

Rio Tinto

Rio Tinto Kennecott

Global Industry Standard on Tailings Management

Magna City Council
October 22, 2024

A commitment to the adoption of global best practices on tailings storage facilities and establishment of an international standard

Tailings are the sand-like ground rock left after target minerals are extracted from the ore

Global Industry Standard on Tailings Management (GISTM)

- The GISTM is **an international standard for safer management of tailings storage facilities** established in August 2020.
- In part, the GISTM requires 'meaningful engagement' with the public regarding tailings management.
- As a member of the International Council on Mining and Metals, **Rio Tinto has committed that all tailings storage facilities comply with the GISTM by August 2025, including increased public engagement.**
- Rio Tinto Kennecott is performing this additional outreach to receive input and demonstrate past and ongoing compliance.

Rio Tinto Kennecott Tailings Storage Facilities



South Impoundment

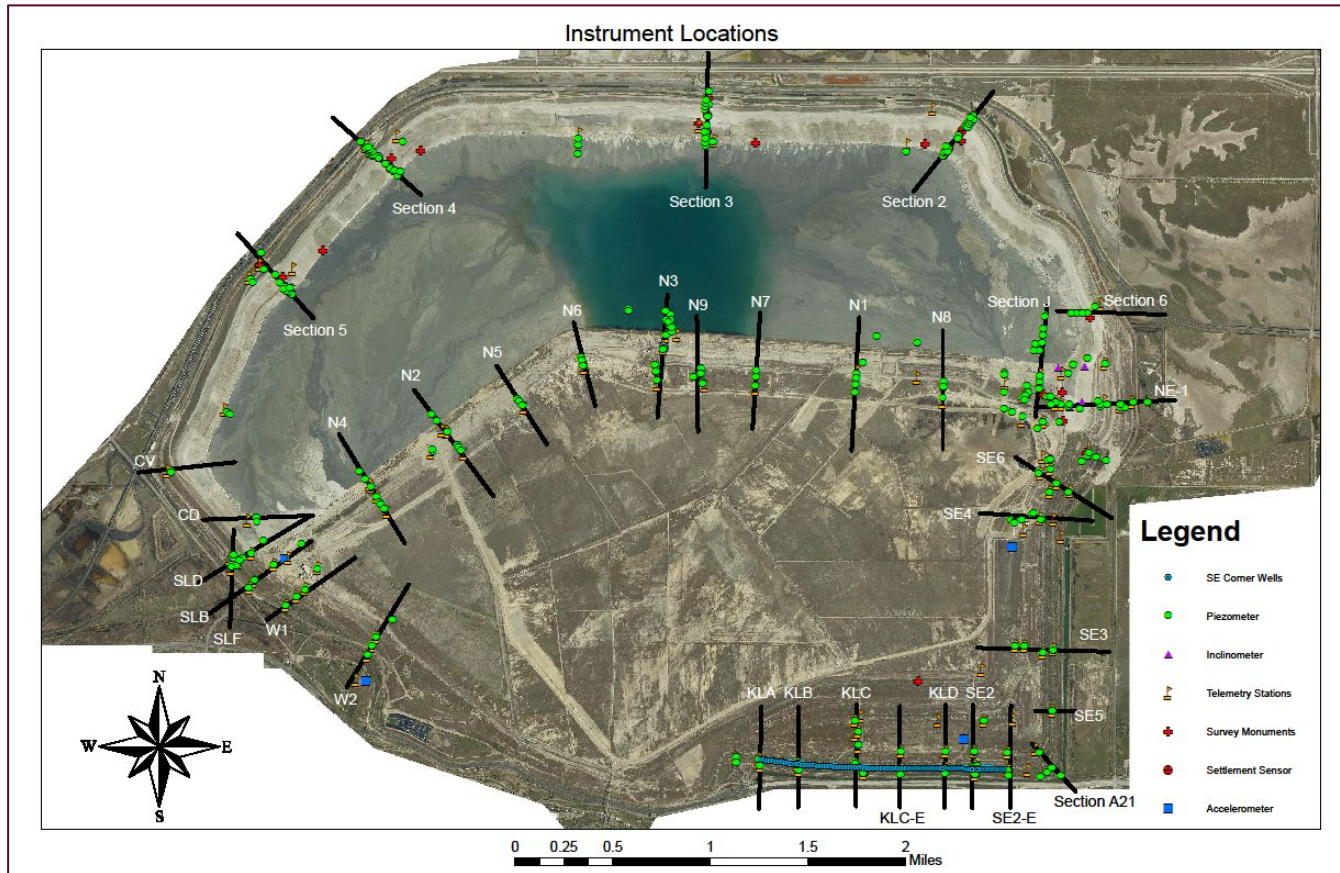
- Operation began 1906; inactive since 2001
- Mostly reclaimed, and stabilization efforts are ongoing

