Citxw Nlakaʼpamux Assembly

CNA Grazing Impact Study

Phase 2

CONNECTING WITH OUR PAST.
CREATING OUR FUTURE.
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Study Overview

- **Purpose**

The study identified and characterized how mining in the Highland Valley has impacted nłeʔképmx range management and land use over time.

It also supported CNA’s input on the proposed 18-year Mine Life Extension by HVC.

- **Scope**

Focus areas include grazing lands, forage quality, water access, and feral horse activity in the Pimainus Range.

Study Objectives

Phase 1

- **Documenting grazing impacts**: Collect and compile information on the timing and nature of grazing tenure impacts, as well as perceptions of change over time, through interviews with current tenure holders.
- **Recording historical testimony**: Capture the experiences and perspectives of historical tenure holders regarding changes and impacts to grazing over time.
- **Reviewing government actions**: Summarize historical changes in provincial grazing licenses and tenures, and document any actions taken by the government to address these impacts.
- **Clarifying tenure processes**: Outline the provincial application process and requirements for grazing tenures, especially those involving access to reclaimed mine areas.
- **GIS modeling and mapping**: Use GIS analysis to model current and historical grazing tenures around the mine site, incorporating available land use and mapping data to assess grazing impacts.
- These objectives aim to build a foundational understanding of the historical and current impacts of mining activities on grazing, and to identify gaps for further investigation in Phase 2 of the study.

Phase 2

- **Assess Baseline Range Health** Evaluate new and previously assessed sites both within and outside the Permitted Mine Area to establish a baseline of range health.
- **Estimate Forage Quantity** Use field sampling and GIS modeling to determine the amount of forage available.
- **Analyze Forage Quality** Conduct lab analyses on forage samples to assess nutritional value, stratified by forest and vegetation age class.
- **Model Future Forage Availability** Use GIS to project forage availability across the Pimainus Range through to 2040.
- **Evaluate Water Resources** Assess current and future water availability and identify potential areas for water development.
- **Quantify Feral Horse Impact** Estimate the range and forage consumption of feral horses in the study area.
- **Assess Wildfire Impacts** Quantify the extent and potential effects of recent wildfires on the Pimainus Range Unit.
- **Develop Range Management Strategies** Propose practical short-, medium-, and long-term strategies to improve range management.
- **Address Grazing Losses** Suggest approaches to mitigate and compensate for the loss of grazing opportunities on the Pimainus Range Unit.

Results Summary

Range Health

Sites Sampled: 15 total

Proper Functioning Condition (PFC):

- 10 sites
- Diverse plant communities
- Good litter cover, minimal erosion

Moderately At-Risk:

- 3 sites
- Located in 11–15 yr cut blocks & open forest
- Tree encroachment, reduced litter

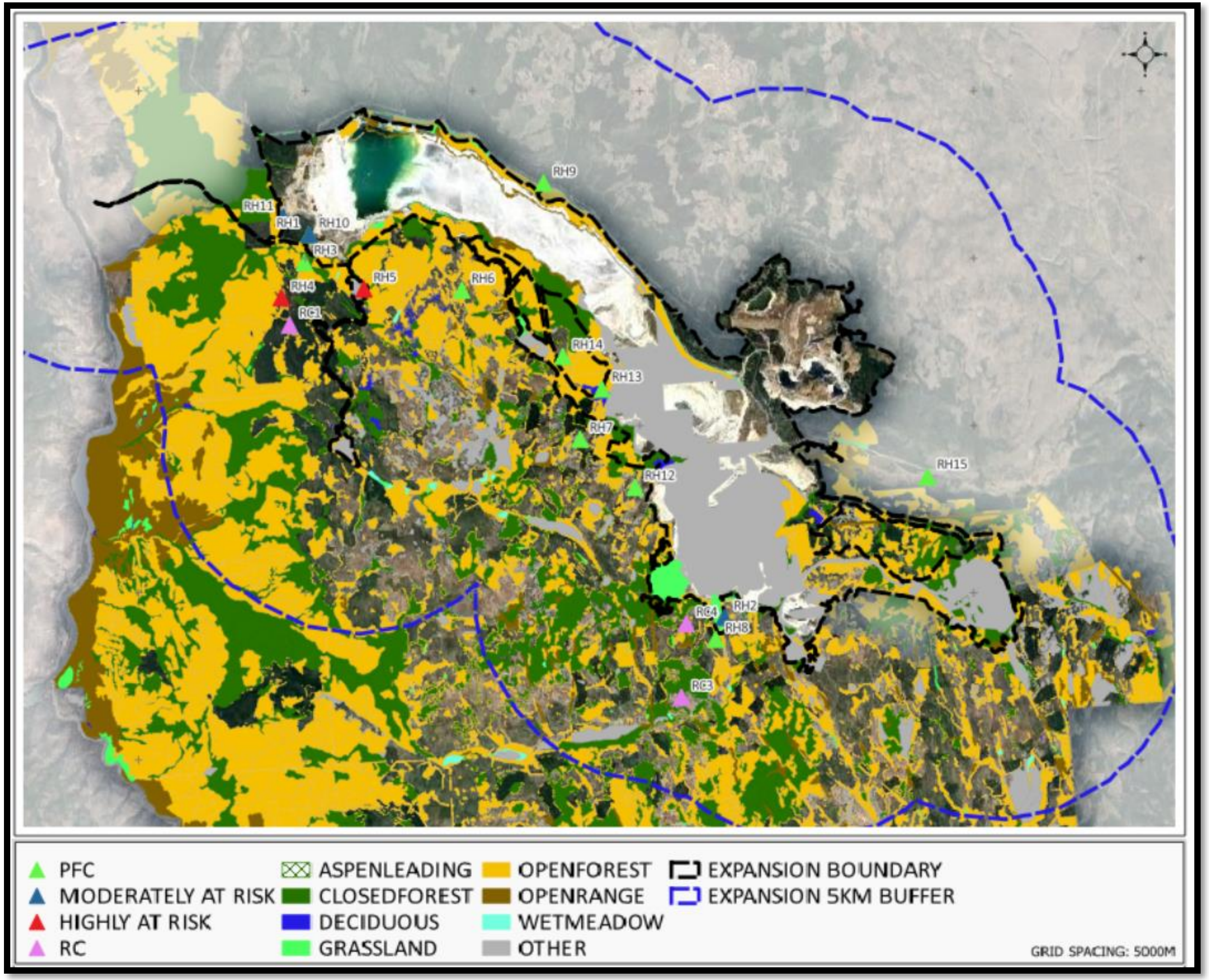
Highly At-Risk:

