



# Responsible Mine Closure & Reclamation

**Teck**

# About Teck

Teck is Canada's largest diversified resource company, with business units focused on copper, steelmaking coal, zinc and energy.

Headquartered in Vancouver, Canada, we own, or have an interest in, 12 mines in Canada, the United States, Chile and Peru, as well as a large metallurgical complex.

We are an important producer of copper, the second largest exporter of seaborne steelmaking coal and one of the world's largest zinc miners.

Our expertise spans the full range of mining activities, including exploration, development, mining, reclamation, safety, environmental protection and research. Over our 100-year history, we have learned that responsible mining and mineral development are fundamental to our long-term success.





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Jaimie Dickson, Environment Supervisor, and Matt Bryan, Mine Support General Supervisor, review the reclaimed Bethlehem Pit at Highland Valley Copper Operations in B.C.

Cover: Garry Luini, Environmental Coordinator, at a reclaimed area of Line Creek Operations.



# Our Approach to Responsible Mining

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Metals and minerals are the building blocks of everyday life. Around the world, people and communities rely on the products of mining—and they also rely on companies like Teck to responsibly develop and provide those products.

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At the same time, we know that mining has an impact on biodiversity and alters ecosystems. Likewise, mining has significant effects on communities in terms of jobs and investment during mining followed by economic transition during mine closure. But with over 100 years of operating experience we know that with careful planning and community engagement, successful reclamation and closure is possible. In fact, our goal is to work with all stakeholders to make the environment and communities better off as a result of our activities so that we are welcome neighbour in the areas where we operate.

That makes it critical that we develop, operate and close our mines using a responsible, science-based approach that ensures a positive outcome for the environment and communities both during and after mining. To achieve this, we learn as much as we can about mining areas from experts, community

leaders and Indigenous Peoples before we begin mining; minimize our footprint as we do mine; then reclaim those lands for the use of future generations after mining is done.

We also collaborate with individuals and organizations—Indigenous Peoples, communities, residents, local governments, federal/provincial lawmakers, regulatory agencies and our own employees, to name a few—to establish post mining land use objectives and track progress towards achieving them.

Our vision for biodiversity is to achieve a net-positive impact in the areas where we operate. “Net-positive impact” means that in areas where we mine, the ecosystem and biodiversity of the mining area and its broader surroundings—will be in better overall condition than before the mining occurred.

Bighorn sheep on reclaimed land at Cardinal River Operations.

We simply will not start a project unless we are first confident that we can responsibly close and rehabilitate it when mining is finished. That is an important part of who we are as a company, and it is a commitment our employees are proud to uphold.

Don Lindsay,  
President and CEO

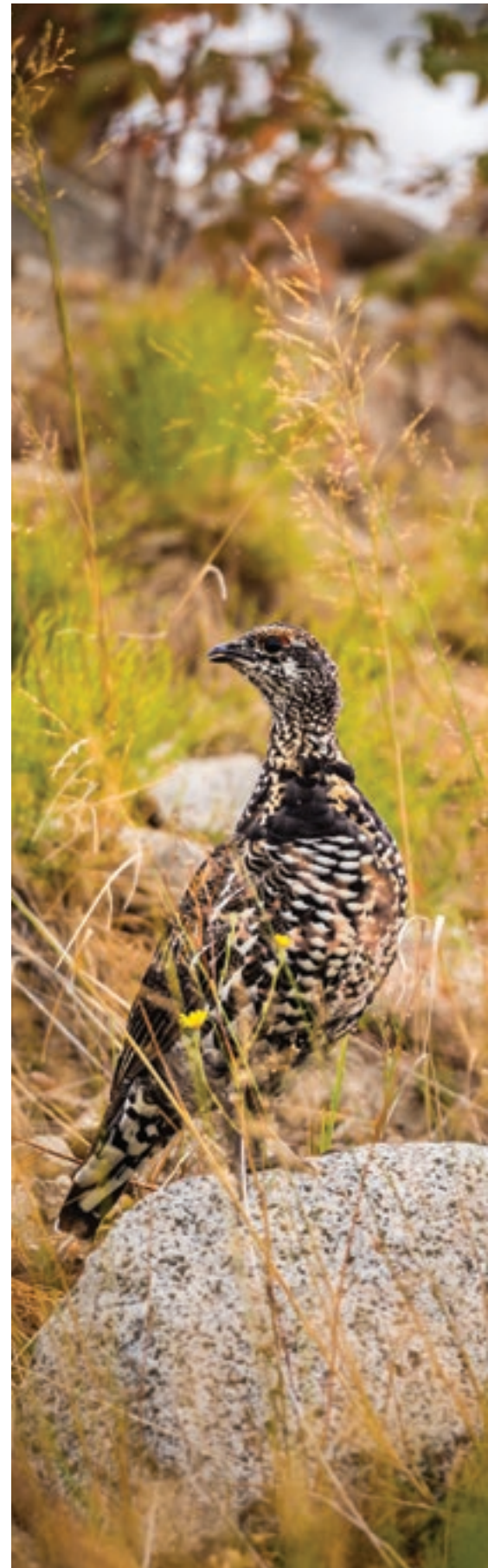
The actions we use to achieve this vision include progressive reclamation (reclaiming portions of our sites no longer required for mining as they are available, rather than waiting for final mine closure), the use of native vegetation, restoration of waterways and wildlife habitats, and using the most up-to-date reclamation techniques and science available. We then look at the use of “offsets”—such as setting aside additional land for conservation, to ensure we achieve an overall net-positive impact on biodiversity.

This publication provides an overview of the approach Teck takes to responsibly closing and remediating our mine sites—an essential part of our overall focus on responsible mining. While every mine site requires a tailored approach for responsible closure, the principles outlined here guide our approach across our operations in North and South America.

