

Rapid Assessment Rapid Remediation (RARR) Of Mine Tailings



Wesco Tailings along the Salmo River, Salmo, BC

Photo by G. Nellestijn

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Introduction

The Salmo Watershed Streamkeepers Society (SWSS) would like to work with Government, Industry and others to pilot a new program to Rapidly Assess and Rapidly Remediate (RARR) mine tailings. It is our intention to recruit a qualified social enterprise team of professionals that are interested in working together to increase Ecosystem health and remove mine tailings or mine associated waste rock dumps as contributors to the pollution stream. The process outlined here is written to inspire guidance from others to contribute to the thinking and program building that will allow us to Pilot a program that will:

1. Streamline removal of orphaned and other mine tailings from the pollution stream
2. Look for and assess revenue generation potential
3. Free up resources, human and financial, to accomplish more remediation of more sites
4. Be safe, quick and effective, thereby increasing ‘biological bang-for-the-buck’
5. Do so in an Environmentally, social, and economically sensitive way
6. Pilot this program in the Salmo River watershed
7. Create long lasting effective partnerships with industry and Government
8. Additionally, a RARR database will be produced of the information discovered using the RARR protocols

Background

Mining has played a significant role in the development of Canada, BC and more locally in the Kootenays. Historically, mining gave rise to construction of our towns and cities. Mining was a significant contributor to the social and economic systems that drive our region. It has also dramatically altered our environmental landscape. Many of our historical mines are no longer active, however, remnants of the industry, specifically abandoned infrastructure and mine tailings, still remain. There is an increasing awareness and concern of the harmful effects of unmanaged tailings on both human and ecosystem health. Currently, remediation can be funded and executed independently by private land owners or through government. Though these processes exist, there are hundreds of these tailings remaining on the landscape that await remediation, and continue to pose a social, economic, and environmental health hazard.

Rapid Assessment and Rapid Remediation Process (RARR)

RARR was developed as a place-based and community-based process allowing for either temporary or full remediation of mine tailings sites in consultation with the Crown Contaminated Sites Program (CCSP) of the BC Ministry of Environment. If needed, characterization and temporary remediation can initialize a more permanent remediation process that can be completed later on by the CCSP and their partners, such as industry or others, as resources become available. The purpose of this process is to quickly identify, analyze, characterize revalue, and where possible remediate abandoned tailings.

Assessments will be carried out by a team of local professionals, environmental experts, and technicians, and will employ local experienced heavy machinery operators as needed for remediation processes.

The process has four main steps (see Figure 1):

1. *Identification* of an abandoned mine tailing site and its site characteristics,
2. *Assessment* of the site's geographical, biological, and chemical components,
3. *Analyzing* assessment results; and
4. *Remediating* the tailings with the appropriate, selected, pathway(s).

Detailed processes of each of these four steps have been created based on the guidelines, protocols, and schedules found in BC's Environmental Assessment Act and Contaminated Sites Regulation. Consequently, RARR methodology uses a combination of gathering information through local knowledge and online resources, site visits, sampling, and qualitative and quantitative assessments to determine remediation pathways. This will allow for a rapid, yet detailed, characterization of the site and the tailings, as well as the potential human and ecosystem health risk.

Specifically, RARR will use the following resources/methods to collect data:

ONLINE

- MINfiles associated with the tailings for historical information
- Footprint and adjacent land ownership/usages
- On-site or downstream water licences

IN FIELD

- Inventory of potentially impacted vegetation and waterbodies
- Vegetation and wildlife conditions/exposure
- Site access conditions

IN LAB

- Chemical analysis of tailings and any associated water

Using this information, the RARR team can create a remediation plan for the tailings of interest. Four potential pathways, or a combination of these, have been identified:

1. Reroute surface water that may move tailings, cap and cover to negate snow melt/rain activated erosion, and/or as resources allow.
2. Recycle the tailings to extract potential value and separate heavy metal and other contaminants if feasible.
3. Removal of tailings and restore the site.
4. Relocation of tails or capping within the subject property

RARR offers a summary package that characterises the site, surface water, snow melt and rain activated tailings leaching elimination and a remediation plan or other possible approaches. Each recommendation is site specific, however the RARR approach is transferable.

Figure 1. Rapid Assessment Rapid Remediation Chart Summary

