



REPORT

2023 Lynx Tailings Disposal Facility Dam Safety Inspection

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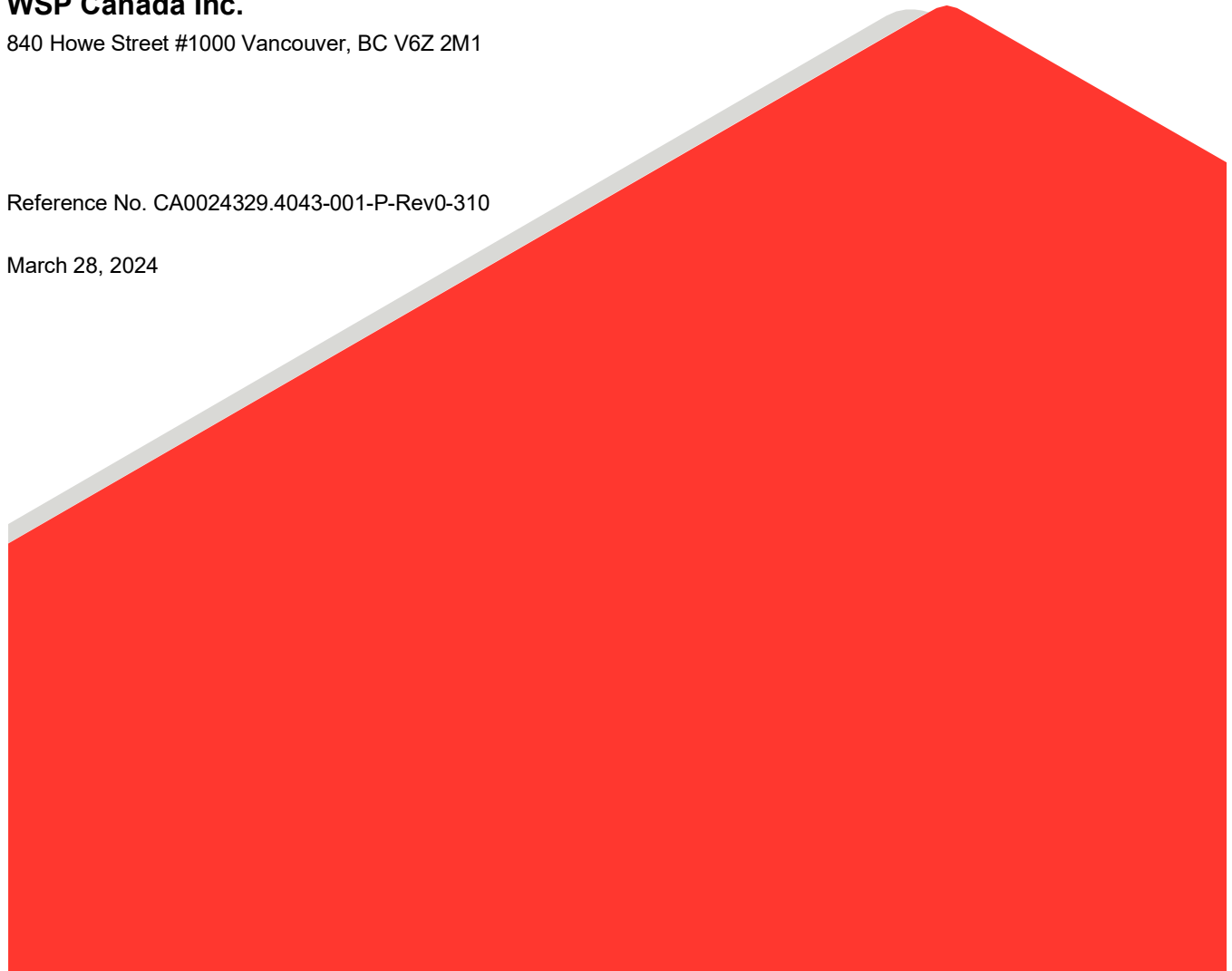
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Executive Summary

The following report presents the 2023 annual Dam Safety Inspection for the Lynx Tailings Disposal Facility (TDF) at the Myra Falls Mine. Myra Falls Mine Ltd. (MFM), aTrafigura Group company, owns and operates the mine. This report was prepared in accordance with requirements of British Columbia Ministry of Energy, Mines and Low Carbon Innovation (EMLI) presented in the November 2022 revision of *Health Safety and Reclamation Code (HSRC) for Mines in British Columbia* (EMLI 2022) and the July 2016, *Guidance Document – HSRC for Mines in British Columbia* (Ministry of Energy & Mines of British Columbia 2016). The following list provides the information to be included in the executive summary for facilities that impound water or saturated tailings as required by the HSRC Guidance Document:

a) Summary of Facility Description

The Lynx TDF is in the Operations phase of its lifecycle. The facility was designed in the early 2000s by Klohn Crippen Berger Ltd., and the starter dam was partially constructed at the time when AMEC Earth & Environmental Ltd. (now WSP Canada Inc.) assumed the role of geotechnical consultant in 2006. Tailings deposition in the Lynx TDF started in 2008. The Lynx tailings deposition area is bounded by the Upper Lynx Pit walls and waste rock dumps to the north and the Lynx Dam to the east, south, and west. The south and west sides of the embankment are sloped at 2H:1V and the east side at 4H:1V. The Lynx TDF has been raised nine times by centreline methods to a height of 50.5 m (elevation 378.0 m, not including a 0.5 m capping layer), most recently in 2023. The Lynx Dam is a centerline dam, with the upstream section of the dam partly supported by tailings. The embankment has a total horizontal crest width of 16 m. Internally the dam consists of a 6 m wide vertical filter zone along the centerline of the dam crest. The filter zone is constructed of well-graded, fine-grained granular material (Zone J), which provides filter compatibility between the impoundment contents (mainly tailings) and the downstream shell. The downstream shell is constructed of well-graded, compacted, granular rock fill (Zone A). The upstream shell is built of a nominally compacted mixture of coarse- and fine-grained granular materials (Zone J or A), which is inter-layered with tailings. The facility design includes a paste tailings beach against the upstream slope to keep the normal operating pond away from the dam.

Pond level in the facility is controlled by pumping. The facility has the capacity to store the environmental design flood (EDF), a 24-hour storm event with a 1/200 annual exceedance probability. An operations spillway is constructed near the west abutment. The spillway is designed to safely pass the inflow design flood (IDF) while maintaining 0.3 m freeboard. The IDF for Lynx is a 24-hour duration storm 1/3 between a 1/1000 annual exceedance probability storm and a probable maximum flood.

b) Summary of Key Hazards

The key hazards to the Lynx TDF, some of which are inherited from legacy designs, are:

- Tailings with high susceptibility to earthquake-induced liquefaction, which partially support the upstream shell.
- High seismic hazard for the site.
- High intensity precipitation or prolonged periods of precipitation. Snowmelt from higher elevations of the catchment area.

- Mountainous terrain above the facilities with associated terrain stability hazards including rock falls and debris flows.
- Waste rock dumps on slopes above the facilities that have been assessed as having factors of safety below recommended targets.
- Sulphide-rich potentially acid generating mine waste materials, associated metal leaching and acid rock drainage impacted surface water and groundwater (not within WSP's scope).
- Potentially unreliable upstream water diversion ditches across steep catchment areas. Diversion ditches are assumed to fail during an IDF event and the spillway is designed accordingly. Only a portion of the diversion ditch is assumed to function in an EDF event.
- Flooding of the underground mine workings beneath the facility if the tailings facility breaches through the remnants of the crown pillar and underlying sand-filled stopes (not within WSP's scope).