North Impoundment

- Began operations in 1999
- Current active storage facility for RTK
- Permitted as a dam with the State Engineer's office

Geotechnical Monitoring

**Extensive geotechnical monitoring
in and around existing tailings impoundments**



500+ Piezometers

- Measure impoundment pore pressures
- Automated Geotech Monitoring System collects/displays data

Inclinometers

- Measures horizontal displacement within slopes of impoundment
- Allows identification of settlement / movement

Accelerometers

- Measures earthquake movement (acceleration)
- Triggers automated sirens and highway warning signs

InSAR

- Satellite radar images measure displacement on surface (few centimeters or less)
- Tool for early detection and warning of potential slope displacement and instability

iAuditor Inspections

- Used by operators on an iPad
- Findings trigger automated notifications

South Impoundment Improvements

Improvements to South Impoundment ongoing since 1988 to improve seismic stability.

1988 - 1999:

- 40+ vertical dewatering wells installed and pumping
- 1500+ wick drains installed along embankment crest lower portions
- 200+ horizontal drains installed in toe of southeast corner of embankment
- Step-back dikes completed
- Installed accelerometer based seismic highway warning

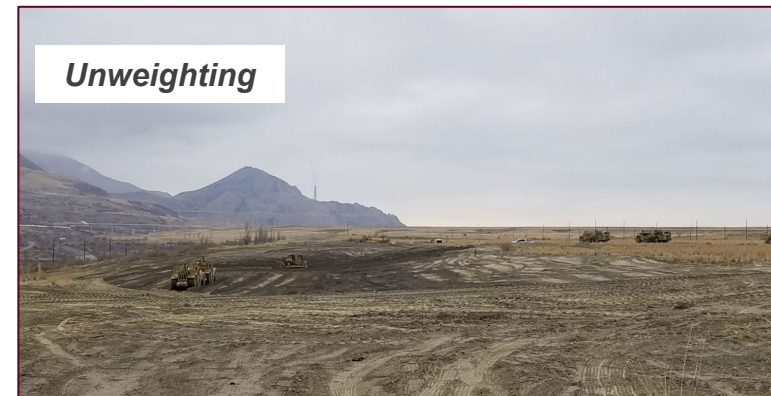
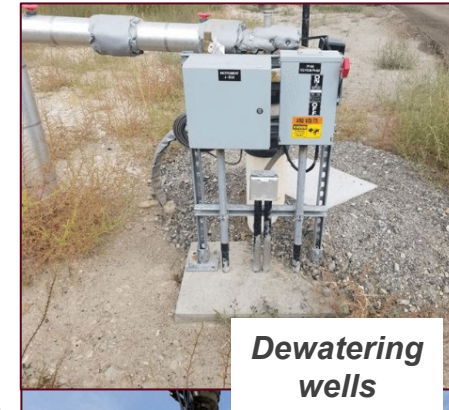
2001:

- Completed transition of tailings deposition to North impoundment
- All surface water removed
- Reclamation efforts on South impoundment

Working Group on Utah Earthquake Probabilities - 43% probability Wasatch Front will experience a magnitude 6.75+ earthquake in next 50 years