This document is divided into three major sections:

- 1. Overview:** About Teck and a summary of our approach to mine closure
- 2. Closure:** The entire process of planning for, and carrying out, responsible mine closure throughout the mining life cycle, with examples from across Teck
- 3. Reclamation:** Reclamation is an important part of mine closure, and this section gets into more detail about how we reclaim sites, with more examples from Teck

A female grouse at Highland Valley Copper Operations.



# Overview of Mine Closure and Reclamation

## Closure

Mine closure is the entire process of winding down operations at a mine, including planning for closure, decommissioning of the mine site, reclamation and ongoing monitoring.

Our approach to mine closure begins before mining starts and carries on throughout the lifecycle of the mine. We work with the Indigenous Peoples and local communities in the area to create closure plans focused on supporting the economic and social transition after mining ends, establishing a thriving, self-sustaining ecosystem and opportunities for a range of potential post-mining land uses.

## Reclamation

Reclamation—one of the largest components of the mine closure process—is the way mined lands are restored for other positive post-mining uses in cooperation with the local community and Indigenous Peoples.

### **Our objectives for reclamation:**

- Conserve and enhance biodiversity
- Return mined areas to productive uses

Reclaimed areas at Highland Valley Copper's former Highmont Tailings Pond





# Closure and Reclamation Throughout the Mining Life Cycle







## After Mining: Reclamation

- Shut down operations and responsibly remove structures
- Reslope and contour rock piles as required
- Replant areas with trees and other vegetation
- Close or reclaim water features as required

## After Mining: End Land Use

- Continued engagement with Indigenous Peoples and communities
- Implementation of end land use plan
- Ongoing monitoring to ensure post-mining land use objectives achieved
- Evaluate success of rehabilitation, water quality and end land uses

# In Detail: Our Approach to Mine Closure

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At Teck, we plan for responsible mine closure before mining begins. Our approach to closure is to responsibly end and decommission mining operations while working with Indigenous Peoples and communities to reflect their input and priorities for viable, long-term and diverse post-closure land uses.

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Mining operations are often key contributors to employment, local businesses, and social benefits for nearby communities, so we understand that steps must be taken to minimize economic impacts after the mine closes. We work with communities to identify ways of supporting them through the transition.

Some mines have a short life, some a very long, so each closure plan has to reflect the realities of the mine site and the unique profiles of the surrounding communities.

The first step we take is to develop a conceptual closure plan. This plan is periodically updated over the life of the operation to incorporate new research into reclamation and other closure issues.

Closure planning gets more detailed as a mine begins to near the end of its life, when all conditions of the operation and its effect on local economies and communities are better known.

That applies also to environmental considerations. During the closure phase, we focus on returning the land to a stable state for post-mining land uses and healthy ecosystems.

Once the mine site is closed, it is monitored and managed on a long-term basis to ensure that our closure actions remain successful in achieving the goals we planned for back at the beginning. Key objectives include: healthy ecosystems, public safety, water quality protection, and alternative uses for the land as suggested by Indigenous Peoples and local communities.

The SunMine solar farm, built on reclaimed land at the former Sullivan Mine site in Kimberley, B.C.





Our goal is to work cooperatively with Indigenous Peoples and local communities to restore mined areas back to a state where they can support a range of post-mining land uses, from wildlife habitat to economic diversification

Marcia Smith,  
Senior Vice President,  
Sustainability and External Affairs



## The Mine Closure Process: A Closer Look

### Step 1: Closure Planning (conceptual)

- Early engagement with communities and Indigenous Peoples
  - Build relationships
  - Inform and engage before any activity begins
  - Involve in closure and end land use planning
- Outline of progressive and post-closure reclamation
- Forecast mine life and closure date
- Assess potential community impacts of closure and mitigation strategies
- Estimate of resources needed for closure and reclamation

### Step 2: Closure Planning (detailed)

- Expand upon closure and end land use plan, including more detailed information on how we will:
  - Reclaim mining areas and water features such as tailings facilities
  - Ensure biodiversity is protected, including vegetation and wildlife habitat
  - Help transition employees and local communities to a post-mining economy
- Continue engagement with communities and Indigenous Peoples
  - Engage in detailed closure and end land use planning
  - Prepare employees and communities for effects of closure
- Update the plan throughout the life of the mine to ensure it remains relevant; incorporate new issues, research and practices
- Planning intensifies as a mine begins to near the end of its life

### Step 3: Closure

- Occurs when the mine reaches its end of life, usually when ore reserves are exhausted
- Smaller crews remain at site to dismantle the mine processing facilities and equipment
  - Buildings and physical infrastructure are removed, relocated or disassembled
  - Removing and properly disposing of any hazardous materials
- For employees, we provide transition support and work to identify opportunities to move them to other operations where possible
- Dialogue continues with local stakeholders to support the post-mining economic and social transition



Reclaimed areas at Teck's Fording River Operations in B.C.

