Overview

Lundin Mining employs a comprehensive and integrated approach to tailings management. This provides us with confidence that potential environmental and social impacts can be reliably identified and minimized.

Candelaria tailings facility at Candelaria, Chile

Efficient mining and mineral processing, along with disposal underground where practicable, allow our operations to minimize the quantities of tailings stored on surface. Our operations aim to minimize associated risk with a clear understanding of the tailings characteristics, the facility construction materials, and the final settings in which they are placed.

Lundin Mining's Tailings Facilities

Lundin Mining operates five mines with five active tailings facilities and uses two widely accepted methods of tailings disposal:

5 **Active tailings facilities**

6 **Inactive/closed tailings facilities**

39 tailings dam structures across all sites

(1) underground disposal involves mixing tailings with products, such as sand or cement, followed by disposal as a paste backfill or hydraulic backfill in previously mined areas of underground mines; and

(2) surface disposal involves placement in engineered surface impoundments or, in the case of Eagle, in a previously mined open pit.

Of the five Lundin Mining operations, Eagle Mine is the only operation that does not have a constructed tailings impoundment with dams.

The five active tailings facilities use various construction techniques for the main and secondary or perimeter dams, but none use upstream construction. Lundin Mining also maintains and monitors six inactive/closed tailings facilities, one of which is a rockfill combination centreline and downstream design followed by rockfill upstream raises and buttresses (Enemossen tailings facility at Zinkgruvan).

All tailings facilities are operated or closed as per the currently approved design. Full and complete engineering records including design, construction, operation, maintenance and/or closure exist for all tailings facilities except for the inactive Enemossen facility at Zinkgruvan, and closed San Esteban and Ojos del Salado facilities at Candelaria. San Esteban has an updated detailed design closure plan and the three Ojos del Salado tailings facilities are legacy sites that ceased operations in the 1960s. The Ojos del Salado tailings facilities were fully closed in 2012 as per an approved engineered closure plan.

A full list of tailings facilities that Lundin Mining manages, including information on construction method, maximum dam height and volume, can be found in the table on pages 4 and 5.

Tailings Management at Lundin Mining

Surface tailings impoundments can represent one of the more significant environmental risks for the mining industry. Lundin Mining takes considerable care to ensure our tailings facilities are well-designed, built in accordance with leading industry practices and standards, well-maintained, inspected, independently reviewed, and carefully monitored.

Chapada tailings facility at Chapada, Brazil

Policies and Standards

Lundin Mining's Responsible Mining Policy includes a specific Tailings Management Technical Standard. All Lundin Mining's operations manage their tailings in accordance with this technical standard, developed in

2015, and currently under update.

This technical standard requires that all tailings facilities, including major water retention dams, are planned, designed, constructed, operated, and, in the case of inactive or closed facilities, decommissioned and closed in such a manner that:

- All structures are stable; and
- All aspects comply with regulatory requirements, accepted international practice and any commitments to local stakeholders.

Cerro do Lobo tailings facility at Neves-Corvo, Portugal

Monitoring and Surveillance

A requirement of the Tailings Management Technical Standard is for all sites to conduct regular geotechnical, hydrogeological and environmental monitoring to meet regulatory requirements and prevent the uncontrolled release of tailings and/or water to the environment.

All sites employ monitoring and surveillance systems which may include surface prisms, piezometers, inclinometers, remote sensing and other technologies to monitor tailings dams and water levels. Trigger action response plans (TARPs) provide clear guidance on how to respond to pre-determined trigger levels for surveillance activities.

All active tailings facilities have a closure plan which includes long-term monitoring requirements. The monitoring plan for the closed Ojos del Salado tailings facilities is under development and will be evaluated further in 2020.

Responsible Person

Sites are required to identify a Responsible Person (RP) to ensure ownership and proper management of the tailings facility. The RP guarantees procedures for each facility, including an Operating, Maintenance, and Surveillance (OMS) Manual and Emergency Preparedness and Response Plan, are regularly documented and made available to site personnel.

The RP is an appropriately qualified, experienced and site-dedicated individual employed directly by the site. This person typically has an environmental or engineering background.

Staff Inspections

Tailings dams are regularly inspected by trained operators and technical staff, sometimes as frequently as several times daily, with formal documented staff inspections at least quarterly.

Engineer of Record

Each active and inactive tailings facility has an appropriately qualified, licensed and experienced third-party geotechnical engineer to act as an external Engineer of Record or Design Engineer in the relative jurisdiction.

Dam Safety Inspections

Formal dam safety inspections are conducted at least annually by the external Engineer of Record, and reports are issued to the Responsible Person for action on recommendations.

Risk Assessment

Tailings and water dam safety focused risk assessments are reviewed and updated at least annually and include input from site and corporate staff, the Engineer of Record and independent reviewers.

Independent Reviews

A component of the Tailings Management Technical Standard is the requirement for regular independent third-party tailings reviews, which are recognized as a leading practice for effective tailings and water dam stewardship. The reviews are focused on impoundment stability and integrity.