Hazards associated with possible flow through the operations spillway as designed include:

- Spilling of mine-impacted waters to the environment (as intended by design, for floods greater than the EDF).
- Moderate to severe erosion of the flow path from the terminus of the spillway towards Myra Creek, including in the mill laydown area, camp area, and cookhouse borrow.
- Damage to infrastructure such as the ore conveyor, buried infrastructure, fuelling station, lime silos, sand shed, cookhouse, and camp buildings (necessitating likely evacuation of site accommodations) which are located downstream of the spillway.
- Possible mobilization of potentially acid generating mine waste along the flow path with deposition in Myra Creek.
- Possible transport of other contaminants from the mill laydown area such as hydrocarbons from the fuelling station.

Spillway flow is not anticipated for flood conditions less than 1/200 annual exceedance probability, and the facility may have storage for more than the EDF volume if the pond is drawn down in advance of a flood event.

c) Dam Classification

The Lynx TDF is classified as a High consequence dam in accordance with Table 2-1 of the Canadian Dam Association (CDA) Dam Safety Guidelines (2013). The classification is primarily because of the potential environmental consequences associated with release of tailings and mine waste into the hypothetical breach inundation area, which were interpreted by others to constitute a "significant loss or deterioration of important fish habitat". The dam classification has not been updated to take into consideration updated environmental consequence classification recommendations in CDA (2023).

Further details are available in Section 2.4

d) Summary of Significant Construction Changes

Dam raise construction work was carried out on Lynx TDF in 2023. A summary of construction work is included in Section 9.0 and the detailed construction record is documented in WSP (2024a). The following is a brief summary:

- Widening of the downstream shell was started in 2022 and continued in 2023 from an elevation of 351.5 m to an elevation of 373.5 m.
- The Lynx TDF Dam crest, with the exception of the upstream shell push out over tailings, was raised from the Raise 8 crest elevation of 373.5 m to the Raise 9 crest elevation 378.0 m.
- The downstream shell was constructed of compacted Zone A fill (west and south arms) and nominally compacted Zone A fill (4H:1V east arm).
- The dam filter zone was constructed of nominally compacted Zone J.
- The operations spillway was constructed with an invert elevation of 376.75 m across the dam crest and was tied into the fully armoured channel running from the downstream crest of the dam to the dam toe.
- Placement of a 0.5 m capping layer, to elevation 378.5 m, to create an auxiliary swale on the east arm was mostly complete; however, review of as-built survey data indicates that the capping layer was under built between the operations spillway and the west abutment. Additional material placement is required in this area to meet the 378.5 m design elevation.

e) Significant Changes in Instrumentation and/or Visual Monitoring Records

Performance of the Lynx TDF is assessed by monitoring instrumentation and visual inspections. Instrumentation includes piezometers for measuring porewater pressures, survey monuments for monitoring settlement and displacement, and slope inclinometers (SIs) for measuring lateral deformation. The following changes to the instrumentation system occurred in 2023:

- Some vibrating wire piezometers were temporarily disconnected from their transmitter (RStar) during construction; splicing of vibrating wire piezometer leads was also required.
- Eleven surface deformation survey monuments for the Lynx TDF were removed for construction in July 2023 and 13 were reinstated in October 2023 on the crest of the dam.
- An SI probe became stuck in SI BH14-08 at a depth of about 45 m below the dam crest in November 2022. Due to the risk of having more probes stuck no SIs were monitored in 2023 and MFM initiated a scope to install shape accelerometer arrays in the three SIs installed in the Lynx TDF Dam. Installation is scheduled for 2024.

A detailed discussion of the instrumentation monitoring results is provided in Section 8.0.

In 2023, piezometer readings within the foundation remained relatively stable with a moderate increase in the deep foundation piezometers of about 3 m and an increase in the shallow foundation of about 1 to 1.5 m in Q3, which is interpreted to be associated with the wet season. Piezometers in the dam fills remained dry over the reporting period. Pore pressures recorded during the reporting period generally showed similar trends consistent with previous years.

The following visual inspections were carried out as part of routine surveillance activities:

- Fifty-two weekly inspections of Lynx TDF were reported to have been carried out by MFM personnel.
- Four quarterly inspections were carried out by the Engineer of Record or delegate (WSP).

Visual monitoring indicates the Lynx TDF dam continues to perform satisfactorily. Additional details regarding visual inspections are discussed in Section 7.0.

f) Significant Changes to Dam Stability and/or Surface Water Control

There were no observations indicating a change in the dam safety performance in 2023. There were also no substantial changes in 2023, which would change the established surface water flow, infiltration, and discharge patterns for the area. The changes to surface water infiltration and discharge from the 2021 changes are still being observed but at the time are not considered to impact the safety of Lynx TDF.

g) Summary of Review of the Operation, Maintenance and Surveillance Manual

The Operation, Maintenance and Surveillance (OMS) Manual was updated by MFM in March 2023 and reviewed by WSP in November 2023. The MFM went into care and maintenance in December 2023, which will require an update to the OMS manual to reflect changes in on-site staffing and operation associated with the change in the mine's status.

h) Summary of Review of the Emergency Preparedness and Response Plan

A summary of the components of MFM's emergency response program is provided in Appendix E of the OMS Manual. MFM reviewed and updated the Emergency Preparedness and Response Plan in March 2023, and the plan was reviewed by WSP in November 2023. A test of the ERP was not performed in 2023.

i) Scheduled Date For the Next Formal Dam Safety Review in Accordance with Health, Safety and Reclamation Code for Mines in British Columbia and CDA Dam Safety Guidelines

A Dam Safety Review (DSR) should be carried out at minimum frequency of every five years as per EMLI 2022. The most recent DSR for the tailings facilities was carried out in 2020 by Thurber Engineering Ltd. and was submitted to EMLI in March 2021 to meet regulatory requirements. The next DSR is due in 2025.

Formal DSRs were also completed in 2013 by Robertson Geotechnical Consulting Ltd. (RGC) and in June 2016 by Tierra Group International Ltd. These reviews were completed at a higher frequency than the minimum frequency recommended by EMLI (2022) or the CDA guidelines (2013).

j) Summary of Recommendations

Tabel ES-1 provides a summary of recommendations made in 2023. A summary tracking the status of open recommendations as well as those closed in 2023 is provided in Section 11.0.

Summary of Recommendations

Table ES-1: 2023 Summary of Recommendations Table

Structure	Tracking Number	Site Visit	Deficiency or Non-Conformance	Recommended Action from Site Visit	Updated Recommended Action for Mine Shut Down and Care and Maintenance Operation Status	Priority	Recommended Deadline/ Status
Lynx TDF	2023-01	October	Relatively minor tension cracks observed in the upstream slope of the dam (Zone J used to construct the upstream shell above approximate El. 376 m).	Monitor cracking. If cracking or deformation in the upstream slope are minor, the slope can be repaired as the upstream Zone A shell is raised to 378 m sequentially with tailings deposition.	Now that mine production/tailings production has ceased, MFM will need to develop and implement a new plan for completing the upstream Zone A shell.	3	2024 Q3
Lynx TDF	2023-02	October	Tailings deposition and pond management.	Tailings deposition from the dam crest should be established as soon as possible, particularly in the southwest corner. Beaches that slope away from the dams should be developed along all dams.	<ul style="list-style-type: none"> ▪ MFM ceased operations prior to developing a beach that sloped away from the dam along the West Arm and the west end of the South Arm. ▪ Photos from November 2023 provided by MFM show pond at back of facility and not along upstream dam face. ▪ As per OMS manual, pond shall be kept away from upstream slope of dam except under high precipitation events. 	3	Complete
Lynx TDF	2023-03	October	WRD2 Seepage flows bypassing Upper Lynx Diversion Ditch and being directed over the abutment of the East Arm and down the toe of the 4H:1V slope and WRD1.	MFM reported and provided photos that the WRD2 seepage runoff flows had been redirected into the Lynx TDF by late October. To be validated during next Engineer of Record inspection.	No change in recommendation.	3	MFM Reports this is complete