## Step 4: Reclamation

- Progressive reclamation occurs throughout the mining process
- At closure, reclamation activities focus on returning all remaining disturbed land to a stable state for post-mining land uses (e.g., wetlands, various wildlife habitats, outdoor recreation, commercial uses)
- Activities can include:
  - Revegetating areas
  - Managing water quality
  - Resloping and contouring rock piles as necessary
  - Capping or covering waste rock piles
  - Closing or reclaiming water features, including tailings facilities

## Step 5: Post-closure/End Land Use

- Our Legacy Properties team manages post-closure at former mine sites
- We continue to engage with communities to implement end land use opportunities; such as:
  - Biodiversity conservation
  - Indigenous Peoples' subsistence activities (e.g., hunting and gathering)
  - Recreation (e.g., fishing, hunting)
  - Agriculture
  - Local economic development opportunities
- Monitoring programs assess the effectiveness of reclamation strategies and identify any additional reclamation work that may be needed
- Ongoing care and maintenance to ensure public safety and that our closure actions were successful in achieving end land use objectives, including:
  - Ecosystem rehabilitation
  - Water treatment, if necessary
  - Monitoring and maintenance of any remaining water structures
  - Public access management and safety



● **Sullivan Mine**  
Kimberley, British Columbia

**Type:** Zinc and lead mine

**Active:** Operated for over 100 years, closed in 2001

**Status:** Closed and reclaimed; ongoing monitoring, water treatment and post-mining economic diversification activities

## Closure Example: Preparing for Life After the Sullivan Mine

Our former Sullivan mine in Kimberley, British Columbia, was once a major producer of zinc, lead and silver. After operating for nearly 100 years, it is now an example of a successful mine closure—a process which includes ongoing collaboration between Teck and the local community to create lasting benefits.


Sullivan began operating near the beginning of the 1900s. However, detailed closure planning began in 1990 as it became clear that reserves would be depleted by 2001. As the mine was the primary local economic driver, we engaged surrounding communities early on to help create strategies that would mitigate the economic impact of the pending closure. This included career transition planning and training opportunities for employees, as well as the formation of the Sullivan Public Liaison Committee to provide community input into closure planning. The City of Kimberley also actively participated in developing the mine's Decommissioning and Reclamation Plan.

After the mine closed, we replanted nearly 1,100 hectares of former mining area—an area almost three times the size of Stanley Park in Vancouver. The water collection and treatment system was enhanced to manage and treat water from the site for the long term and ensure water quality downstream.

The City of Kimberley began to rebrand itself as a tourism and recreation destination, so Teck-owned lands were turned over to the city to help them expand the local ski hill, build recreational resorts and develop golf courses.

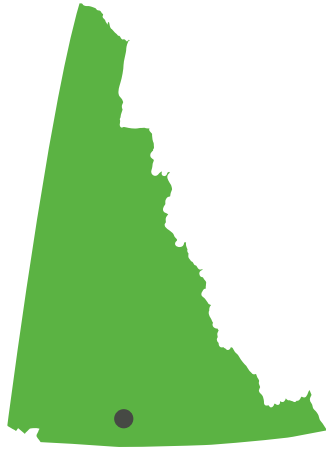
Although most reclamation activities were completed by 2010, Teck continues to work with the community to find further post-closure land uses. For example, through a collaborative partnership with the City of Kimberley, a 1.05-megawatt community solar power plant was completed and began operating in 2015 on reclaimed land at the Sullivan site

Bruce Donald, Manager, Legacy Properties, at the reclaimed Sullivan Mine site.



Closure is the longest part of a mine's life, so it needs to be done properly. You need to consider how you're going to restore the land toward its natural state, while at the same time helping the community transition throughout the process and adjust to life after the mine.

Bruce Donald,  
Manager,  
Legacy Properties



● **Sä Dena Hes**

Watson Lake, Yukon

**Type:** Zinc and lead mine

**Active:** 1991–1992

**Status:** Closed and fully reclaimed; ongoing post-closure monitoring and transitioning to end land uses

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## Closure Example: Collaborating with Indigenous Peoples at Sä Dena Hes

At Teck, we know that engaging Indigenous Peoples in the planning process, even before the mine begins, is fundamental to successful mine closure. One example is the relationship built with the Liard First Nation. The former Sä Dena Hes mine lies within the Liard First Nation traditional territory in the Yukon and was acquired by Teck in 1993 after it had been operated for only 16 months. In 2013, when we made the decision to permanently close the zinc-lead mine, it was our priority to work with them on the closure and reclamation plan.

We began a dialogue with Elders, Chief and Council, and community members. Through meetings, open houses, site visits and the development of a project working group, we learned that one of their main areas of interest was maximizing local economic benefits during the closure process. This led to signing of a socio-economic participation agreement between Teck and the Liard First Nation.

This agreement resulted in a local Indigenous hiring requirement for the major general contractor tackling much of the reclamation work on the site. Most of the remaining projects also went through a tendering process with the same requirement, and several contracts were directly awarded to Liard First Nation contractors.

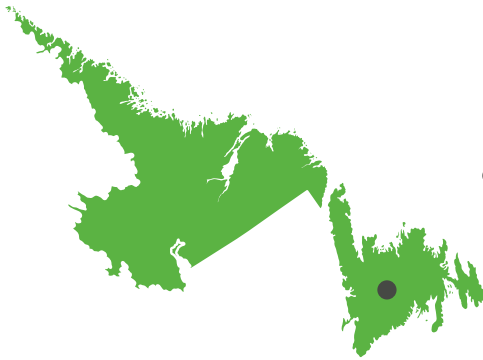
With our support, the Liard First Nation also conducted a qualified personnel search, which included collecting résumés and advising the community about opportunities.

To further promote local involvement, we hired environmental monitors and first-aid attendants from the Liard First Nation and funded traditional knowledge studies. Throughout the closure work, 60 per cent of all Teck-contracted hours worked at site were completed by Indigenous personnel.

As part of our ongoing engagement, discussing end uses for the land was a cornerstone of the dialogue with the Liard First Nation. Traditional land uses such as subsistence activities and traditional values were incorporated into the final plans.

Based on the successful closure of the Sä Dena Hes mine site, Teck was recognized for Excellence in Environmental Stewardship with the Robert E. Leckie Award from the Yukon Government.