Enemossen tailings facility at Zinkgruvan, Sweden

Independent Third-Party Tailings Reviews

- Requires annual reviews by independent qualified engineering specialists for all active and inactive facilities.
- Reviews are to provide an expert, independent opinion as to whether the tailings facility design and performance meet accepted international practice from a geotechnical and hydrogeological perspective.
- Includes all tailings facilities and water retention structures at each site.
- Program performance is reported quarterly to the Board-appointed HSEC Committee.

The planned annual independent review site visits in 2020 have been postponed because of the COVID-19 travel restrictions. In their absence, online progress workshops with the independent reviewers and Designer/Engineer of Record have been performed to closely track progress made on outstanding recommendations.

Results from the third-party reviews are carefully tracked, and progress updates are sent to the Board-appointed HSEC Committee each quarter.

Continuous Improvement

Continuous improvement initiatives planned over the next two years include the following:

- Mining Association of Canada (MAC) Towards Sustainable Mining (TSM) tailings management protocol gap analyses against existing Lundin Mining tailings related policies and standards.
- A final version of the Global Industry Standard on Tailings Management (GISTM) was released in August 2020. An internal gap analysis is underway to understand alignment between the GISTM and existing Lundin Mining tailings related policies and standards.
- Tailings governance assurance reviews;
- Tailings dewatering (e.g. thickened and/or filtered) evaluations as part of tailings expansion studies; and
- Enhanced tailings dam monitoring and data management systems.

Humboldt tailings facility at Eagle, USA

/s/ Marie Inkster

Marie Inkster
President, CEO and
Director

Lundin Mining Tailings Facility Inventory

Mine Site	Tailings Facility	Current Number of Tailings Dam Structures	Location	Ownership	Status	Years of Operation	Construction Method	Current Max Dam Height (September 2020)	Current Tailings Storage Volume (September 2020)	Planned Tailings Storage Volume in 5 Years (September 2025)	Most Recent Independent Technical Review	Most Recent Dam Breach Analysis
Candelaria	Candelaria Tailings Facility	One main dam and three perimeter dams	Latitude: 27°30'21.90"S Longitude: 70°18'41.96"W	Owned (80%) and Operated	Inactive	1994 to 2019	Downstream	170 m	312 Mm^3	Same as current	June 2020 (5)	February 2017 with update planned in early 2021.
	Los Diques Tailings Facility	One main dam and one perimeter dam	Latitude: 27°32'13.74"S Longitude: 70°19'8.37"W	Owned (80%) and Operated	Active	2018 to Present	Downstream	71 m	27.5 Mm^3	112 Mm^3	June 2020 (5)	December 2014
	San Esteban Tailings Facility	One main dam and one secondary dam	Latitude: 27°29'7.11"S Longitude: 70°17'29.97"W	Owned and Operated	Closed	2006 to 2010	Centerline	45 m	2.1 Mm^3	Same as current	June 2020 (5)	Closed facility with no water cover. Credible failure/flow potential to be evaluated.
	Ojos del Salado Tailings Facility – North	Two rehabilitated legacy dams	Latitude: 27°29'25.18"S Longitude: 70°15'43.60"W	Owned and Operated	Closed	Operated until the 1960s and closed in 2012	Centerline	22 m	less than 1 Mm^3	Same as current	June 2020 (5)	Closed facility with no water cover. Credible failure/flow potential to be evaluated.
	Ojos del Salado Tailings Facility – Central	One rehabilitated legacy dam	Latitude: 27°29'40.43"S Longitude: 70°15'41.26"W	Owned and Operated	Closed	Operated until the 1960s and closed in 2012	Centerline	20 m	less than 1 Mm^3	Same as current	June 2020 (5)	Closed facility with no water cover. Credible failure/flow potential to be evaluated.
	Ojos del Salado Tailings Facility - South	Three rehabilitated legacy dams	Latitude: 27°29'45.59"S Longitude: 70°15'36.44"W	Owned and Operated	Closed	Operated until the 1960s and closed in 2012	Centerline	34 m	less than 1 Mm^3	Same as current	June 2020 (5)	Closed facility with no water cover. Credible failure/flow potential to be evaluated.
Chapada	Chapada Tailings Facility	One main dam and two perimeter dams	Latitude: 14°13'4.18"S Longitude: 49°24'13.37"W	Owned and Operated	Active	2007 to Present	Centerline	48 m	191 Mm^3	276 Mm^3	December 2019. Online progress workshop planned in November 2020.	March 2020 with update planned in December 2020.
Neves-Corvo	Cerro do Lobo Tailings Facility	One main dam, seven perimeter dams, and four internal berms	Latitude: 37°33'36.99"N Longitude: 7°56'6.43"W	Owned and Operated	Active	1988 to Present	Downstream (2)	42 m	32 Mm^3 (4)	40 Mm^3	July 2020 (5)	July 2019
Zinkgruvan	Enemossen East Tailings Facility	Two main dams	Latitude: 58°46'38.28"N Longitude: 15°6'24.23"E	Owned and Operated	Active	2017 to Present	Centerline	13 m	1.5 Mm^3	5 Mm^3	October 2020 (5)	August 2019
	Enemossen Tailings Facility	Two main dams and six perimeter dams	Latitude: 58°46'41.76"N Longitude: 15°5'48.58"E	Owned and Operated	Inactive (1)	1977 to 2017	Hybrid combination of Centerline & Downstream / Upstream (3)	35 m	12 Mm^3	Same as current	October 2020 (5)	March 2016
Eagle	Humboldt Tailings Facility	Zero dams, tailings stored sub-aqueously in an old open pit	Latitude: 46°29'26.57"N Longitude: 87°54'8.70"W	Owned and Operated	Active	2014 to Present	N/A	N/A	1.9 Mm^3	3.7 Mm^3	September 2020 (5)	N/A