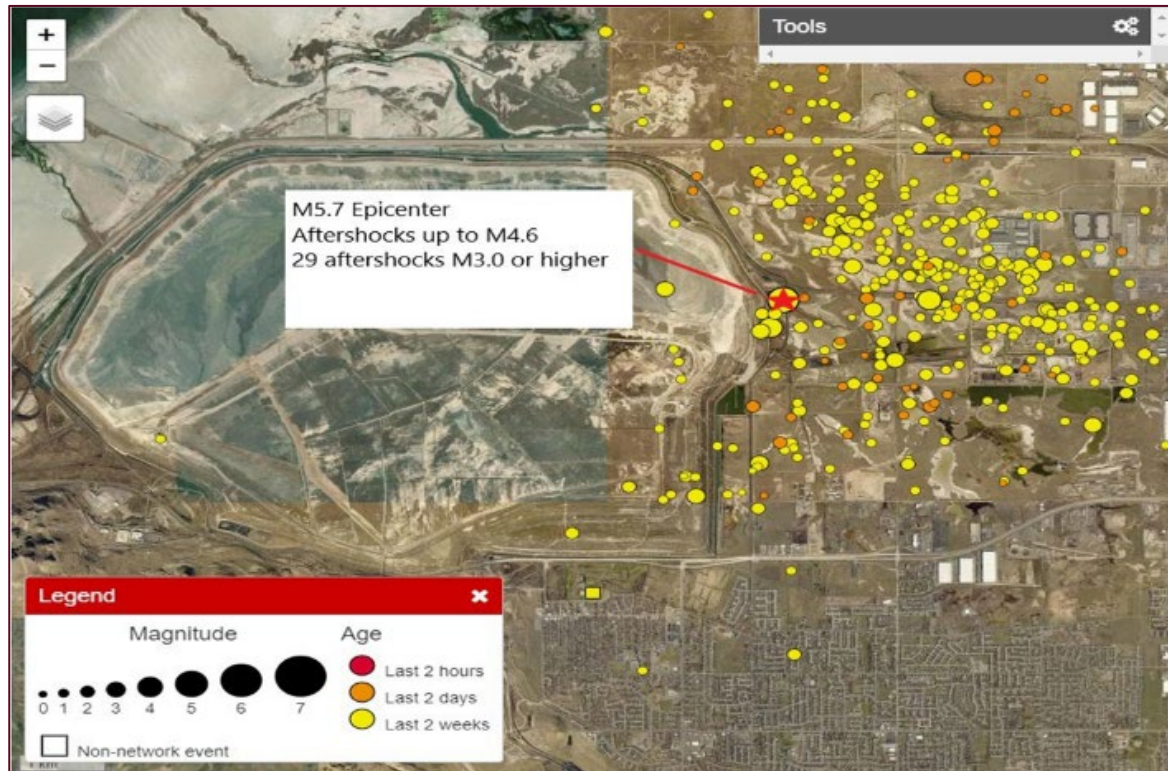
2016 – 2021 (South Slope Stabilization Project)

- 101 dewatering wells installed
- Unweighted the southeast corner (~1 million cubic yards of material)
 - Capped and reseeded southeast corner as part of reclamation



2009 Salt Lake County independent Tailings Impoundment study concluded efforts have effectively limited runoff

2020 Earthquake Results *(5.7 magnitude, March 18, 2020)*



- Pore pressures initially spiked but dissipated within days.
- InSAR captured small movements from earthquake and aftershocks.
- Minor subsurface movement captured by inclinometers but stabilized quickly.
- Minor cracks on South Impoundment, no repairs needed.
- South Impoundment behaved as modeled, showing seismic improvements have been successful.