● **Duck Pond**  
Millertown, Newfoundland

**Type:** Underground copper mine

**Active:** 2007–2015

**Status:** Decommissioning underway, reclamation work begun; working with local stakeholders to establish end land uses

## Closure Example: Planning for the Mine Life of Duck Pond

When our Duck Pond copper and zinc mine in central Newfoundland began operations in 2007, it was with the knowledge it would likely close in 2015. That made it important to focus on planning for closure to mitigate the impacts on employees and communities. There had to be dialogue and a lot of local input into the closure plans.

In the years and months leading up to mine closure we held a series of information sessions in the six local communities to seek local input on closure plans. We also scheduled regular meetings and site visits with municipal governments and local organizations. The feedback we received throughout this process was largely concern over lost employment and a desire to know what Teck planned to do with the land. There was high interest in returning the land to its natural state, with some considerations for hunting, fishing and logging.

Given this feedback, even though the closure had been planned for from day one, we recognized our employees and the community would need to be supported throughout the transition. As a result, the closure plan included severance, résumé assistance and help identifying employment opportunities for employees at other Teck operations in Canada or other companies in the region. We also looked for opportunities to sell the mill to potential buyers, in an effort to create new regional employment and economic opportunities.

Teck connected with more than 60 companies from the region to collaborate on how they could participate in the various stages of closure and reclamation in a way that would continue to generate local economic benefits.

The decommissioning and reclamation activities are focused on restoring the land to a natural state that reflects the community's objectives for the land. While closure work continues at

Duck Pond, our focus is to maintain engagement with our communities of interest to keep them informed, identify further opportunities to create benefits and continue planning for post-closure land uses.

**Teck has been a great corporate citizen and have set the bar for other companies to follow when it comes to engaging and supporting rural communities while partnering with them in resource development.**

Derm Corbett,  
Mayor of the Town of Buchans, Newfoundland



● **Luscar mining area at Cardinal River Operations**  
Hinton, Alberta

**Type:** Steelmaking coal mine

**Active:** 1969–2004

**Status:** Ongoing reclamation of former mining areas; end land use plan established

## Closure Example: Cooperative Planning for Land Uses After Mining

The Luscar mining area, located in the foothills of the Rocky Mountains at our Cardinal River Operations in west-central Alberta, operated from 1969 until 2004 when its steelmaking coal resources were largely depleted.

While a portion of the area with infrastructure including the processing plant, continues to support the active mine, much of the disturbed lands are in the midst of reclamation. Once reclamation is complete, these post-mining lands will be returned to the provincial Crown, so it was important to Teck that a Land Management Plan (LMP) process be initiated. Teck acted as a catalyst in engaging provincial agencies and regulators to define a land management plan to facilitate this future transition. Together, a Working Group was developed to initiate the Luscar & Gregg River Mines Land Management planning process.

Through this process, a collaborative planning approach that incorporated views from a diverse group of local stakeholders—including government, other mining companies, recreationists, conservationists, Indigenous Peoples and local communities—was undertaken. Those discussions led to the development of focus groups and working groups and ultimately the development of strategies to meet the end land use objectives.

In 2012, the Luscar & Gregg River Mines Land Management Plan was signed by the Crown. It provides guidance on future management of reclaimed lands, with specific focus on conservation values, ecological health, and public access.

The LMP for Luscar is focused on achieving the following outcomes:

- Ensuring wildlife and fishery resources and habitats are healthy, productive and sustainable

- Keeping water and watersheds healthy, productive and sustainable
- Developing effective education, enforcement, monitoring and stewardship approaches
- Advancing sustainable recreational opportunities
- Pursuing commercial and industrial opportunities compatible with the plan

To date, over 1,300 hectares—an area larger than 2,400 football fields—have been reclaimed at the former Luscar mine.

Reclaimed area at Cardinal River Operations in Alberta.



We monitor and manage post-mining landscapes long-term to ensure that our closure actions have been successful at achieving the key objectives identified in our end land use plan. These objectives include habitat rehabilitation, public health and safety, and water quality protection.

Marc Symbaluk,  
Superintendent, Environment,  
Cardinal River Operations

# In Detail: Our Approach to Reclamation

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The goal of reclamation is to conserve and enhance biodiversity, protect the environment, and turn lands where mining has occurred over to new and productive uses. This work can include establishing healthy wildlife areas and wetlands, or preparing for future economic or recreational uses.

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In the earlier days of mining, reclamation planning was done towards the end of the mine's life, if at all. Today, we begin reclamation planning at the start of a project—before mining even begins—which allows for a wider range of potential methods, better options for the landscape, and shorter timeframes to achieve end land uses for Indigenous Peoples and communities.

We engage with governments, communities and Indigenous Peoples about our reclamation plans and objectives prior to mining. We adopted this approach to promote a more inclusive and collaborative way of doing business and outcomes that better reflect what local stakeholders want for their region.

We also carry out progressive reclamation, which means that we reclaim portions of the site no longer required for mining, while mining continues at other parts of the site.

The reclamation best practices we implement today have been developed throughout the course of three decades of reclamation research at our sites.

Garry Luini, Environmental Coordinator, takes notes in an early-stage reclamation area at Line Creek Operations.







## Reclamation: A Closer Look

### Before Mining Step 1: Reclamation planning

Prior to mining, we conduct social, environmental, regulatory and archeological assessments and consult with Indigenous Peoples and local communities regarding traditional and recreational land uses. The information we gather on the original conditions at our mine sites helps shape our long-term reclamation targets for areas such as water, soil and biodiversity, as well as end land uses.

During our initial research we develop a biodiversity baseline for each site that guides our reclamation plans. It helps us ensure we are minimizing impacts to animals, plants and their habitats, and is factored into all our work throughout the life of the mine.

### Preparing for Mining Step 2: Removing overburden

To prepare the site for mining, we begin by removing the sand, gravel, topsoil and vegetation in the areas we plan to mine. Where practicable, we save this mixed soil material so we can use it as part of reclamation work as mining is completed. Soil is a valuable resource for re-establishing native plant-life, which leads on to habitat for birds, insects and other animals to make the former mine their home once again.

