

Highvale Mine Decommissioning and Reclamation Plan

February 2022

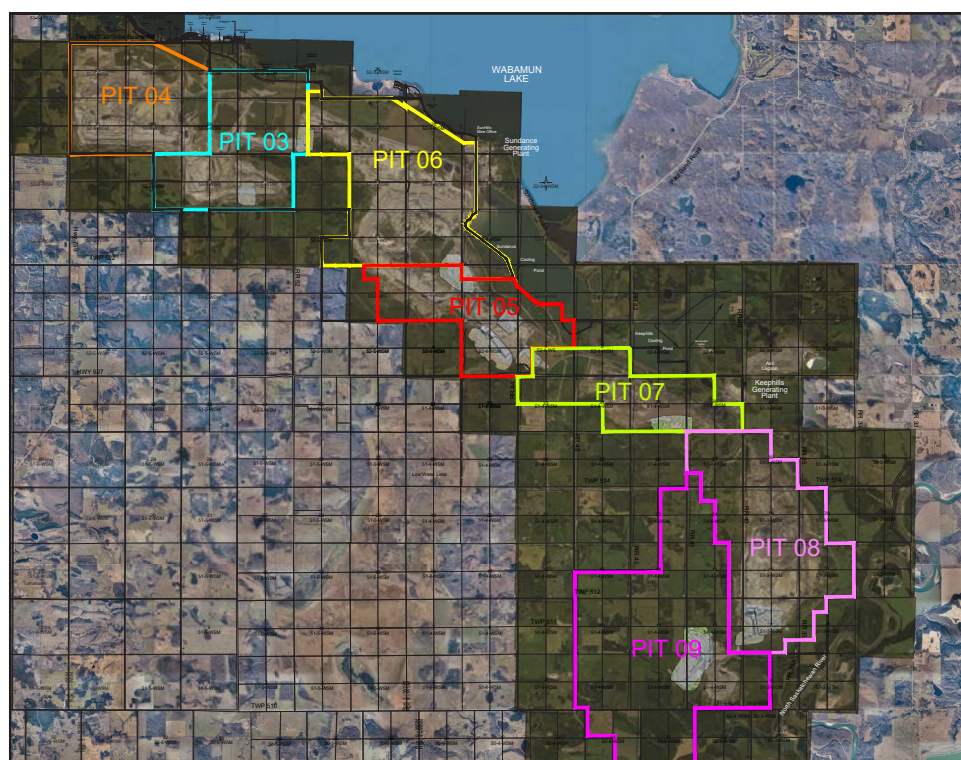
Introduction

Active coal mining at TransAlta's Highvale Mine ceased at the end of December 2021 with the end of coal-fired generation at the Keephills and Sundance power plants. Operations at the Highvale Mine shifted to full-time reclamation in January 2022 with plans to have the Highvale Mine fully reclaimed by 2046.

TransAlta Corporation (TransAlta") will be submitting under the Environmental Protection and Enhancement Act ("EPEA") a combined Decommissioning Plan and Final Reclamation Plan integrated with an EPEA Renewal Application for a 10-year term for the Highvale Mine to the Alberta Energy Regulator ("AER") in June 2022. Prior to filing our regulatory applications, TransAlta will be engaging with Indigenous groups and local stakeholders about the decommissioning and reclamation plans, and the 10-year EPEA, Water Act and Coal Conservation Act Renewals for the Highvale Mine.

Overview of the Highvale Mine

The Highvale Mine began operations in 1970 and was the largest sub-bituminous, surface coal mine in Canada covering an area of approximately 12,620 hectares. The Highvale Mine is located to the south of Wabamun Lake, approximately 65 kilometers west of Edmonton, Alberta in Township 50, Range 4; Township 51, Ranges 3 and 4; and Township 52, Ranges 5 and 4; all west of the fifth Meridian. The Highvale Mine transitioned from five active pits in 2017 to one active pit in 2020, permanently ceasing coal mining operations at the end of last year.