South Impoundment Modeled Impacts – Post MCE

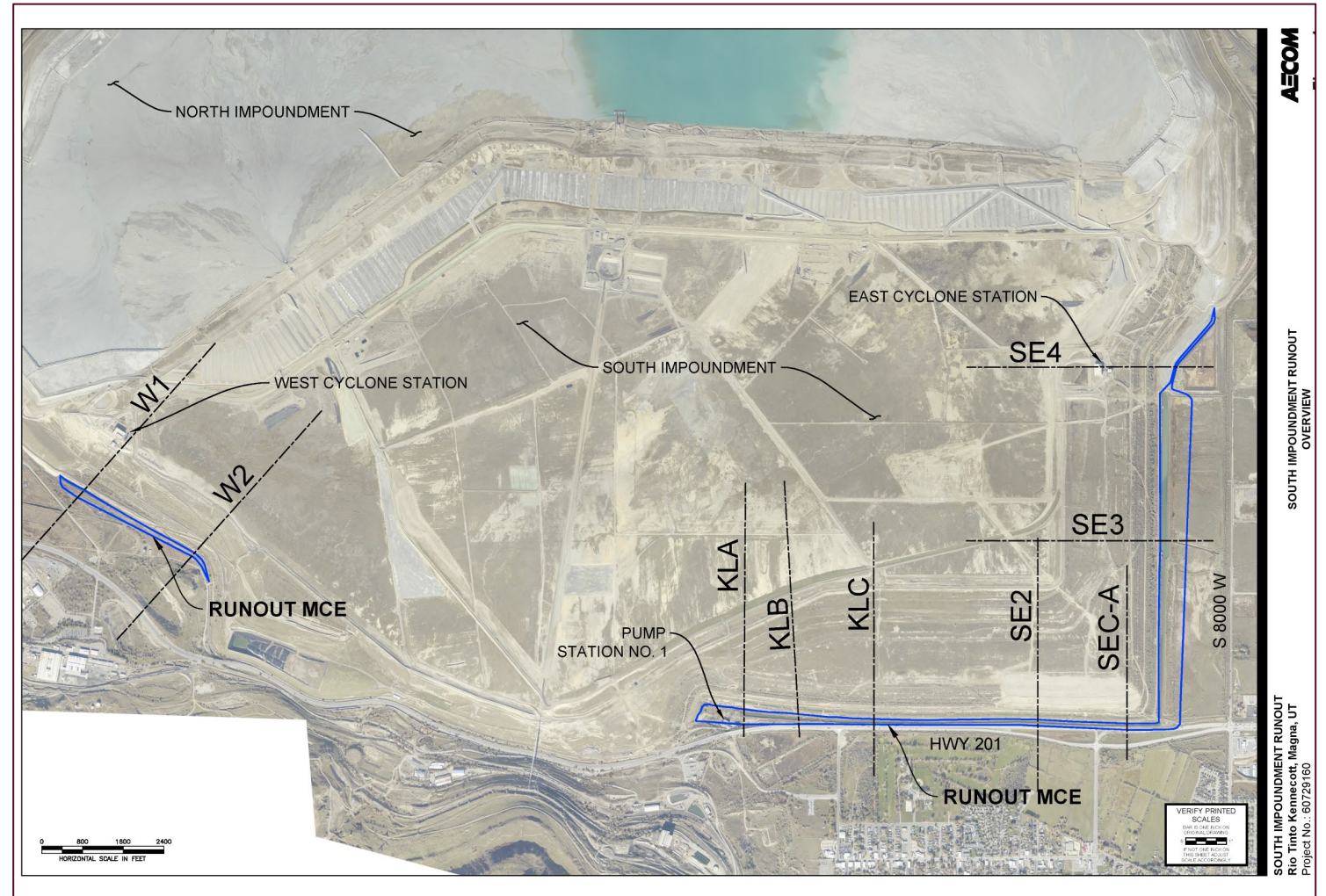
Maximum Credible Event (MCE) for the Salt Lake region is ~7.25 earthquake

East & West Sides

- Based on modeling, all materials remain on Kennecott property; no impact to private property
- East Tailings Expansion project will reduce possibility of failure on east side
 - *Currently in permitting process through U.S. Army Corp of Engineers and local authorities*