### During Mining Step 3: Progressive reclamation

When mining in a particular area of the operation is complete, we begin the work of reclaiming that area of the mine even as work continues in other areas of the operation.

#### **Step 3.1: Sloping and placing soil**

We re-slope the area as required, and place the soil material salvaged in Step 2 on areas of the mine to be revegetated. We may also use additional coarse woody debris—fallen trees and large branches found in the areas ground cover during the reclamation process—as ground cover during the reclamation process. We also use wildlife trees—dead trees placed vertically in the ground—to provide structures on rocky areas which can be used as nesting or perching habitat for birds. This enhances the biodiversity value of the reclaimed landscape by returning key elements of mature or old growth forest that create suitable habitat for nesting birds.



Dan Charest, Environmental Coordinator, conducts water testing at Greenhills Operations in southeast B.C.

### Step 3.2: Replanting

Whenever possible, we plant native species when reclaiming a mined area, chosen based on research and consultation conducted during previous planning phases. We use those native species most likely to survive and thrive in a particular area and we also plant the type of vegetation most suitable for natural ecosystems that occur in the area, in order to achieve ecosystem and biodiversity objectives. We also incorporate cultural uses of the land, after learning about those from area Indigenous Peoples and other community stakeholders tied to the land.

For example, one area of reclamation at our Fording River Operations is a relatively low-elevation site, and is east-facing, which means that the slopes are cooler and moister than a sunny west-facing slope would be. This results in selection of plant species that will thrive in a cooler and moister environment. Species such as Engelmann spruce will have much higher growth rates in these sites than if planted on a drier and warmer site. Reclamation at higher elevation sites can mean a harsher climate—higher winds, more

exposed sites—so vegetation planted in these areas needs to be tailored to thrive in these conditions. A lot of work goes into determining the right types of vegetation to plant: site studies, Indigenous Peoples consultation and science informs these decisions.

### Step 3.3: Reclaiming water features

Another important part of the reclamation process is reclaiming water features at the mine site, such as tailings ponds and pit lakes.

Tailings are the finely ground rock particles, sand, silt and other substances left following the process that extracts the valuable resource (e.g. copper, zinc, steelmaking coal) from the rock. They are often stored in tailings ponds created through the use of berms, dams or natural features that hold it all in place. Depending on the reclamation plan and the end land uses, these ponds are either entirely drained of water and decommissioned, or turned into new aquatic ecosystems of their own.

In some cases, our closure plans include creating other new water features that remain after mining, called pit lakes. In

this case, when one area of a mine is complete, the remaining pit can be filled with tailings or rock and then covered with water, creating a new lake.

Turning tailings ponds and pit lakes into functioning, healthy aquatic ecosystems is something Teck has done successfully at several of our sites, including our Highland Valley and Cardinal River operations. For more information, see the reclamation case studies on pages 28 and 30.

## After Mining Step 4: Monitoring and Upkeep

Once reclamation of an area is complete, we monitor the success of reclamation activities and adjust our approaches as necessary to ensure our land-use plans are working and environmental and biodiversity objectives are being achieved.

At some mine sites, long-term treatment of water is required. In those cases, Teck responsibly operates and maintains those facilities, and monitors to ensure water quality targets are being met.



● **Fording River and Greenhills**

Elkford, British Columbia

**Type:** Steelmaking coal mine

**Active:** Fording River, 1972–today  
Greenhills, 1983–today

**Status:** Progressive reclamation during mining; active reclamation research program

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## Reclamation Example: Reclamation Research at Fording River and Greenhills

Our Fording River mine in the Elk Valley of southeastern B.C. is a pioneering site in mining reclamation research, having led research and development of best practices and improved techniques for decades.

Environment personnel at Fording River began to incorporate reclamation research in the early 1980s, conducting early studies on optimal approaches to slope preparation, site preparation, species selection, and the spacing and timing of revegetation. From this research we developed our operational best practices, which we have refined over the last 30 years.

We still learn from the work being undertaken at Fording as we continue to conduct monitoring and research on the response of the vegetation to our treatments. We carry that new knowledge forward into our operational practice, to see improvements and to realize our goals of net positive impact for biodiversity.

At our Greenhills mine, located adjacent to Fording River, we are conducting reclamation research at the Rosebowl, a 30-hectare site where leftover rock was piled during mining. This research is focused on better understanding what types of plant species are best for revegetation and what kind of soil treatments may help to retain moisture to support vegetation growth.

For this research, we create mounds, similar to moguls on a ski hill, which provide shade and wind protection and help to increase moisture in the trenches between them—all things that promote vegetation. We plant a variety of species, from herbs to shrubs to conifers; each species is targeted towards the conditions found in individual portions of the mounded surfaces. Studying the areas prepared in this manner is helping us determine which native species are best suited to grow in which specific conditions.

Victoria Gehue, Environmental Technician at a reclaimed area of Fording River Operations.







● **Greenhills**  
Elkford, British Columbia

**Type:** Steelmaking coal mine

**Active:** 1983–today

**Status:** Progressive reclamation during mining; researching improved reclamation techniques

## Reclamation Example: Saving Soil at Greenhills

Our objective in conducting reclamation is to conserve and re-establish the biodiversity of a mine site, in order to replace much or most of the diversity of natural ecosystems that existed before mining and create a positive legacy for the environment and local communities.

An important technique we use is salvaging soil to assist in the re-vegetation of mined areas. A project undertaken at an area of our Greenhills operation in southeast British Columbia is an example of how we salvage soil for later use in reclamation. We salvaged soil over a large area to a depth of nearly 1 metre—including woody debris such as stumps—and stockpiled it for later use in reclamation activities. To maximize productivity, 16 pieces of soil-mulching equipment worked simultaneously, chewing up woody debris and mixing it all into the soil.