Table ES-1: 2023 Summary of Recommendations Table

Structure	Tracking Number	Site Visit	Deficiency or Non-Conformance	Recommended Action from Site Visit	Updated Recommended Action for Mine Shut Down and Care and Maintenance Operation Status	Priority	Recommended Deadline/ Status
Lynx TDF	2023-04	October	Run-off and/or seepage water observed coming down the gully on the downstream side of the West Arm Dam abutment.	It is recommended that this water is managed in a more controlled manner so that under a larger storm event flows do not impact the downstream shell of the dam.	No change in recommendation.	3	2024 Q3
Lynx TDF	2023-05	October	Ponding was observed in the area at the toe of the Lynx TDF near the northeast corner of the Super Pond. No signs of seepage from dam toe.	Grade the area so that water does not pond at the toe of the dam and monitor for any signs of seepage.	No change in recommendation.	3	2024 Q3
Lynx TDF	2023-06	General	Some VWP's are not reporting data.	Trouble shoot to re-establish readings from VWP's that have not been reporting data for several months. If readings from instruments cannot be re-established, new/replacement instrumentation may be necessary.	No change in recommendation.	3	2024 Q2
Lynx TDF	2023-07	General	OMS Manual and ERP	OMS manual and ERP need to be updated to reflect care and maintenance status of the mine.	No change in recommendation.	3	2024 Q2
Lynx TDF	2023-08	General	10 L portal plugs and backfill.	Provide as-built record of 10 L portal plugs and backfill which should be sealed by a qualified Engineer.	No change in recommendation.	3	2024 Q2

Table ES-1: 2023 Summary of Recommendations Table

Structure	Tracking Number	Site Visit	Deficiency or Non-Conformance	Recommended Action from Site Visit	Updated Recommended Action for Mine Shut Down and Care and Maintenance Operation Status	Priority	Recommended Deadline/ Status
Lynx TDF	2023-09	General	Upstream Zone A shell push out over tailings completed to El. 374 m. Temporary over steepened upstream slope constructed to allow crest raise to El. 378 m.	Construction of upstream shell was planned to be sequenced with tailings deposition	Revised plan required to complete construction of the upstream shell or develop a revised geometry that is considered stable for care and maintenance, since sequencing construction with tailings deposition no longer feasible with mine shut down.	3	2024 Q4
Lynx TDF	2023-10	General	Insufficient capping layer to El. 378.5 m between spillway and West Arm abutment.	Review of as-built surveys indicates that the capping layer was underbuilt between the spillway and the abutment. The capping layer should be topped up to El. 378.5 m so that the auxiliary swale will function as intended.	No change in recommendation.	3	2024 Q3

Notes: Priority Levels are defined by EMLI (2022) as follows:

Priority Level 1 = A high probability of, or actual dam safety issues considered immediately dangerous to life, health or the environment, or a significant risk of regulatory enforcement.

Priority Level 2 = If not corrected, could likely result in dam safety issues leading to injury, environmental impact or significant regulatory enforcement, or a repetitive deficiency that demonstrates a systematic breakdown of procedures.

Priority Level 3 = Single occurrences of deficiencies or non-conformances that [alone] would not be expected to result in dam safety issues.

Priority Level 4 = Best Management Practice – further improvements are necessary to meet industry best practices or reduce potential risks.

ERP = emergency response plan; El. = elevation; TDF = tailings disposal facility; OMS = Operation, Maintenance and Surveillance; WRD = waste rock dump; VWP = vibrating wire piezometer.

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1.0 INTRODUCTION

WSP Canada Inc. (WSP) was retained by Myra Falls Mine Ltd. (MFM) to perform the 2023 annual dam safety inspection (DSI) for the Lynx Tailings Disposal Facility (TDF) at Myra Falls Mine in accordance with requirements of Section 10.5.3 of the Health, Safety, and Reclamation Code for Mines in British Columbia (EMLI 2022). MFM, a Trafigura Group Company, owns and operates the mine. The Lynx TDF is the only active tailing disposal facility at the site. Drawing 010701 shows the location of the Lynx TDF.

1.1 Scope of Report

Regulatory reporting requirements for the annual DSI require that the report covers the calendar year and be submitted no later than March 31 of the following year. The scope of this report addresses the period spanning January 1 through December 31, 2023, which is referred to as the “reporting period”. Information presented is based on observations made during site visits, analysis of instrumentation and monitoring data, reviews of construction activities and observations made by MFM that were communicated to WSP. The report generally does not address changes or conditions after the end of the reporting period.

Details of the Lynx TDF construction activities in 2023 for which WSP provided designs and construction monitoring are documented under separate cover in the 2023 Lynx TDF Construction Record Report (WSP E&I 2024a). A brief summary of the 2023 construction activities is provided in Section 9.0 of this report.

1.2 Annual Reporting Requirements

This report was prepared in accordance with requirements of British Columbia Ministry of Energy, Mines and Low Carbon Innovation (EMLI) presented in the November 2022 revision of *Health Safety and Reclamation Code for Mines in British Columbia* (EMLI 2022) and the July 2016, *Guidance Document – Health, Safety and Reclamation Code for Mines in British Columbia* (Ministry of Energy & Mines of British Columbia 2016).

The numbered items required for the Annual DSI by Section 4.2 of the Health Safety and Reclamation Code Guidance Document are found in the following sections of this report.

- 1) Executive Summary – precedes the Table of Contents.
- 2) Facility Description – Section 2.0 (also see Section 9.0 for summary of construction).
- 3) Identification of Engineer of Record (EoR) and TSF Qualified Person – Section 1.3.
- 4) Updated plan and representative cross sections – Drawings.
- 5) Site Photographs – Appendix A.
- 6) Review of Climate Data – Section 3.0.
- 7) Water balance review and reconciliation – Section 6.0.
- 8) Freeboard and storage availability (in excess of the design flood) – Sections 5.0 and 6.0.
- 9) Water discharge system, volumes, and quality – Section 6.0.
- 10) Seepage occurrence and water quality – Section 6.0.
- 11) Surface water control and surface erosion – Section 6.0.

12) Instrumentation Review – Section 8.0 and Appendix B.

13) Recommendations – Section 11.0.

1.3 Engineer of Record and Tailings Disposal Facility Qualified Person

Roles and responsibilities of the EoR and TDF Qualified Person for the tailings disposal facilities at the Myra Falls Mine are defined in *Guidance Document – Health, Safety and Reclamation Code for Mines in British Columbia* (Ministry of Energy & Mines of British Columbia 2016). During 2023, the EoR role was held by Dixie Ann Simon, P.Eng. from January 1 to October 31, 2023, and was taken over by Allison Isidoro, P.Eng. from November 1 to December 31, 2023. Allison Isidoro is the current EoR. Table 1 lists the contact information of the EoR and TDF Qualified Person for the Lynx TDF.

Table 1: Lynx Tailings Disposal Facility Responsible Persons

Function	Name	Company	Contact Information
Engineer of Record	Allison Isidoro, P.Eng.	WSP Canada Inc.	allison.isidoro@wsp.com 587-334-7044
TDF Qualified Person	Nicole Pesonen	Myra Falls Mine Ltd.	nicole.pesonen@myrafallsmine.com 250-202-9468

TDF = tailings disposal facility.

2.0 BACKGROUND AND FACILITY DESCRIPTION

2.1 Elevation Datum and Coordinate System

The global coordinate system used for surface works at the mine is the North American Datum of 1983 (NAD 83) with coordinates projected to Universal Transverse Mercator (UTM) Zone 10. The geodetic datum is Canadian Geodetic Vertical Datum 1928 and hybrid geoid model HTv2_0.

