Tailings Facilities Management

Our Maracás Menchen Mine in Bahia, Brazil is relatively new and consequently, benefits from updated technologies and research associated with the production of vanadium.

Tailings facilities located at the mine site are designed for safety and are built in basins created using readily available waste rock generated from the open pit mining. This results in the width of the associated basins being large and the facilities being shallow, with extremely stable slopes.

The design and project were based on extensive geotechnical investigations and the construction conformed with best-in-class engineering practices. The facilities are lined with two layers of geotextiles, providing excellent impermeability, preventing water infiltration, soil contamination and acid drainage. The groundwater quality is monitored in several points.

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Types Of Tailings Generated

Our vanadium ore processing circuit generates four types of tailings, which are stored in different facilities, depending on their characteristics.

Non-magnetic – after the initial steps of crushing, dry magnetic sorting and grinding, the vanadium ore is separated in a wet magnetic sorting process. The non-magnetic mix is pumped to the tailings facilities of the Bacia de Não Magnético (BNM) type. As the solids separate from the water and deposit at the bottom of the facility, the surface water is pumped back to be re-used in the processing circuit, resulting in excellent management of the water. The solids are rich in ilmenite and will feed the ilmenite concentration plant.

Iron-rich – ore passes through calcination and then through a leaching process, after which it is filtered and washed. The iron-rich solids are dry stacked in the Bacia de Calcinado (BCAL) facilities. These solids can be sold depending on the economics of the transportation cost and sale price.

Silica cakes – the desilication step produces silica cakes which are also dry stacked in the BCAL facilities. Any water that percolates through the dry stacks is captured and reused in the processing circuit.

Chloride – the ore processing circuit includes the recovery of three important materials for reuse: two sulphate salts and water. The excess of saline mix (ammonium sulfate and chlorides) that cannot be reused is pumped to the Bacia de Cloretado (BCL) facilities. This mix has a low evaporation rate.

Active Tailings Facilities – Summary

Name	Risk	Potential Impact	Class
Bacia de Calcinado 1.2*	Low	Medium	C
Bacia de Calcinado 3	Low	Medium	C
Bacia de Cloretado 1.2*	Low	Medium	C
Bacia de Cloretado 3	Low	Medium	C
Bacia de Não Magnético 2	Low	Medium	B
Bacia de Não Magnético 3	Low	Medium	B
Bacia de Não Magnético 4	Low	Medium	B
Bacia de Não Magnético 6	Low	Medium	B

*Some facilities are considered to be structurally combined

Brazilian Tailings Facilities Classification

All our facilities are included in Brazil's National Dams Safety Policy (Política Nacional de Segurança de Barragens – PNSB). They are classified according to the Brazilian National Mining Agency (ANM) Risk Matrix for Dams. The classification takes into account:

1) Risk: technical characteristics, conservation status, management system in place; and
2) Potential Hazard: based on potential severity of impacts to people, the environment and socio economic.

Management Approach

Largo complies with strict Brazilian tailings legislation and currently aligns with over 90% of the Global Industry Standard on Tailings Management (GISTM). While GISTM calls for an independent Engineer of Record, at Largo these responsibilities are carried out by the engineer responsible for Tailings Management Coordination, in accordance with our internal structure and applicable national regulations.

These standards cover governance, risk assessments, engineering plans, documentation (e.g., as-built reports), monitoring, inspections, emergency response plans, and dam-break simulations. New facilities follow a rigorous licensing process.

Reporting to LVMSA's Co-COOs, the Mine Planning and Operations team is responsible for managing the tailings facilities, supported by engineers, analysts, and specialized service providers.

Largo conducts thorough geotechnical monitoring of its tailings facilities through visual inspections and instrumentation to detect any changes in stability over time. The system includes 35 dry water level meters to monitor slope saturation, 38 topographic markers for deformation tracking, and 9 vibrating wire piezometers for real-time water pressure monitoring.

Emergency Response Plan

An emergency response plan for a variety of scenarios is in place, including responsibilities and communication with external stakeholders. Training and drills are conducted at least twice a year.

Dam break simulations show that in the case of a catastrophic failure, the flood wave would not reach the Contas river, and there would be no risk to the people on site nor to the population of the nearest village, which is 8 km away.

Inspection Type	Frequency	Comments
Visual	Daily	Structure monitoring
Visual	Weekly	Drone flights (image and level measuring tool)
Instrumental	15 Days	Instruments installed at strategic points on the dam monitor structural integrity by measuring pressure, displacement, deformation, water levels, flow rates, and topographic movement
Formal Inspections	15 Days	Inspection reports are filed in the Dam Safety Plan. Reports for the BNMs are uploaded to the ANM's SIGBM platform. https://app.anm.gov.br/sigbm/publico
Regular Safety Inspection	6 Months	All inspection and instruments monitoring records are reviewed. The independent consulting company issued the Certificate of Stability Conditions – Declarações de Condição de Estabilidade
ANM	Annual	