Over the course of the project, we salvaged and saved approximately 1 million cubic metres of this earthy material—the equivalent of about 17 million large bags of soil from a home gardening store.

The soil is stockpiled outside the footprint of the active mine area and is now being used to cover the areas where mining activity has been completed via progressive reclamation, which will occur from now until 2035.

This project demonstrates how we can work to improve reclamation techniques such as soil salvaging, and the importance of the measures we take early in the mining process to help ensure we can fully reclaim mined areas in the future.

**Every area we mine, we do so knowing that in the future, we'll need to reclaim it back to a more natural state. Salvaging soils is an important part of that long-term process.**

Dan Charest,  
Environmental Officer,  
Greenhills Operations

Dan Charest and Jim Thorner, Senior Coordinator, Environment, discuss the Soil Salvage Project near the Greenhills Operations soil stockpile.





● **Highland Valley Copper**  
Logan Lake, British Columbia

**Type:** Copper mine

**Active:** 1962–today

**Status:** Progressive reclamation of former mining areas during ongoing mining activity

## Reclamation Example: From a Tailings Pond to a Trout Pond

Trojan Pond at our Highland Valley Copper Operations near Kamloops, B.C. was once a working tailings pond. Through the work of our environmental experts and aquatic biologists, it has been reclaimed into a naturally functioning, self-sustaining lake ecosystem, complete with healthy populations of fish.

The process of transforming Trojan Pond into a functioning ecosystem began at the very bottom of the food chain. First, phosphorus and nitrogen were added to the pond to balance out the nutrients already present and get the base of the food chain started. Then, we introduced bacteria, which are a key component of ecosystems. Once the bacteria were established, we introduced algae to the mix. Algae help create a healthy habitat for fish by removing much of the metals present in the water.

Zooplankton, tiny organisms that eat algae, are also introduced. Once a population of zooplankton was established, we began to introduce fish.

Trojan Pond has now been self-sustaining for 20 years and serves an important role both in ongoing research on tailings pond reclamation techniques and as a recreational area for the community. Highland Valley Copper hosts multiple fishing derbies at Trojan Pond each year, with funds raised going to support charities in the region.

**The Trojan Pond reclamation site has become an excellent community resource for environmental education and outdoor recreation. Over the past several years, the Freshwater Fisheries Society of BC has delivered Learn to Fish programs for youth and their families, as well as participated in various other tremendously popular fishing events hosted by Highland Valley Copper.**

Mike Gass  
Manager of Sport Fishing Development,  
Freshwater Fisheries Society of BC



● **McCracken Mine**

Signal, Arizona

**Type:** Silver-lead-zinc mine

**Active:** Intermittently from 1870s – 1985

**Status:** Closure and reclamation work to improve safety and environment

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## Reclamation Example: Rehabilitating Historic Sites

In some cases, Teck’s commitment to responsible closure and reclamation can mean rehabilitating sites that we never actually mined. An example of this is the former McCracken Mine in Arizona. An historically significant silver mine in Arizona, the McCracken Mine was mined episodically between the 1870s and 1985. Though Teck acquired the title to the patented claims for McCracken, we never operated the mine.

Surveys of the site determined that safety risks posed by old openings to underground workings required extensive closure work. Teck undertook that work in 2008, securing nearly 50 mine openings to ensure safety. That closure included collaborating with wildlife experts to install specially-designed gates and other barriers that protected underground habitat for four different species of bats, while closing human access to the mine.

In 2015 and 2016, Teck undertook additional voluntary reclamation work in partnership with the U.S. Bureau of Land Management, removing approximately 20,000 cubic yards of historic tailings from adjacent public lands and placing them into an engineered repository on Teck property, further enhancing safety and environmental protection at the former mine. During the reclamation work, special care was taken to prevent harm to protected species including Sonoran Desert Tortoise and migratory birds.

Teck’s efforts to responsibly close and reclaim this historic site were recognized with the Bureau of Land Management’s “Fix a Shaft Today” award and the Arizona State Mine Inspector’s Abandoned Mines Program Voluntary Action Award.

**Teck American implemented the closure plan with an unwavering commitment to health and public safety, as well as the preservation of significant wildlife habitat.**

U.S. Department of the Interior,  
Bureau of Land Management



● **Luscar mining area at Cardinal River Operations**  
Hinton, Alberta

**Type:** Steelmaking coal mine

**Active:** 1969–2004

**Status:** Ongoing reclamation of former mining areas; end land use plan established

## Reclamation Example: Making a Mine Pit into an Aquatic Habitat

Comprehensive early reclamation planning has helped create a habitat for rainbow trout and bull trout to thrive out of a former mining pit at our Cardinal River steelmaking coal operations near Hinton, Alberta.

Cardinal River Operations is one of Teck's six steelmaking coal operations in western Canada. Located within the Luscar mine, this pit was actively mined from 1992 to 1999. As it was located in the drainage of Sphinx Creek, prior to mining a channel was made for Sphinx Creek to go around the active site. Once mining was complete, our goal for reclamation was to restore the flow of the creek and establish a fish habitat as good, or better, than before the mine.