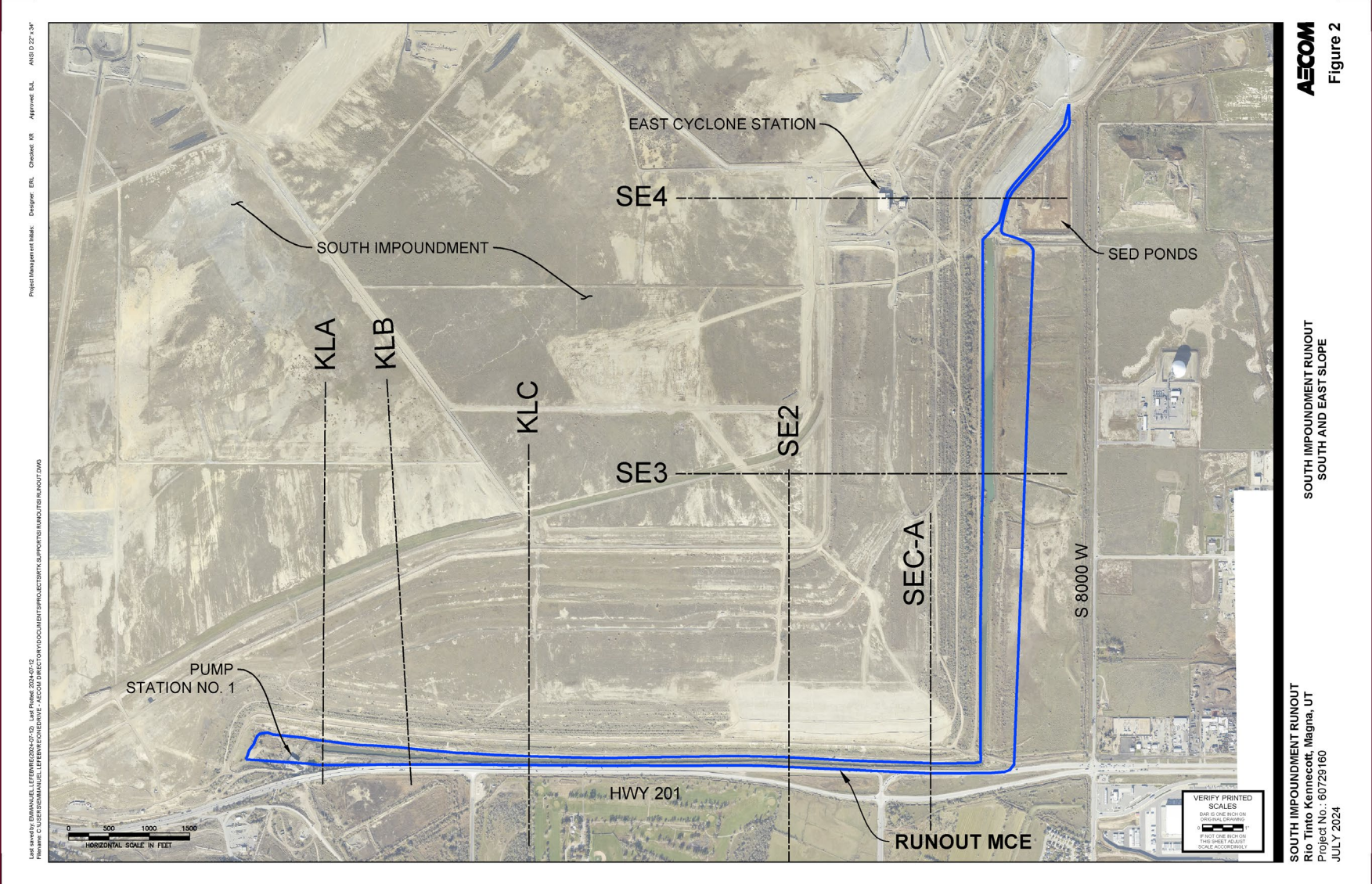
South Side

- Based on modeling, limited amount of tailings could flow onto SR-201.
 - *Likely a slow, slumping movement*
 - *No impact to residential/commercial buildings, power lines, sewer, drinking water*
- Seismic triggered (accelerometers) automated alarms and highway warning signs to alert traffic installed in coordination with UDOT



2009 Salt Lake County independent tailings impoundment study concluded efforts have effectively limited runoff

South Impoundment Modeled Impacts – Post MCE



North Impoundment Engineering Design & Operations

The North Impoundment permitted through State Engineers Office for Dam Safety. **Designed/constructed to withstand a Maximum Credible Event (~7.25 earthquake).**