Highvale Mine Layout

Objectives for Reclamation

- Return all areas disturbed by mining operations to acceptable and/or equivalent land use and capability;
- Work collaboratively with regulators, governments, local stakeholders and Indigenous communities as we reclaim the Highvale Mine lands;
- Achieve best-in-class in safety and environmental performance; and
- Reflect TransAlta's values: safety, sustainability, innovation, respect and integrity.

Reclamation Process

Currently, 1,566 hectares ("ha") of land at Highvale has been reclaimed and 215 ha are certified. In 2021, TransAlta applied for a reclamation certificate for 263 ha. The sequence of progressive reclamation activities at the Highvale Mine will continue as described below:

- **Planning and design** - regrading designs will be prepared taking into account planned end-land uses, the cut/fill balance of placed materials and the final drainage pathways.
- **Land forming** - areas will be smoothed and leveled to final slope designs taking into consideration planned final land class and end use.



Land forming will primarily be completed with dozers, draglines will be utilized in certain areas where this is possible.

Reclamation Process (continued from page 2)

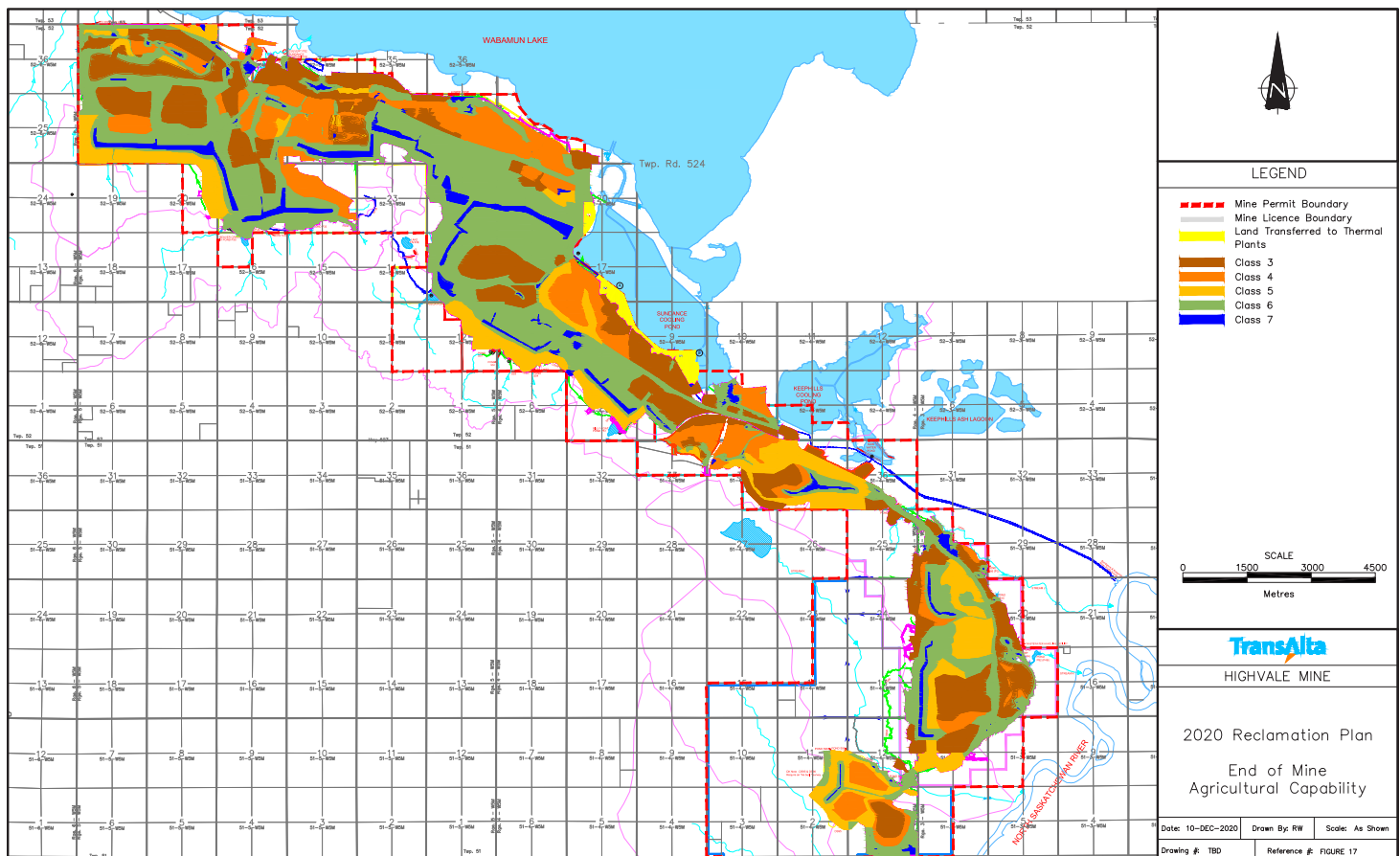
- **Re-establish drainage pathways** – outlets from end-pit lakes will be created to maintain natural water pathways once the end-pit lakes reach designed water levels.
- **Soil placement** – soils will be replaced in depths according to planned end-land use. Subsoil will be placed first and will remain in place for at least one year so it can settle, and large rocks can be removed. Prior to topsoil placement, the subsoil will be de-compacted to ensure adequate water penetration and root formation.
- **Revegetation and land management** – vegetation will be established on reclaimed lands as soon as possible following soil reconstruction in order to support the land capability goals, control wind and water erosion and reduce the infestation and spread of noxious weeds. Various land management techniques may be undertaken on reclaimed land including fertilizing, mulching and deep ripping. The revegetation plan is designed to produce stable landscapes with minimal erosion on areas designated for low intensity use and productive agricultural fields, which can sustain typical farming practices used in the Highvale region.