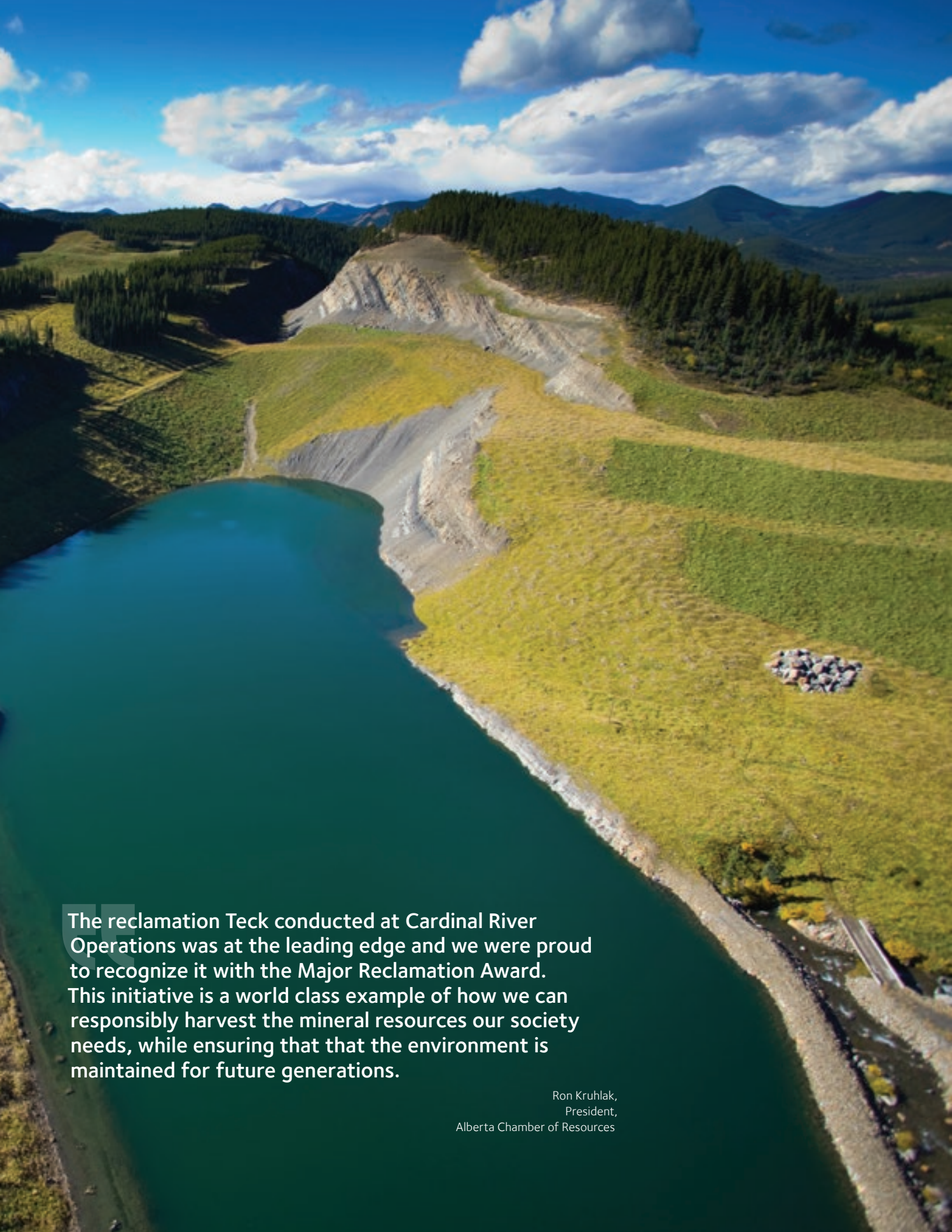
First, the Sphinx Lake pit lake system was constructed by replacing and reshaping the material removed during mining to backfill some of the pit, and then filling it with water. The next step was constructing an inlet and outlet channel for the lake, as well as habitat suitable for aquatic plants and other life.

Next, Sphinx Creek was redirected into the newly constructed channel into the lake, serving as a spawning and rearing stream.

We've watched over the years as Sphinx Lake has flourished, and today it meets all of the criteria for an ecologically healthy lake. The Sphinx Creek watershed now provides healthy habitat for a substantial population of both resident and migratory native rainbow trout, as well as bull trout—both of which are listed as Species of Special Concern by Alberta's Endangered Species Conservation Committee.

In 2007, our work to create Sphinx Lake was awarded the Major Reclamation Award by the Alberta Chamber of Resources.

Rainbow and bull trout are now thriving in the Sphinx Creek watershed, thanks to the successful reclamation work to turn a former mining pit into Sphinx Lake at our Cardinal River Operations.



The reclamation Teck conducted at Cardinal River Operations was at the leading edge and we were proud to recognize it with the Major Reclamation Award. This initiative is a world class example of how we can responsibly harvest the mineral resources our society needs, while ensuring that that the environment is maintained for future generations.

Ron Kruhlak,  
President,  
Alberta Chamber of Resources

# Awards and Recognition for our Mine Closure and Reclamation

Teck's reclamation work has been recognized through dozens of reclamation awards and citations. In British Columbia alone, where most of our current operating mines are located, we have received over 50 individual provincial awards over almost 40 years for reclamation achievements. Below is a list of reclamation awards since 2000.

## 2015

### Sullivan Mine

SunMine developed at the reclaimed Sullivan mine in partnership with Teck, recognized by Clean Energy BC with the Community of the Year Award and by the Association of Professional Engineers and Geologists with the BC Sustainability Award

### Apex mine

Earth Day Award from Utah Board of Oil, Gas and Mining

## 2014

### Sa Dena Hes Mine

Robert E. Leckie Award from the Yukon Government for excellence in environmental performance based upon closure and reclamation activities

## 2013

### Pinchi Mine

Jake McDonald Reclamation Award for outstanding achievement in mine reclamation in B.C.

## 2010

### McCracken mine

Fix a Shaft Today (FAST) award from federal Bureau of Land Management

### Elkview Operations

B.C. Technical & Research Committee on Reclamation (BCTRCR) award for outstanding achievement for reclamation at a coal mine

## 2009

### Highland Valley Copper

Jake McDonald Reclamation Award for outstanding achievement in mine reclamation in B.C.