Before 2016, a local grid coordinate system (Mine Grid) was used for the site; where older data is referenced it has been converted from Mine Grid to UTM. Mine Grid distances are in metres but bearing and elevations are adjusted. Mine Grid north is on a bearing of approximately 48° relative to true north. Mine datum elevations are adjusted upwards by 3,047.518 m so that all values remain positive to the bottom of the underground mine. Mine datum and geodetic elevations do not overlap. The lowest topographic point near the site is the surface of Buttle Lake at approximate geodetic elevation 222.5 m (Mine Grid elevation 3,270 m), whereas the highest point near the site is Mt. Myra at geodetic elevation 1,810 m (Mine Grid elevation 4,857.5 m).

2.2 Historical Project Development

The MFM is an underground polymetallic base metal mine, located within Strathcona Westmin Provincial Park, approximately 60 km southwest of Campbell River, British Columbia. Prospecting began in the early 1900s, with the first industrial mine production in the 1960s and the development of the Lynx open pit. Most surface mining operations terminated around 1975, after which the underground development of the Lynx and H-W ore bodies commenced. During this period, the cyclone segregated sand fraction of the tailings was used as backfill in decommissioned underground workings, and the fine fraction of the tailings was deposited directly in the south end of Buttle Lake. In the early 1980s the provincial government prohibited further tailings deposition to Buttle Lake due to concerns over water quality, resulting in the design and construction of the Old TDF (formerly referred to as Myra TDF). The Old TDF operated as the primary TDF between 1984 and 2008, with final deposition in 2011.

The Lynx TDF is a tailings deposition area within the former Lynx open pit mine and is the sole active TDF at the site. It is bounded by the Lynx open pit walls to the north and Lynx Dam to the east, south, and west. The south and west sides of the embankment are sloped at 2H:1V, the east side at 4H:1V, and the upstream side at 2H:1V. The Lynx TDF has been raised nine times by centreline methods, most recently in 2023 to an elevation of 378.5 m. Drawing 010701 shows the overall arrangement of the Lynx TDF.

2.3 Dam Design Overview

The Lynx TDF is retained by a U-shaped, centreline constructed, rockfill embankment dam across the low side of the historical Lynx open pit with its base at a minimum elevation of about 325.5 m. The dam has been raised nine times, most recently in 2023 (Section 9.0). The current crest is at approximate elevation 378.5 m, which includes a 0.5 m capping layer.

The centreline remains at a fixed alignment during each raise with the crest raised vertically and the downstream toe extends further from the centreline to maintain a constant crest width with each raise. The toe of the upstream shell extends onto the tailings beach, to support each vertical crest raise. The ultimate design crest height is planned to reach an elevation of 382.5 m, about 4 m above the current crest. The south and west arms of the downstream embankment are sloped at 2H:1V and the east arm is at 4H:1V. The upstream shell is designed at 2H:1V; however, the current upstream slope was temporarily constructed at a steeper slope to allow the crest raise to elevation 378 m ahead of completing the upstream shell over the tailings.

The embankment has a horizontal crest width of 16 m, after completion of the upstream shell. Internally the dam consists of a 6 m wide vertical filter zone that is along the centreline of the dam crest. The filter zone is constructed of well-graded, fine-grained granular material (Zone J), which provides filter compatibility between the impoundment tailings and the downstream shell. The downstream shell is constructed of well-graded, compacted, granular rockfill (Zone A).

The upstream shell is built of a nominally compacted mixture of coarse- and fine-grained granular materials and boulders (Zone J or A). The upstream shell construction is staged with tailings deposition. The facility design includes a paste tailings beach against the upstream slope to keep the pond away from the dam.

The operations spillway was raised in 2023, through the west arm of the dam to an invert elevation of 376.75 m across the dam crest. The design intent of the operations spillway is to safely release water from events more extreme than the environmental design flood (EDF) event and up to the inflow design flood (IDF) event while maintaining appropriate freeboard (Section 2.5). The operations spillway was designed to safely convey water from within the impoundment to beyond the facility toe to preserve dam structural integrity with respect to erosion during a release of water event.

The most recent Lynx TDF designs can be found in the 2021 Lynx TDF Ultimate Dam detailed design addendum (Wood 2020c) and the 378.0 m Lynx Dam Raise Design Issued for Construction Drawings (WSP E&I 2023d).

2.4 Dam Classification

The Lynx TDF is assigned a High consequence classification considering the Canadian Dam Association guidelines (CDA 2013) primarily based on the potential environmental consequences associated with release of tailings and mine waste into the hypothetical breach inundation area, which is interpreted by MFM to constitute a “significant loss or deterioration of important fish habitat”.

A dam break study completed by WSP E&I in 2022 (WSP E&I 2022) demonstrated that failure of the West Arm of the dam could inundate the area around the mill and camp buildings which could result in loss of life that would increase the dam classification to Very High or Extreme. A risk assessment was completed in 2020 (Wood 2020b) and it concluded that the only theoretical failure mechanism for the West Arm was due to overtopping by failure of the spillway or if the IDF was exceeded. To mitigate potential failure of the West Arm, the Lynx TDF Dam Raise 9 design (WSP E&I 2023a) included an auxiliary swale on the East Arm to provide an area that would overtop first; away from the camp and mill where a permanent population may be at risk. The reduction in risk to loss of life by constructing the auxiliary swale was considered to justify maintaining the classification of the Lynx TDF Dam as High (Wood E&I 2023b). In addition, MFM indicated that an operational control would be included in the Emergency Preparedness and Response Plan such that the camp area would be evacuated if the spillway started to flow.

Since the mine suspended production and went into care and maintenance in December 2023, the number of people on the site is substantially reduced which further supports a High consequence classification.

The Lynx TDF Dam classification has not been updated as part of preparing this report, including consideration for the updated environmental consequence classification recommendations in CDA (2023).

2.5 Key Design Criteria

Key Design Criteria for the Lynx TDF are summarized in Table 2.

Table 2: Lynx Tailings Disposal Facility Design Criteria

Aspect	Original Design Criteria ^(a)	Previous Updated Design Criteria ^(b)	Current Design Criteria
EDF	Based on 24-hour storm event Assumes diversion ditches function 1:200 AEP, 24-hour storm event	Assume diversion ditches do not function 1:200 AEP, 24-hour storm event: 303,000 m ³ (AMEC 2012) 1:200 AEP, 24-hour storm event (Wood 2019a): wet season (Sept 16 to April 14) 294,700 m ³ total volume dry season (April 15 to September 15): 114,400 m ³ total volume	Assume partial function of the diversion ditches. 1:200 AEP, 24-hour storm event (Wood 2020a): wet Season (September 16 to April 14): 226,000 m ³ total volume dry season (April 15 to September 15): 91,200 m ³ total volume
IDF	Based on 24-hour storm event Assumes diversions function Operations and Closure: 1/1,000 AEP 78,000 m ³ total volume Closure: PMF	Based on 24-hour storm event Assume diversions fail Operations, Transition, Closure-Active Care ^l 1/3 between 1:1,000 AEP and PMF Closure-Passive Care: 2/3 between 1:1,000 AEP and PMF	Same as previous criteria
Flood storage and freeboard	Operations: Maximum 1 m water against dam crest in normal conditions Store IDF Minimum 0.5 m freeboard No spillway Closure: Not designed, presumed dry cover and spillway	Operations, Transition: Minimize water against dam crest in normal conditions Store EDF Minimum 1.0 m freeboard Spillway required to route IDF Active and Closure-Passive Care: Minimize storage, clean water spillway	Maximum normal water level to maintain EDF storage below spillway invert El. 376.75 m (Based on December 2023 survey): “wet season” = 373.9 m “dry season” = 375.6 m Monthly Survey to be used for on-going monitoring. Water shall not pond against the dam shell under normal conditions. Maximum tailings elevations will control allowable normal pond elevation due to MFM suspending production in December 2023. Minimum 0.3 m freeboard during passage of IDF (Wood 2019b)

Table 2: Lynx Tailings Disposal Facility Design Criteria

Aspect	Original Design Criteria ^(a)	Previous Updated Design Criteria ^(b)	Current Design Criteria
Dam Stability (static)	Short term or temporary: FoS ^(d) ≥ 1.3 Long term, steady state: FoS ≥ 1.5	Short term or temporary (construction): FoS ≥ 1.3 Long term, steady state: FoS ≥ 1.5	Same as previous criteria
Dam stability (post-seismic)	Operations and Closure: Based on 100% or the Maximum Credible Earthquake, PGA = 0.60 g M7.5 intraplate earthquake Post-seismic FoS ≥ 1.3	FoS ≥ 1.2, post-earthquake conditions M9.0 subduction earthquake Operations, Transition, Closure-Active Care ^(b) : 1:2,475 AEP, 0.55 g Closure-Passive Care: ½ between 1:2,475 and 1:10,000 AEP, 0.63 g	Same as previous criteria

(a) Amec (2008b).

