing process, and details on how to participate in the Commission's public hearing process. A follow-up phone call was made to YNLR to ensure the communities had received the correspondence and to answer any questions. CNSC staff are committed to continue engaging and sharing information with all Indigenous communities with an interest in Beaverlodge.





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# Intervention CMD 19-H6.8 Ya'thi Néné Land and Resource Office

#### Comment

#### Recommendations

- 3. Keep all Athabasca Basin communities informed of future monitoring results from sites transferred to the ICP.
- 4. Conduct a human health study on the rates of cancer and health issues related to the mining industry in the Athabasca Basin.
- Remediate the legacy buildings in Uranium City that were constructed and abandoned by Eldorado Nuclear Limited, now Canada Eldor Inc. (under the federal Crown).

3. Under the ICP, Saskatchewan Ministry of Energy and Resources (SMER) will have responsibility for future monitoring of the site. CNSC staff note that inspection reports are publically available and can be obtained by contacting SMER.

**CNSC** Disposition

- 4. CNSC is participating with the provincial agencies in both Saskatchewan and Ontario and licensees to conduct an updated Canadian Uranium Workers Study and welcome opportunities to contribute and participate in scientific studies. CNSC staff have shared information regarding the study with YNLR and have offered to have a teleconference to answer any questions that they may have. There are studies that have been completed that the province can speak on. In addition, the CNSC will continue to engage with YNLR on their areas of interest regarding potential health issues related to the mining industry.
- 5. Issues associated with buildings located in Uranium City are outside of the mandate of the CNSC.



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### Intervention CMD 19-H6.9 Athabasca Chipewyan First Nation

#### **CNSC** Disposition Comment The CNSC values the input from ACFN land users and Elders into our processes and Concerns: 1. 1. Interviews of Uranium City residents (land appreciate the areas of interest brought forward by ACFN in their intervention. users) not including ACFN users and SCFN Regarding the survey, in order to determine a reasonable approximation of the time each person spent on the former Beaverlodge properties, a door-to-door survey was traditional use conducted to gather information from the community residents regarding their use of the areas around Uranium City. The program included interviews of representatives from 21 of the 34 reportedly active Uranium City households. The other households did not participate because the residents either declined to be interviewed (4), were out of town during the survey period and were unreachable (5) or were believed to be in town but unavailable to participate (4). This represents a 62 percent participation rate which was considered good for this type of survey instrument. The survey did not include historic traditional land use as the purpose was to help assess risk associated with use of the decommissioned site. However,

have.

CNSC staff are happy to meet with ACFN to discuss any concerns that they might



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### Intervention CMD 19-H6.9 Athabasca Chipewyan First Nation

study was completed specifically for the Beaverlodge Project in 2011 and 2012. The results of the study indicate that traditional harvesting of country foods does not present health risks to Uranium City residents. CNSC staff can share this stud with ACFN, should they be interested. CNSC staff look forward to continuing to engage with ACFN on their areas of interest regarding the safety of animals and the environment around the Beaverlodge site. The Province can also speak on	Comment	CNSC Disposition
some of the studies that have been undertaken in northern saskatchewan.		contaminants in country foods and water in northern Saskatchewan. The information received to date shows that country foods are safe. A country foods study was completed specifically for the Beaverlodge Project in 2011 and 2012. The results of the study indicate that traditional harvesting of country foods does not present health risks to Uranium City residents. CNSC staff can share this study with ACFN, should they be interested. CNSC staff look forward to continuing to engage with ACFN on their areas of interest regarding the safety of animals and



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# Intervention CMD 19-H6.9 Athabasca Chipewyan First Nation

#### **CNSC** Disposition Comment Concerns: 3. CNSC staff identified Athabasca Chipewyan First Nation (ACFN) as an Indigenous 3. More consultations to be done, hold meetings in community who may have an interest in this Commission hearing. The CNSC sent a Fort Chipewyan, AB letter of notification in April 2019 informing ACFN of the receipt of the application for the proposed licence amendment, including the availability of participant funding to facilitate participation in the hearing process, and details on how to participate in the Commission's public hearing process. A follow-up phone call was made to ACFN to ensure they had received the correspondence and to answer any questions. In addition, the CNSC is committed to building a long term, meaningful relationship with ACFN, and look forward to continuing to engage with ACFN on their areas of interest regarding Beaverlodge and CNSC-regulated uranium mines and mills of interest. CNSC staff are open to participating in meetings with ACFN community members and leadership and look forward to coordinating these activities with ACFN.





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# Intervention CMD 19-H6.10 Métis Nation - Saskatchewan

Comment	CNSC Disposition
Cameco should provide a tour of some of the sites and answer questions	While CNSC staff cannot comment on the request for Cameco to provide a tour, CNSC staff encourage Métis Nation - Saskatchewan (MN-S) to reach out to Cameco with any questions they have about the Beaverlodge site. CNSC staff are also happy to participate in meetings between MN-S, Cameco, and the Province, where appropriate.
	CNSC staff have also been engaging MN-S regarding the Beaverlodge licence amendment. The CNSC identified MN-S as an Indigenous group with potential interest in this hearing. The CNSC sent a letter of notification in April 2019 informing MN-S of the receipt of the application for the proposed licence amendment, including the availability of participant funding to facilitate participation in the hearing process, and details on how to participate in the Commission's public hearing process. A follow-up phone call was made to MN-S to ensure they had received the correspondence and to answer any questions. An additional teleconference was also held with MN-S by request to go over any additional questions they had about the licence amendment and hearing process. The CNSC is committed to building a long term, meaningful relationship with MN-S, and look forward to continuing to engage with MN-S on their areas of interest regarding Beaverlodge and CNSC-regulated uranium mines and mills of interest.
	beavenouse and Crisc-regulated dramum mines and mins of interest.