Tailings Impoundment Monitoring Program

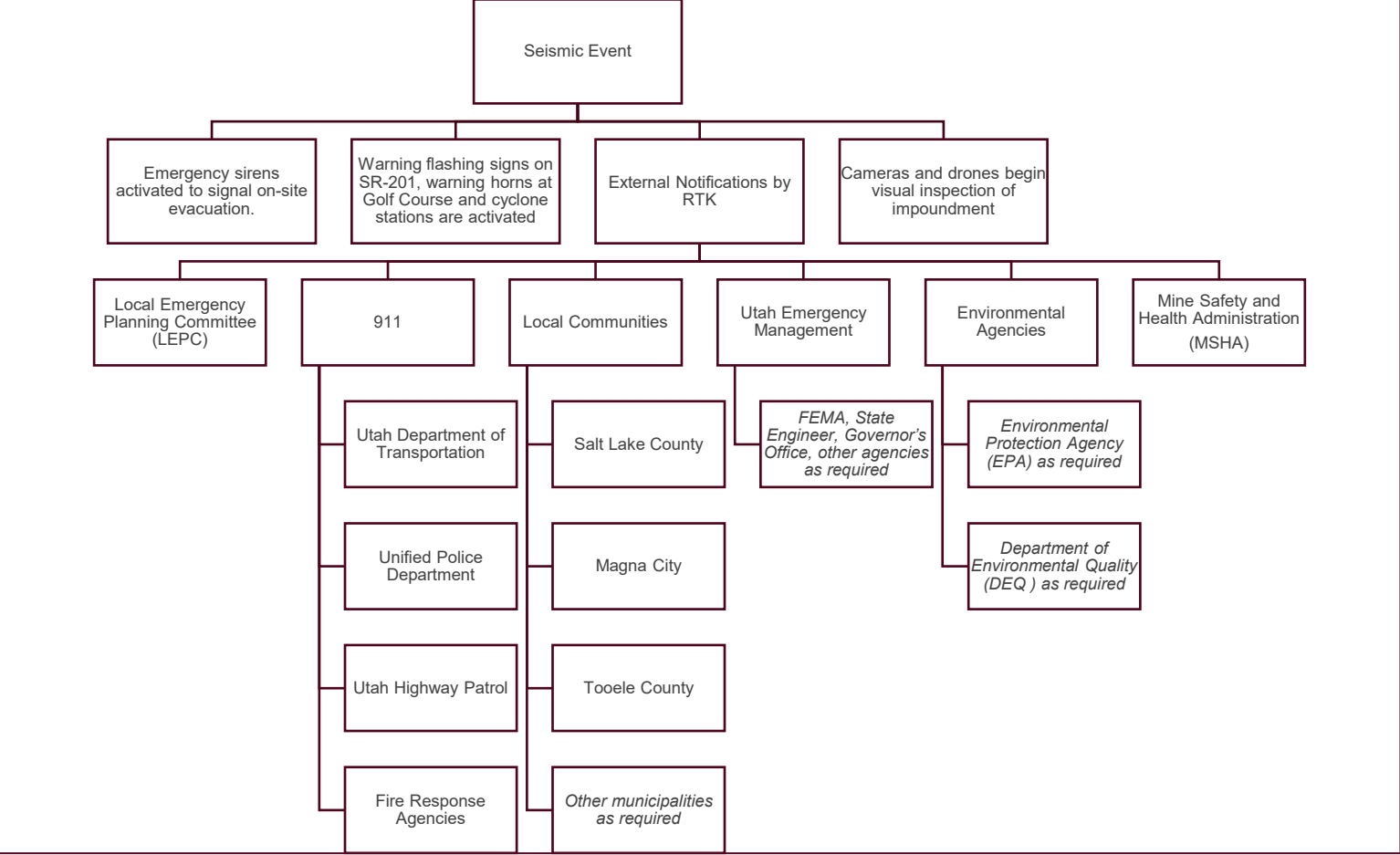
- Extensive Geotech Monitoring
- Independent Design and Operational Reviews
- Risk assessments to confirm, evaluate, or develop necessary controls and mitigation measures.
- External Reviews and Inspections
 - Quarterly Mine Safety and Health Administration (MSHA) inspections
 - Annual Utah State Engineer inspection
- Internal Reports and Reviews
- All contractors and RTK personnel trained to identify/report geotechnical hazards
- Documented dam safety Inspections - iAuditor System
- Drone Inspections & GPS Surveys



Modeled a hypothetical breach for the North Impoundment to understand impacts and plan response

- Potential Impacts to I-80, Rocky Mountain Power lines, Union Pacific Railroad tracks, and land leading into Great Salt Lake
- It is highly likely that a problem is identified, and actions taken before materials impact I-80
- Given the Great Salt Lake's existing high salinity and good quality of tailings water, no significant long-term impacts expected. Monitoring in place, would be used to confirm.

Emergency Response and Coordination



- Seismic activity triggers automated sirens (golf course, cyclone stations, barge), and SR-201 warning signs
- UDOT notified to update Variable Message Signs for traffic detours:
 - *Westbound traffic diverted north at 5600 West to I-80 where commuters can resume westbound travel*
 - *SR-202 would remain open, and traffic can be directed back to SR-201 or remain on I-80*
- Local communities immediately contacted by RTK team to coordinate short-term response needs
- Community input and coordination will be integrated into any needed clean-up and recovery efforts

Emergency Response and Coordination



Contact Us

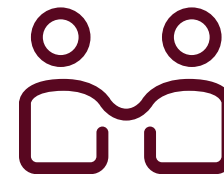
Sharing your feedback helps us with future planning and engagement opportunities.



Call us at **801-204-2070**



Send us an email at
rtkcomments@riotinto.com



Speak with RTK representative

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