(b) Updated criteria are derived from the updated CDA Guidelines and Mining Dams Bulletin (CDA 2013, 2019), wind/wave analysis to assess minimum freeboard (Wood 2019b), BC Ministry of Environment requirements for the EDF magnitude, and the updated seismic hazard assessment (Amec 2016b).

i CDA Mining Dams Bulletin (CDA 2019) recommends that the higher “Closure – Passive Care” standards should be considered where it is anticipated that the “Closure – Active Care” configuration is expected to last decades or centuries if there are not sufficient resources on hand to address emergencies stemming from extreme floods or major earthquakes.

(d) Seismic design criteria are to be applied to normal wet-season operating water level conditions, and conversely hydrotechnical design criteria are to be applied in static conditions. The hydrotechnical and seismic design criteria constitute separate extreme loading conditions as defined in Section 5.0 of the CDA geotechnical bulletin (CDA 2007).

FoS = factor of safety; CDA = Canadian Dam Association; EDF = environmental design flood; IDF = inflow design flood; ≥ = greater than or equal to; PGA = peak ground acceleration; AEP = annual exceedance probability; PMF = probable maximum flood.

2.6 Surrounding Waste Rock Dumps

Waste rock dumps (WRD) 1, 2, and 3 are above and adjacent to Lynx TDF. They are irregularly shaped with benches, over steepened slopes, and crossed by several active and abandoned roads. They were built between the 1960s and 2015. Limited dumping plans or records exist. In 2023, waste rock was further removed from WRD2 as part of the WRD2 Phase 3 removal plan (Wood 2021g). Waste rock removed from WRD2 in 2023 was used as dam fill in the construction of the Lynx TDF to elevation 378.0 m. Additional information regarding the WRDs for 2023 is documented in the 2023 Annual WRD Report (WSP 2024c).

3.0 SITE CLIMATE REVIEW

The climate in the Myra Falls area is classified as Marine West Coast, based on the Köppen Climate Classification System (Government of Canada 1957). Weather patterns in the area are typical of the coastal regions of British Columbia. The climate at Myra Falls is characterized by a cool, wet season starting in September and extending until May and a warm, dry season starting in May and extending to September.

There is one automated weather station on the site, near the Camp. It records daily and hourly measurements of air temperature, relative humidity, wind speed, wind direction, rainfall, and snowfall depth. The weather station is powered by a combination of solar panels and batteries.

3.1 Precipitation

The Myra Falls Mine is situated in a seasonally wet climate, with a high potential for significant and damaging precipitation events. The hydrology of the site was reviewed in 2012 (Amec Foster Wheeler, 2012) and new precipitation event frequencies were developed.

Monthly site precipitation totals and extremes are presented in Table 3 and Figure 1. Annual precipitation totals for the site record are summarized in Figure 2. Based on data collected between 1979 and 2023, the site has an average annual precipitation of 2,617 mm. The total annual precipitation recorded in 2023 was greater than average with 3,440 mm and was made up of 2,541 mm of rain and 899 mm of snow water equivalent. Precipitation recorded in 2023 was the fourth highest annual total based on the available site record. It should be noted that snowfall values are estimated using recorded snow depth, with the assumption that snow density is equal to 10% of water density.

Table 3: Monthly and Historical Precipitation

Month	Monthly Total Precipitation (mm)	
	Historical Average ^(a)	2023
January	377	795
February	267	608
March	248	210
April	159	294
May	92	20
June	61	3
July	42	24
August	55	18
September	123	161
October	333	301
November	466	349
December	396	657
Total	2,617	3,440

(a) Historical precipitation data was obtained from MFM from the former Powerhouse weather station from 1979 to 2014, from the Paste Plant weather station from 2015 to 2020 and the Camp weather station onwards. Snow depth data was manually checked for erroneous values (large spike in snow depth). When one was observed, the hourly data for the day was calculated after the erroneous value was removed.