- 2 sites
- Open range near water
- Dominated by increaser species (e.g., Kentucky bluegrass)
- Soil compaction, erosion, low diversity
- Frequent feral horse use

Key Observations:

- Pinegrass most common species
- Sites stratified by forest age & vegetation class
- At-risk sites signal need for targeted management

Forest cover classification for 2024



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RH 12 – Properly Functioning

RH 4 – Highly At Risk

2024 Range health assessment results with vegetation cover and forest age class.

Green= Proper Functioning Condition, Yellow=Moderately at-risk, Orange=Highly at-risk

Sample #	Month Sampled	Condition	Forest Age Class	Zone & SubZone	Dominant species
RH 1	18-Jun	PFC	Open Forest	IDFdk	Pinegrass, lupine, rough fescue, Kentucky bluegrass
RH 2	18-Jun	Moderately at-risk	11-15 yrs	MSxk	Kentucky bluegrass, Sandberg's bluegrass, Pinegrass
RH 3-1	19-Jun	PFC	Closed Forest	IDFdk	Pinegrass, some fringed brome
RH 4	19-Jun	Highly at-risk	Open Range	IDFdk check	Kentucky bluegrass, Sandberg's bluegrass
RH5	19-Jun	Highly at-risk	Open Range	IDFdk	
RH 6	19-Jun	PFC	11-15 yrs	MSxk	Pinegrass
RH 7	20-Jun	PFC	11-15 yrs	MSxk	Pinegrass
RH 8	20-Jun	PFC	20+ yrs	MSxk	Pinegrass
RH 9	20-Jun	PFC	Open Forest	IDFdk	Pinegrass, Kentucky bluegrass
RH 11	20-Jun	Moderately at-risk	11-15 yrs	IDFxh	Bluebunch wheatgrass, Pinegrass, Rough fescue
RH 12	13-Aug	PFC	11-15 yrs	MSxk	Pinegrass, Kentucky bluegrass, June grass
RH 13	21-Aug	PFC	Deciduous	IDFdk	Rocky mountain fescue, Kentucky bluegrass, Timothy
RH 14	21-Aug	PFC	11-15 yrs	MSxk	Pinegrass
RH15-1	16-Oct	PFC	Open Forest	IDFdk	Pinegrass

Forage Loss

Forage Quantity Reduction

- Mine expansion causes a significant loss of 186,300 to 204,390 kilograms of forage due to reduced grazing areas.

Environmental Causes

- Changes in forest cover and limited water access reduce available grazing land, impacting forage quantity.

Forage Quality Concerns

- Remaining forage exhibits low protein and high ash content, leading to nutritional deficiencies for cattle.

Mitigation Strategies

- Supplemental feeding and alternative grazing areas are essential to maintain livestock health and productivity.

Feral Horse Impact

Forage Consumption Levels

- Feral horses consume between 913 to 1403 AUMs annually, significantly impacting forage availability.

Economic Cost

- The forage consumption translates to $22,000 to $89,000 in hay replacement costs each year.