A variety of seed mixes have been designed for use at the Highvale Mine depending on the intended end-land use. Areas planned to be reclaimed for agricultural use will typically be seeded for forage production with an initial cereal cover crop. The revegetation of non-agricultural lands will be directed at allowing the establishment of a permanent self-sustaining vegetative cover based on commercially or readily available local species. Islands or clusters of trees and shrubs will be established to visually break up the landscape and provide some immediate cover for wildlife. Revegetation is usually completed one year after it is seeded, and/or adequate growth is observed.

Monitoring and certification process – a reclamation monitoring plan is established outlining procedures and best practices to ensure reclamation quality and completion. Care and custody of the land is required for a period of three to ten years before reclamation certificates can be obtained. Once reclaimed land has met the criteria established in the reclamation monitoring plan, TransAlta will complete and submit a Reclamation Certificate Application to the AER for their review. The AER will review the application to ensure it meets the criteria of the Environmental Protection and Enhancement Act as well as Conservation and Reclamation Regulations. The AER will conduct field visits to verify the application prior to the final review and decision to grant a reclamation certificate.

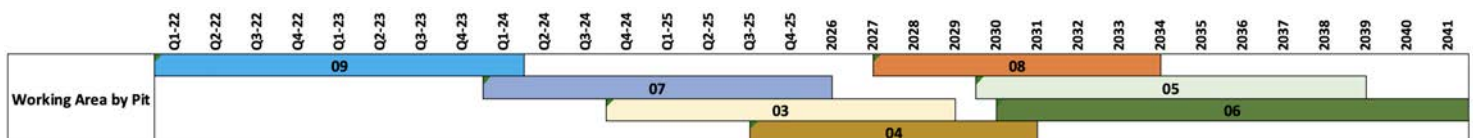
Overview of Mine Reclamation Plan

The post reclamation landscape will have a balance of agricultural end-land uses, forested/open grass areas, wildlands, wetlands and end-pit lakes. TransAlta is proposing to include more wildlands surrounding the end-pit lakes to act as a buffer zone between the agricultural lands and the lakes.



Reclamation Timeline

The estimated schedule for reclamation is described in the following chart, beginning in Pit 09 from 2022 to 2024, followed by Pit 07 from 2024 to 2026.



TransAlta is targeting to have all land regrading completed by 2036, soil placement activities completed by 2042 and full reclamation of the Highvale Mine completed by 2046.