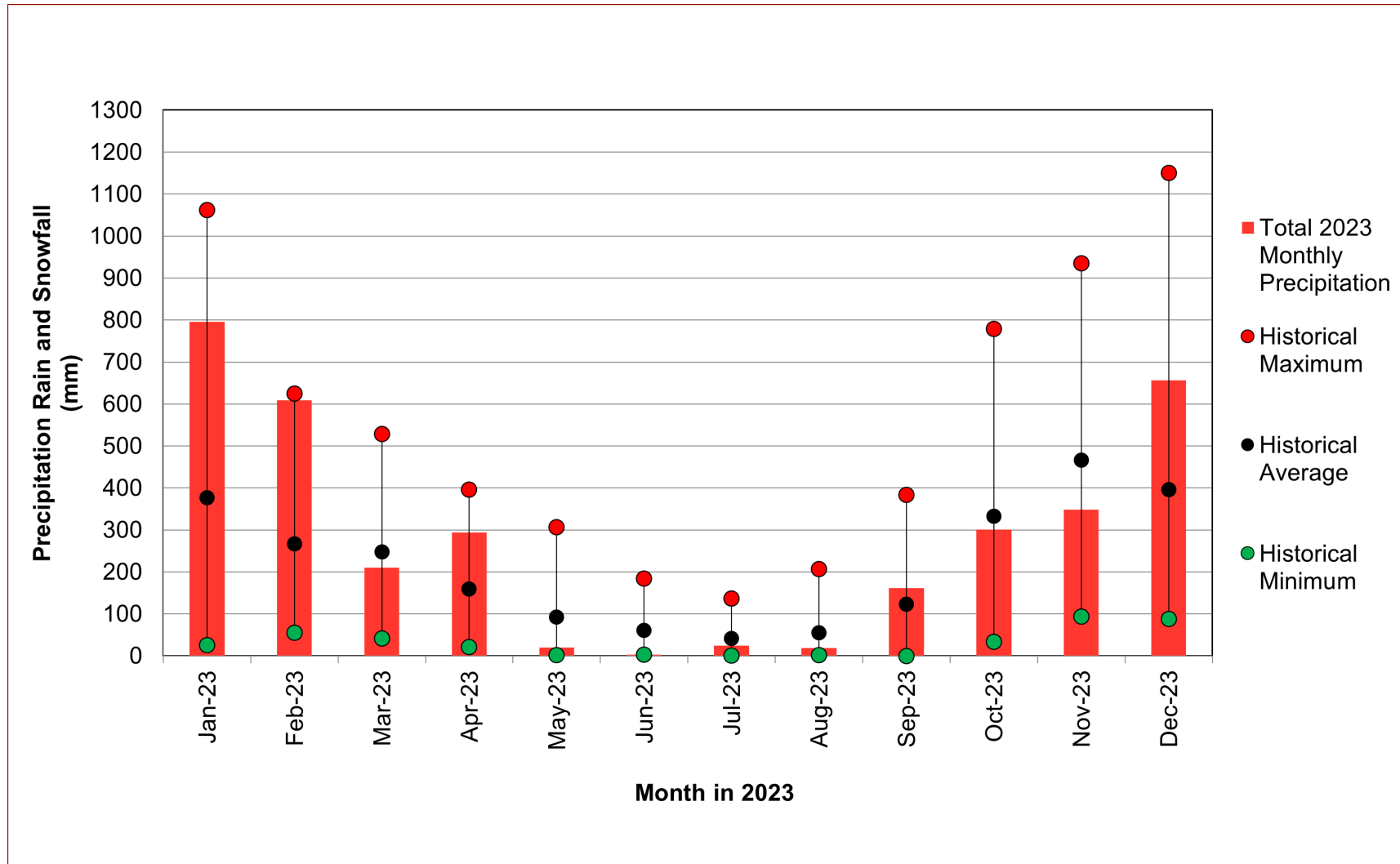
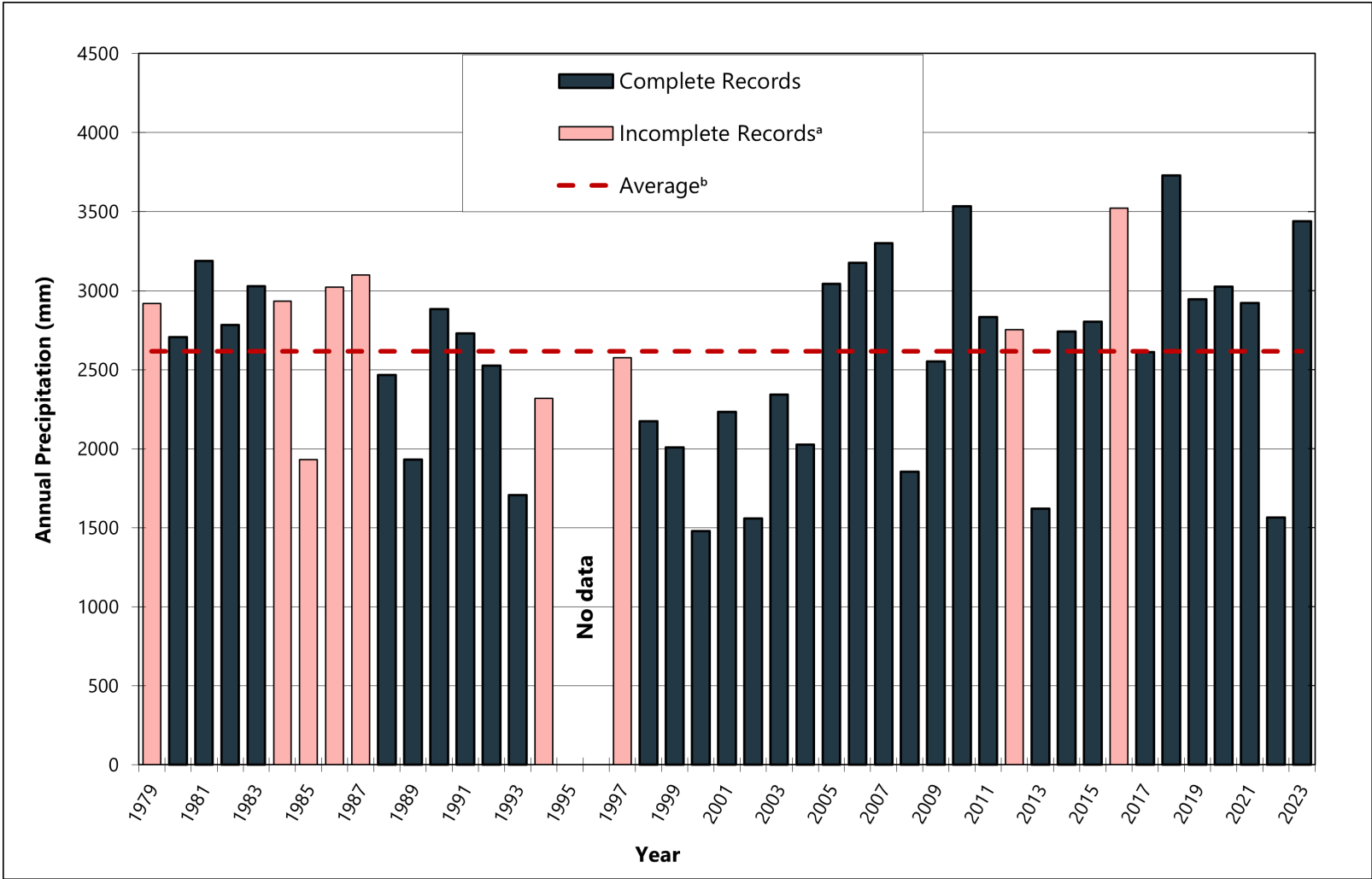


Figure 1: Monthly Site Precipitation Data



Note:

a) For years with incomplete records, the average monthly rainfall from years with complete records have been used to fill gaps (precipitation data for the power house station between 1979 to 2014 and for the Paste Plant station from 2015 and onwards).

b) Average annual precipitation is based only on years with complete records.

Figure 2: Annual Site Total Precipitation 1979 to 2023

3.2 Temperature

Monthly average site temperature minimums and maximums for 2023 were recorded at the Camp weather station and are compared to historical data (2012 to 2023) in Table 4. It is observed in May through August and December 2023, there were average daily maximum temperatures recorded that exceeded the historical average maximum values for those months.

Table 4: Monthly Temperatures

Month	Historical Daily Average Temperatures by Month (°C) ^(a)			2023 Daily Average Temperatures by Month (°C) ^(a)		
	Daily Average Minimum	Daily Average Mean	Daily Average Maximum	Daily Average Minimum	Daily Average Mean	Daily Average Maximum
January	-1.0	0.7	3.0	-0.6	0.8	2.9
February	-1.3	1.1	5.2	-1.9	0.5	4.0
March	0.1	3.5	8.6	-1.1	2.2	7.6
April	2.3	6.7	12.4	1.3	5.1	10.2
May	6.9	12.7	19.6	7.6	14.9	23.4
June	9.7	15.4	21.9	10.0	17.2	24.9
July	12.8	19.1	26.2	12.9	19.8	27.1
August	13.4	19.4	26.6	13.6	19.8	27.5
September	9.7	14.3	20.5	9.0	13.8	20.4
October	5.4	8.5	13.0	5.4	7.9	12.0
November	1.0	3.0	5.6	1.2	2.9	5.2
December	-1.4	0.3	2.2	1.5	2.8	4.6

a) Historical temperature data was obtained from MFM from the former Powerhouse weather station from 1979 to 2014, from the Paste Plant weather station from 2015 to 2020 and the Camp weather station onwards. Values shown are averages of the recorded daily average, daily maximum, and daily minimum temperatures for each month.

4.0 SEISMICITY

The Myra Falls Mine site resides within one of the most seismically active zones in Canada. Two significant earthquakes occurred in the last century, west and east of the Myra Falls site, in 1918 (M7) and 1946 (M7.3). The site is also within the zone that would experience strong shaking in response to a Cascadia subduction zone megathrust earthquake (M9+).

Site specific seismic design ground motion studies have been completed previously for the site [Klohn Crippen (1999) and Amec Foster Wheeler (2016)]. The site specific seismic assessments indicate that a megathrust earthquake would produce the strongest and most prolonged ground motions and is therefore the current design earthquake for the site. Peak ground accelerations values are provided in Table 5. The values obtained from the National Building Code of Canada Natural (2010, 2015 and 2020) are provided for comparison.

Table 5: Summary of Seismic Peak Ground Acceleration Values

Return Period (years)	Peak Ground Acceleration (g)				
	Klohn Crippen (1999)	National Building Code of Canada			Amec (2016)
		2010	2015	2020	
475	0.20	0.18	0.18	0.21	0.22
1,000 (975)	0.30	0.22	0.29	0.33	0.35
2,475^(a)	-	0.34	0.34	0.51	0.55
10,000	0.60	--	--	--	0.71

(a) Design seismic event for the water treatment ponds.