Ecological and Agricultural Impact

- Year-round grazing by feral horses degrades ecosystems and increases competition with livestock.

Need for Management

- Management interventions are necessary to balance ecological health and agricultural productivity.

Water Availability and Range Health

Water Availability Challenges

- Many ponds risk drying due to climate change, impacting water sources for livestock grazing.

Livestock Grazing Patterns

- Livestock typically graze within 1.5 kilometres of reliable water sources, emphasizing sustainable water site importance.

Flow Accumulation Mapping

- Flow accumulation mapping helps identify potential sites for water infrastructure development.

Range Health Assessment

- Range health of 15 sites shows varied risk levels; vulnerable sites are near water and frequented by feral horses.

Invasive Species and Recreation

- **Spread of Invasive Plants**
  - Invasive species like knapweed and thistle are spreading near roads and recreation sites, threatening native plants.
- **Threats to Native Vegetation**
  - Invasions reduce native vegetation health and decrease the quality of forage available for wildlife and livestock.
- **Land Access Challenges**
  - Road decommissioning and overgrowth limit access, making land management and monitoring more difficult.
- **Need for Mitigation Research**
  - Further studies are needed to understand impacts and develop strategies to preserve ecological integrity.

Recommendations

Sustainable Long-Term Stewardship

Implement forward-looking strategies to ensure sustainable land use beyond the mine's operational timeline.

Short-Term (2025–2035)

Disseminate Study Findings

Share research results with CNA members, including tenure holders to increase awareness and support informed decisions.

Financial Support for Water and Nutrition

Provide funds for water projects, forage and water quality testing, and livestock nutrition consultations.

Access to reclaimed grazing lands

Allow CNA members to use HVC reclaimed lands for grazing to support livestock during mine operations.

Medium-Term (2035–2050)

Expand Water Infrastructure

Enhance water systems to adapt to forest canopy changes and ensure steady livestock access to water.

Secure Grazing Lands

Protect adjacent grazing lands to compensate for losses and maintain sufficient grazing capacity.

Manage Invasive Species

Develop and implement strategies to control invasive plants and preserve forage quality.

Long-Term (2050–2063+)

Funding Pools for Land Resources

Establish dedicated funding pools for acquiring water and grazing land to maintain grazing operations' viability.

Adaptive Grazing Management

Enable adaptive management strategies to respond effectively to environmental changes impacting grazing lands.

Silvopasture Integration

Incorporate silvopasture practices into forest management to boost land productivity and ecological resilience.

Next Steps

Implementation and Monitoring

Collaborative Implementation

- Partnerships with HVC and Ministry of Forests enable effective execution of water and grazing solutions.

Advanced Monitoring Technologies

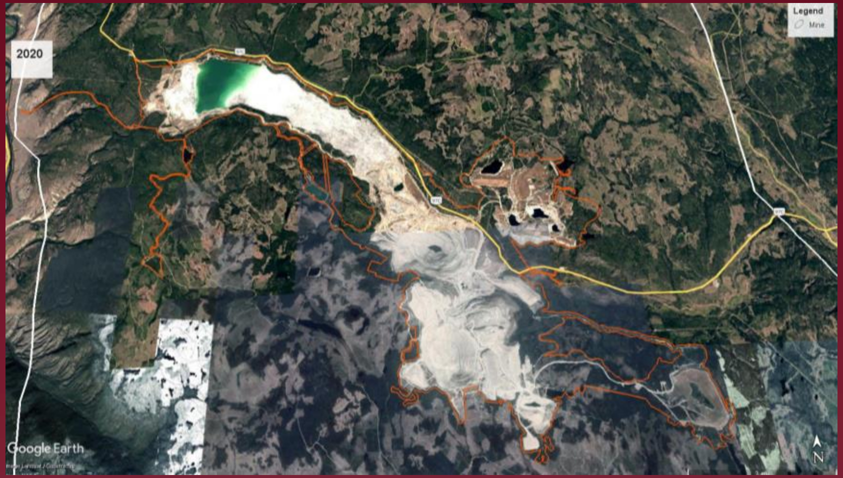
- Drones and GIS mapping are utilized to monitor invasive species and recreational impacts accurately.

Ongoing Environmental Monitoring

- Continuous forage and water quality assessments provide essential data for adaptive management strategies.

Advocacy and Support

- Efforts focus on expanding tenure rights and compensating forage loss to support community members.



•Integration of nłeʔképmx Knowledge

Cultural Connection to Land

- nłeʔképmx knowledge reflects deep historical and cultural ties to the land among CNA members.

Grazing as Stewardship

- Grazing is seen as a traditional stewardship activity that preserves identity and land health.

Wholistic Land Use Approach

- Land management integrates nłeʔképmx values, supporting ecological and cultural sustainability.