Notes:
(1) Active deposition occurs periodically to assist in the establishment of final cover surfaces
(2) Includes internal upstream thickened tailings discharge rockfill berms
(3) Rockfill combination centerline and downstream design followed by rockfill upstream raises and buttresses
(4) Combined volume of co-disposed tailings and mine waste rock
(5) Online progress workshop with independent technical reviewers

Lundin Mining Tailings Facility Inventory

Mine Site	Tailings Facility	Consequence Classification [5]	Classification System	Internal/in-house Engineering Specialist Oversight of this Facility; or, External Engineering Support	Extreme Design Flood Event	Past Incidents of Note
Candelaria	Candelaria Tailings Facility	Chile: Class C Canada: Extreme	Chile: SERNAGEOMIN DS 248/2007 and DGA Decreto 50 (2015) Canada: CDA Dam Safety Guidelines (2013)	Both LMC + Wood	Facility is designed to store the Probable Maximum Precipitation (PMP) flood event	
	Los Diques Tailings Facility	Chile: Class C Canada: Extreme	Chile: SERNAGEOMIN DS 248/2007 and DGA Decreto 50 (2015) Canada: CDA Dam Safety Guidelines (2013)	Both LMC + Wood	Facility is designed to store the PMP flood event	
	San Esteban Tailings Facility	Canada: Very High	Canada: CDA Dam Safety Guidelines (2013)	Both LMC + Wood	Facility closed with a dry cover	
	Ojos del Salado Tailings Facility – North	Canada: Very High	Canada: CDA Dam Safety Guidelines (2013)	Both LMC + Wood	Facility closed with a dry cover	
	Ojos del Salado Tailings Facility – Central	Canada: Significant	Canada: CDA Dam Safety Guidelines (2013)	Both LMC + Wood	Facility closed with a dry cover	
	Ojos del Salado Tailings Facility - South	Canada: Extreme	Canada: CDA Dam Safety Guidelines (2013)	Both LMC + Wood	Facility closed with a dry cover	
Chapada	Chapada Tailings Facility	Brazil: Class B Canada: Extreme	Brazil: Tailings Dam Classification System - Departamento Nacional de Produção Mineral (DNPM) Portaria No 70.389 (May 17, 2017) Canada: CDA Dam Safety Guidelines (2013)	Both LMC + DAM Projetos de Engenharia	Emergency spillway is designed to pass the 1/10,000 year flood event	In 2009, erosional features and internal drainage issues were identified. Mitigation measures were successfully implemented.
Neves-Corvo	Cerro do Lobo Tailings Facility	Portugal: Class I Canada: Very High	Portugal: Decreto_Lei nº. 344/2007, amended by Decreto_Lei nº. 21/2018, which establishes the Regulamento de Segurança de Barragens (RSB) Canada: CDA Dam Safety Guidelines (2013)	Both LMC + Golder	Emergency spillway is designed to pass the 1/10,000 year flood event	
Zinkgruvan	Enemossen East Tailings Facility	Sweden: GruvRIDAS Dam Class 1 and DSK Dam Class B Canada: High	Sweden: GruvRIDAS Dam Class (2012) and Environmental Code Dam Safety Class “Dammsäkerhetsklass” (DSK) (2016) Canada: CDA Dam Safety Guidelines (2013)	Both LMC + Golder	Emergency spillway is designed to pass the PMP flood event	
	Enemossen Tailings Facility	Sweden: GruvRIDAS Dam Class 1 and DSK Dam Class B Canada: High	Sweden: GruvRIDAS Dam Class (2012) and Environmental Code Dam Safety Class “Dammsäkerhetsklass” (DSK) (2016) Canada: CDA Dam Safety Guidelines (2013)	Both LMC + Golder	Emergency spillway is designed to pass the 1/10,000 year flood event	Between 1977 and 2019, a total of 14 incidents were reported on the two main tailings dams which required action. These included localized failures, crest settlement and the formation of localized sinkholes on the downstream shell of the two main dams. All have since been successfully repaired. In addition, dewatering wells and pumps were installed on the two main dams to maintain a depressed phreatic surface and low seepage gradients, and the supernatant water surface was pushed away from dam crests with tailings beaches. The Enemossen tailings facility is inactive having been replaced by Enemossen East in 2017. Enemossen East will buttress one of the Enemossen main tailings dams.
Eagle	Humboldt Tailings Facility	N/A	N/A	Both LMC + Golder	Facility is designed to store the snowmelt PMP flood event	

Notes:
(5) CDA (2013) consequence classifications are assigned for internal purposes.