5.0 TAILINGS MANAGEMENT

Tailings deposited prior to 2015 were produced using a cycloning process to separate the mill tailings stream into fine and coarse tailings. The tailings stream was typically separated into approximately 55% coarse tailings and 45% fine tailings by dry mass. In general, the fine tailings were thickened by the Paste Plant and deposited in the TDFs; however, coarse tailings were used as underground backfill with excess stockpiled in the Reclaimed Sand Area (now the site of the Surge Pond) or used for construction. The mine site went into care and maintenance when milling operations and tailings production were suspended in June 2015 to upgrade various infrastructure on the site. Details on how coarse and fine tailings were processed and stored prior to 2015 are available in the 2016 DSI (Amec 2017c).

In 2018, MFM restarted mining operations and tailings were produced and deposited in September and December of that year when mill commissioning tests were being conducted. Production started again in 2019. The process changes during the upgrades included a change to produce non-segregating tailings paste for underground backfill and for deposition in the TDFs. The upgraded Paste Plant includes a gravity thickener, vacuum filters, mix tanks, and positive displacement pumps.

In mid-December 2023, milling operations and tailings production were suspended again and the mine transitioned into care and maintenance.

Additional details of tailings deposition in the Lynx TDF in 2023 are provided in the following sections.

5.1 Lynx Tailings Disposal Facility Tailings Management

MFM plans and manages tailings deposition and sequencing in the Lynx TDF.

Lynx TDF has historically been used to store primarily fine paste tailings, with lesser amounts of other materials such as, bulk coarse tailings, construction waste, sludge from the water treatment ponds, and fines removed during sump maintenance.

Prior to 2015, paste tailings deposition in the Lynx TDF was completed from near the pit highwall at the back of the facility which had tailings sloping down towards the dam. During the final year prior to suspension of mining operations in 2015 some operation difficulties experienced by the Paste Plant necessitated the deposition of partially thickened tailings from the Paste Plant thickener, as a slurry containing about 50% solids total by mass. The deposition of this slurry filled the lower areas of the paste surface.

When the mine was in care and maintenance from 2015 to 2018, the Lynx TDF was primarily used for storage of dredged spoils (dredgate) from the site's water treatment ponds. The deposition of the dredgate gradually flooded the paste tailings surface such that the entire impoundment deposition surface in the facility was nearly level. The dredgate consisted of slimes resulting from the water treatment system and of sediments that were conveyed into the treatment ponds from around the site, including tailings eroded from the Amalgamated Paste Area of the Old TDF.

The single point discharge of tailings from the back side of the facility was changed in an Amendment of the Lynx TDF design in 2015 (Amec 2015b). Discharge of tailings was changed to be conducted from the upstream dam crest to form a paste beach upstream of the perimeter dams that slopes away from the dam. Details of the change in deposition are outlined in the Lynx TDF Dam design update reports (Amec 2018a) and (Wood 2020d), but the main purpose for the change in deposition was to move the supernatant pond away from the dam.

During dam raise construction in 2023, the tailings pipeline had to be dismantled from the crest and tailings deposition was generally conducted from the upstream side of the facility off the WRD1 filter pad. MFM reported that the Paste Plant was not always producing paste tailings and raw tailings were intermittently deposited in the Lynx TDF from an upstream discharge point.

Prior to the mine suspending production in December 2023, MFM had developed a beach in front of most of the perimeter dams. However, the beach along the west arm and west end of the south arm were less developed. The pond elevation will need to be managed at elevations below the beach so the pond is maintained away from the upstream slope of the dam.

5.2 Tailings Storage Monitoring

The estimated volume remaining in the Lynx TDF between the last tailings surface survey on December 1, 2023, and the operational spillway invert (376.75 m) was approximately 352,500 m³, of which 226,000 m³ is required for EDF storage, leaving 126,500 m³ for tailings deposition (assuming free water volume remains relatively constant). The volume comparison is approximate as the facility contained a shallow but unknown depth of water at the time of the survey and the survey identified the water surface, rather than the tailings bed.

Prior to the mine suspending operation, MFM had indicated that under normal operations approximately 20,000 m³ to 25,000 m³ of tailings was deposited into the TDF each month. Based on this average production rate, the Lynx TDF Dam raise to elevation 378.0 m would provide approximately five to six months of storage if tailings production was restarted at a similar rate.

While the mine is in care and maintenance the storage volume in the Lynx TDF will likely be relatively constant. Deposition of small amounts of dredgate from the water management ponds in the Lynx TDF may result in a minor decrease in storage, but consolidation of the tailings deposit may also result in small increases in storage volume. Quarterly tailings surveys should continue in 2024 to confirm that the EDF storage volume is maintained.

6.0 WATER MANAGEMENT

The mine's water management system has two main purposes:

- Divert non-contact water around the surface workings, WRDs, and tailings disposal facilities and convey the water directly into Myra Creek.
- Capture contact water including surface runoff and pumped water from mine-affected areas and convey it to the water treatment system for treatment and then release to Myra Creek.

The water management system consists of a series of diversion ditches upslope of the mine area, storage within the tailings facilities and water management ponds, various pumping systems, decant structures, and a series of treatment ponds. MFM monitors the treated water for water quality and submits annual reports to EMLI.

The site-wide water balance was updated in 2021 by Robertson Geotechnical Consulting Ltd. (RGC) as part of the Site-Wide Geochemical Model Update (RGC 2021).

The following sections provide a brief description on the configuration and performance of the pertinent aspects of the water management system that relate to the Lynx TDF.

6.1 Pond and Flood Storage

The Lynx TDF is designed to store the EDF event and the operational spillway is designed to pass the IDF event, while maintaining the design freeboard (Section 2.5). Partial diversion of the EDF is assumed in calculating the required EDF storage volume in Lynx TDF (Wood 2020a). Failure of the diversion ditches is assumed for design of the Lynx TDF operational spillway to pass the IDF event.

Under normal operating circumstances, ponded water either infiltrates into the ground below the facility or around the periphery of the facility (into the pit walls or the dam) or is pumped from the facility and discharged into the treatment system. Pumping capacity varies with the season but is typically provided by two Grindex 60 hp electric pumps with a capacity of 0.08 m³/s (1,200 Gallons per minute [gpm]). Additional diesel pumps with capacities varying from 0.07 to 0.16 m³/s (1,200 to 2,600 gpm) are deployed, if necessary.

The facility is operated to maintain storage for the 24-hour EDF above the maximum normal operating water level (NOWL) and below the spillway invert (i.e., no discharge). Any water that builds up above the maximum NOWL must be pumped to the treatment system to maintain EDF storage.

The Operation, Maintenance and Surveillance (OMS) Manual for the Lynx TDF stipulates quarterly tailings surveying and capacity verification. The maximum NOWL is established with each quarterly unmanned aerial vehicle (UAV) survey to account for changes in storage volume (decrease due to deposition or increase due to tailings consolidation). In 2023, MFM facilitated additional surveys to monitor decreasing flood storage until the Lynx TDF Dam raise was complete in September 2023. A total of nine surveys were completed between January 19, 2023, and December 1, 2023.

During 2023, MFM requested that WSP reassess the assumptions and design basis for determining the required EDF storage volume in Lynx TDF to maintain compliance until the Lynx TDF Dam raise to elevation 378 m could be completed. The assessment considered that MFM completed a comprehensive diversion ditch clean out in February 2023, the past performance of the diversion ditches, and the likelihood of an EDF event occurring prior to completion of the dam raise. Based on the assessment, WSP indicated that the required EDF wet season storage volume could be temporarily reduced during 2023 and a linear transition was proposed for the transition

from the dry season to the wet season over the month of September 2023, rather than the EDF volume changing instantaneously on September 16, to the wet season value. Based on the revised EDF storage requirements, MFM was able to maintain tailings deposition and sufficient EDF storage through to completion of the dam raise in September 2023.