Reclamation Work

Reclamation will be performed by a crew of approximately 40-60 people working in the daytime. No night-time shift work is planned and currently there is no blasting planned as part of the reclamation work.

Equipment requirements

- Draglines – one in operation at any given time – land forming and contouring
- Loaders – soil placement
- End dumps (CAT 777 and CAT 789) – soil placement
- Water truck (CAT 777) – dust control
- Graders – road maintenance and soil conditioning
- Dozers (D6, D9, D10 and D11) – land forming, soil spreading, support to draglines and loaders
- Scrapers – soil placement and road maintenance
- Excavators – drainage and water management



TransAlta's largest dragline, Misikitew

Decommissioning

As sections of the mine are reclaimed, the associated mine haul roads, powerlines and buildings will be removed. In some cases, infrastructure may remain in place depending on the intended end-land use. During the decommissioning and reclamation process, all waste materials will be handled according to applicable waste management regulations.

Future Land Sales

With the end of coal operations occurring earlier than originally planned, some previously purchased and undisturbed land owned by TransAlta is no longer needed. The undisturbed land and land with a reclamation certificate will be made available for sale in the future. TransAlta will engage the services of a real estate agent to manage land sales. TransAlta will also look at opportunities to donate land for ecological conservation.

Road Replacement

Road replacements will be coordinated with Parkland County to create appropriate access to the reclaimed areas.

Exploring Renewable Energy (Solar Farm)

TransAlta is engaging in preliminary discussions with regulators to consider the opportunity to build a solar facility on mined land within the Highvale Mine permit area. When more information becomes available about this opportunity, TransAlta will engage Indigenous communities and stakeholders regarding this project.

Reclaiming Ash

TransAlta is exploring commercial opportunities to recover the ash, both bottom and fly ash, stockpiled in the authorized ash dump located in Pit 05, south of the Sundance Power Plant. Fly ash is important for cement production and bottom ash is useful for road and concrete production. TransAlta will share more information related to this opportunity when it is available.

Environmental Considerations

Surface water - The final reclaimed mine landscape will contain surface water resources, which will be equivalent to pre-disturbance conditions in terms of water yield, water quality and protection of aquatic habitats. Drainage patterns will be re-established, integrating the upper undisturbed watersheds with the reclaimed land watersheds with flow to Wabamun Lake and the North Saskatchewan River.

Water management at the Highvale Mine consists of drainage systems for clean undisturbed surface runoff (primary) and mine effluent (secondary). All secondary water is currently routed to the Sundance Cooling Pond or the Pit 08 Flocculant building. The existing water management systems will remain in place until watersheds are approved for release to the surrounding environment. Monitoring and analysis will be required to determine success or the need for additional mitigative measures.

Drainage features will consist of small ponds, flow-through end-pit lakes, swales and constructed riparian channels. Sub-watersheds (runoff from reclaimed land) will be allowed to flow to natural water courses when they are fully revegetated and can be separated from disturbed areas.

Wabamun Lake Water Treatment Plant - TransAlta's Wabamun Lake Water Treatment Plant ("WLWTP") operates to treat and divert water to Wabamun Lake from the Sundance Cooling Pond which is made up of secondary drainage from the Highvale Mine and makeup water from the North Saskatchewan River. Treated water pumped to Wabamun Lake from the WLWTP is used to offset water that is diverted away from Wabamun Lake by TransAlta's operations, primarily the Highvale Mine. Targets for pumping are determined through a water balance model designed specifically for forecasting TransAlta's diversion impact. The model is updated annually to include the most recent precipitation and runoff data as well as long-term data. The volume of treated water pumped annually represents only a fraction of the overall runoff within Wabamun Lake and therefore contributes only a small amount to the lake level.

As reclaimed watersheds are returned to Wabamun Lake, the volume of treated water being pumped will be reduced. TransAlta will continue to operate the water treatment plant until a time when it is no longer required.