### Coal Mountain Operations

BCTRCR award for outstanding achievement for reclamation at a coal mine

## 2008

### Line Creek Operations

BCTRCR award for outstanding achievement for reclamation at a coal mine

### McCracken mine

Voluntary Action Award from Arizona State Inspector of Mines

## 2007

### Fording River Operations

BCTRCR award for outstanding achievement for reclamation at a coal mine

### Cardinal River Operations

Major Reclamation Award by the Alberta Chamber of Resources

### Trail Operations

Citation for outstanding achievement for reclamation at a metal mine/smelter

## 2006

### Highland Valley Copper

BCTRCR award for outstanding achievement for reclamation at a metal mine

### Elkview Operations

BCTRCR award for outstanding achievement for reclamation at a coal mine

## 2005

### Churchill Mine

BCTRCR award for outstanding achievement for reclamation at a metal mine

### Fording River Operations

BCTRCR award for outstanding achievement for reclamation at a coal mine



## 2004

### **Fording River Operations**

BCTRRCR award for outstanding achievement for reclamation at a coal mine

### **Bullmoose Mine**

Jake McDonald Reclamation Award for outstanding achievement in mine reclamation in B.C.

### **Sullivan Mine**

BCTRRCR award for outstanding achievement for reclamation at a metal mine

## 2002

### **Bullmoose Mine**

BCTRRCR award for outstanding achievement for reclamation at a coal mine

### **Bluebell Mine**

Jake McDonald Reclamation Award for outstanding achievement in mine reclamation in B.C.

## 2001

### **Greenhills Operations**

BCTRRCR award for outstanding achievement for reclamation at a coal mine

## 2000

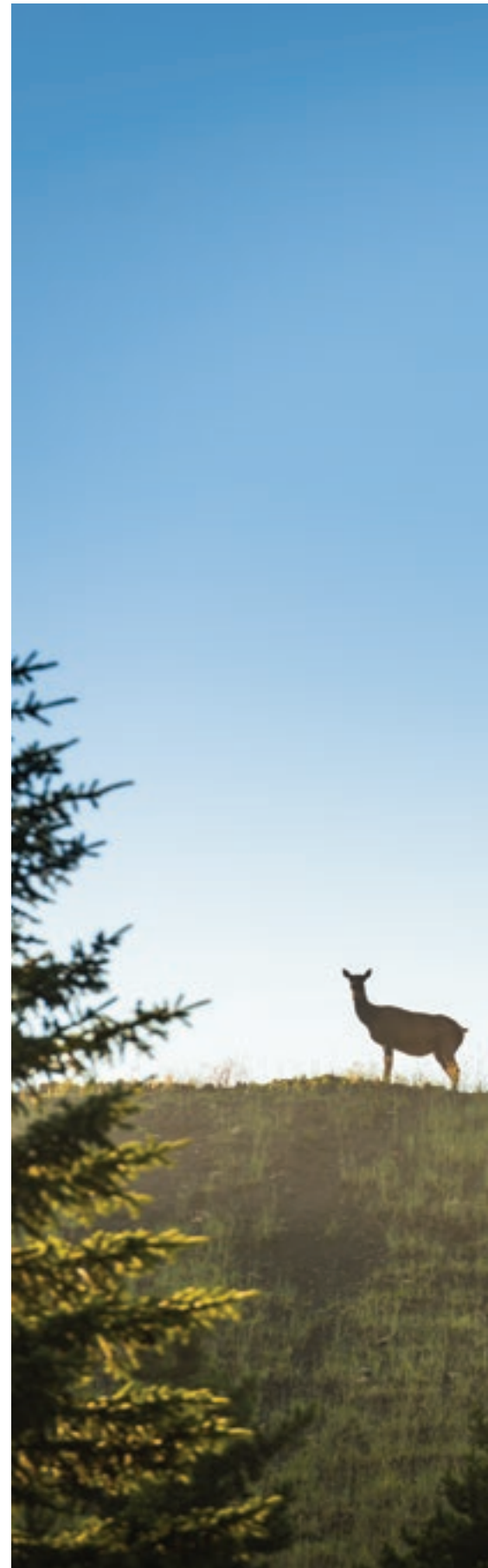
### **Fording River Operations**

BCTRRCR award for outstanding achievement for reclamation at a coal mine

### **Highland Valley Copper**

Jake McDonald Reclamation Award for outstanding achievement in mine reclamation in B.C.

A cow elk near our steelmaking coal operations in British Columbia.



# Summary

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Responsibly closing and reclaiming mine sites is a cornerstone of Teck's approach to sustainable mining. Engaging with communities and Indigenous Peoples and restoring mined areas to productive land uses once mining is concluded is integral to the way we do business. It is important to us and to our employees because it is the right thing to do and because those employees live, work and raise their families in the places where we operate. They are passionate about ensuring wildlife habitat and landscapes are restored so that the area is left better off for the next generation.

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We continue to refine our closure and reclamation activities through research, monitoring and experience in order to ensure our work reflects the best practices in the industry. We are proud of our history of using research—often conducted at our own sites—to improve reclamation outcomes for Teck and for the entire mining industry.

Our vision for closure and reclamation in the future—10, 20 and 50 years from now—is for our reclaimed sites to be flourishing ecosystems that contribute to a net-positive increase in biodiversity and provide opportunities for diverse land uses. Through the hard work, commitment and expertise of our people, we know it is a vision we can achieve.

For more information on Teck's approach to responsible mine closure and reclamation, go to [www.teck.com/AfterMining](http://www.teck.com/AfterMining)

Jaimie Dickson, Environment Supervisor,  
reviews reclamation work at Highland Valley  
Copper Operations