Groundwater - TransAlta maintains a network of groundwater monitoring wells (piezometers) that are used to assess groundwater quantity and quality throughout the Highvale Mine area. As monitoring continues, trends are established which support the long-term recovery of groundwater in the reclaimed landscape. It is predicted that post-mining groundwater resources may not be equivalent to pre-mining conditions. With some disruptions to main aquifers through the mining process, the resulting post reclamation groundwater within mined areas may be unsuitable for domestic use because of variable or low transmissivity and reduced water quality. However, with the cessation of coal mining, further disturbances to groundwater resources will be significantly reduced. As the reclamation certification process advances across the mine area and groundwater conditions are approved, the monitoring piezometers will be decommissioned.

Dust control - TransAlta will continue to water active mine roads to control dust during the summer months until reclamation is complete.

Environmental Considerations (continued from page 6)

Wetland restoration – TransAlta will meet its approval requirements to restore wetlands that have been disturbed or impacted due to mining and will verify their sustainability as part of the reclamation certification process. As reclamation progresses, wetlands will be restored and monitored. Included in our 2021 Pit 07 Reclamation Certificate Application are 3.45 ha of wetlands.



In 2015, TransAlta donated the Beaver Creek Conservation site to Alberta Fish & Game Association Wildlife Trust Fund. A portion of this site was once a mine settling pond which has been reclaimed to a vibrant wetland community.



A wetland created in the Pit 07 area.



Pit 03 ponds area, purple aster.

Tree planting – trees will be planted on land that is not intended for agricultural use to create habitat for wildlife, create natural breaks within the landscape and to act as a buffer between agricultural fields and future end-pit lakes. Areas planned for future forest will typically be planted with a mix of shrubs and tree species including willows, aspen and balsam poplar, spruce and native berry bushes. TransAlta will look to incorporate identified species that are culturally important for Indigenous communities in its reforestation work. Areas where trees naturally revegetate on reclaimed land, such as in Pit 06 pictured below, will be left as is and this land will be excluded from future agricultural operations.

Weed control – TransAlta's weed control program operates from May to September each year which typically includes an aerial-spraying program reaching more than 2,000 acres in the Highvale and Whitewood mine areas. To reach the areas that the aerial program does not cover there are spraying teams equipped with truck-mounted sprayers and one all-terrain vehicle to access small areas.



Naturally reforested land in Pit 06.

Regulatory Overview

Six months after the end of active mining (June 2022), TransAlta is required to submit to the AER a Decommissioning Plan and Final Mine Reclamation Plan. At the same time, TransAlta will file a 10-year Renewal for the Highvale Mine under EPEA, the Water Act and the Coal Conservation Act.

Indigenous and stakeholder engagement

TransAlta values engagement with all participants and we welcome your involvement in the regulatory process for the combined Decommissioning Plan and Final Reclamation Plan integrated with an EPEA Renewal Application for a 10-year term. Your participation helps us to understand desired end-land uses and to optimize the Highvale Mine reclamation plan where possible.

You are invited to join us at our **Public Open House**

Date: Thursday, March 17, 2022

Time: 3 – 4 pm | 5 – 8 pm

Location: Highvale Mine Building

4419B Sundance Road, Parkland County, Alberta (west of Sundance Power Plant)

Being mindful of the importance of physical distancing and to comply with provincial health restrictions, participants are asked to pre-register to attend the open house within one of the following one-hour time slots.

3 – 4 pm | 5 – 6 pm | 6 – 7 pm | 7 – 8 pm

Participants who are unable to attend are welcome to submit their questions to TransAlta and a representative will respond to their query within three business days.

To register for the open house or if you have questions please email: AB_Coal_Communications@TransAlta.com

TransAlta contact information

TransAlta's team looks forward to hearing your feedback and invites participants to send their questions to the following email and telephone number. A team member will respond to all queries within three business days.

Telephone: 1-877-636-7822 | **Email:** AB_Coal_Communications@TransAlta.com

For more information visit: www.transalta.com/highvalereclamation

Alberta Energy Regulator contact information

- General Inquiries
Contact the AER's Customer Contact Centre:
Phone: 403-297-8311
Toll-free: 1-855-297-8311
Fax: 403-297-7336
Inquiries@aer.ca
<https://www.aer.ca/protecting-what-matters/giving-albertans-a-voice/statement-of-concern>