If heavy precipitation threatens to exceed the water treatment system capacity and overwhelm Super Pond, the water management protocol for site is to allow water to temporarily collect in the Lynx TDF above the maximum NOWL to reduce the potential for release of untreated water. The EoR shall be notified when the NOWL is exceeded. The Lynx TDF will be able to store a precipitation event up to at least the size of an EDF event, which can then be pumped out once precipitation has reduced. If an EDF event occurred prior to the water level being pumped down, there may not be sufficient volume in the facility to store the EDF. The spillway is designed to pass the IDF, which is larger than the EDF, so the only concern related to having a reduced storage in the TDF would be release of untreated water through the spillway.

The following sections detail specific water management items for Lynx TDF during the 2023 reporting period.

6.2 Non-Contact Water

The main non-contact water diversion ditch system for the mine consists of three ditches along the north side of the valley which collect non-contact runoff water from the three primary drainage areas upslope from the mine site. These are highlighted in Drawing 010707, and are as follows:

- Arnica Diversion Ditch: flows east to west above the Lynx TDF into Arnica Creek.
- Upper Lynx Diversion Ditch (ULDD): flows from west to east above the Lynx TDF and into a natural unnamed stream, locally referred to as Cascade Reach.
- Lower Lynx Diversion Ditch (LLDD): diverts Cascade Reach and runoff from the hillside above the Old TDF from west to east along the north upstream edge of the Old TDF and into Myra Creek downstream of the Pumphouse 4 Bridge.

Per the OMS Manual, MFM conducts weekly inspections of the LLDD and quarterly inspections of the ULDD with unusual observations, if any, reported to WSP. The LLDD is inspected quarterly by WSP and the ULDD is inspected at least annually by WSP. Additional inspections of the diversion ditches are conducted by MFM as necessary during and immediately after significant storm events. Typical maintenance activities carried out by MFM for the diversion ditch system have included removal of fallen trees, rocks or debris from the ditches, and minor repairs to the LLDD lining.

WSP inspected Arnica Creek Diversion Ditch in February 2023 and ULDD was inspected in February, May, July, and September 2023. Observations from inspections of Arnica Diversion Ditch and ULDD in 2023 are summarized in the following sections.

Observations for the LLDD are detailed in the 2023 Old TDF DSI report (WSP 2024a).

The volume of runoff and seepage observed at the mid-slope of WRD2 during WSP's inspection in October 2023 suggested that runoff and/or seepage were bypassing the ULDD and reporting to the Lynx TDF. WSP worked with MFM to develop a program for monitoring flows in Upper Arnica Diversion Ditch, ULDD and the seepage flows in WRD2, for comparison with site rainfall data, to better assess how effective the diversion ditches are and provide better data for refinement of the required EDF storage volume in Lynx TDF. The monitoring program

would help assess variability of seepage losses along the ditches under higher and lower flow events. It is hypothesized that under higher flow events, more of the flows may be conveyed through the ditch with limitations on the volume of seepage losses; however, monitoring data are required to confirm.

During 2023, WSP was working with MFM to evaluate options for potential upgrades to the diversion ditch system to allow for a reduction in the required Lynx TDF EDF storage volume.

The priority for upgrading the diversion ditches and monitoring to evaluate the effectiveness of the ditches will require re-evaluation in consideration of the mine suspending production and entering care and maintenance. The Lynx TDF has sufficient capacity to store the EDF design volume (Sections 2.5 and 5.2) and while the mine is not producing tailings, the volume in the Lynx TDF is expected to be generally stable (potential for small reduction in volume associated with deposition of sludge from water management ponds in the Lynx TDF and potential for an increase in storage volume associated with consolidation of the tailings). Reducing the required EDF storage volume would only be a benefit if operations restart in the future.

6.2.1 Arnica Diversion Ditch

MFM conducted significant maintenance of Arnica Diversion Ditch in February 2023 to clean out existing debris and remove vegetative overgrowth within the ditch. WSP determined that the unobstructed capacity of the ditch following this maintenance was greater than what would be required to convey the Lynx TDF EDF flows for Arnica Ditch catchment.

WSP has provided recommendations for ditch improvements and an inspection and maintenance program in the report entitled Conveyance Improvements – Upper Lynx and Upper Arnica Diversion Ditches (WSP E&I 2023e). To rely on the upper reach of Arnica Diversion Ditch to convey a portion of the Lynx TDF EDF, WSP recommended placement of large rocks at select locations of loose colluvium material along the ditch to protect the slope from undercutting/erosion during flows and reduce the potential for a blockage of the ditch. Annual clean out of the ditch at the onset of the wet season was also recommended combined with bi-weekly inspections. These tasks should be added to the OMS manual.

Several locations along the upper reach and transition to the lower reach have been observed where flows in the ditch disappear into the ground. Seepage into the ditch may not change substantially between low flows and high flows, which are more likely to be diverted along the ditch.

6.2.2 Upper Lynx Diversion Ditch

The ULDD was observed to be functioning as expected during 2023. Specific concerns were not observed.

The portion of the ULDD downstream of the culvert is functioning well, leading up to Cascade Reach. Minor obstructions were noted during inspection that were addressed. These types of minor obstructions can be addressed through regular maintenance. Upstream of the culvert, minor obstructions from vegetative debris and sediment were noted. Frequent maintenance is important along this section to make sure flow is conveyed into the culvert.

Annual clean out of the ULDD prior to the onset of the wet season and regular biweekly inspections are recommended to maintain the maximum diversion capacity of the ditch. These tasks should be added to the OMS manual. Further evaluation of options to improve ditch performance and reliability are required for consideration of reducing the required Lynx TDF storage volume.

6.3 Contact Water

The Lynx TDF operates as an open-ended system with several unquantifiable inputs and outputs and therefore does not have a detailed water balance. The facility water management design basis is focused on management of short duration peak runoff events, and operational water management requires maintenance of a relatively small pond during normal operating conditions.

The Lynx TDF receives water from the four sources listed below:

- Release of water from tailings or waste materials deposited as paste or slurries upon initial deposition (can be significant: from raw tailings, paste plant thickener underflow, or from treatment pond dredgate slurries).
- Additional release of porewater from within the tailings mass during long-term consolidation (insignificant compared to other sources).
- Precipitation on the impoundment and catchment area (potentially the single largest source, and the most variable).
- Groundwater seepage flux into the facility (less significant compared to other sources).

The Lynx TDF dam design is based on the assumption that the dam fill is relatively permeable such that significant porewater pressures do not develop. The design does not include a low permeability core or liner system. The tailings are of relatively low permeability and the design is based on maintaining a tailings beach in front of the dam with a limited pond volume to manage seepage through the dam. A filter zone within the dam is designed to restrict tailings migration through the dam.

6.3.1 Foundation Drains

There are two drains that have been constructed within the foundation of the Lynx TDF:

- Panel 15 Toe Drain
- Lynx Springs Drain

Following foundation preparation in 2015, a spring with an approximate flow of 50 L/s was observed near the southwest toe of the dam near Panel 15 at an approximate elevation of 325.8 m. A drain was designed and constructed to capture and convey the water outside the toe of the dam with the intent to tie it into the closure cover toe drain. A temporary sump was constructed at the toe of Lynx Dam near panel 13/14 in 2017. The sump was constructed with the intention for it to collect water from the Panel 15 toe drain and surface runoff from the downstream dam face; however, MFM reported that water did not collect in the sump so it was replaced with a monitoring well, outside the footprint of the dam. Water levels are monitored (by others) and a permanent system will be installed when the Lynx cover toe drain is constructed. The Lynx closure cover toe drain will be constructed after the dam has reached the ultimate design elevation and vegetation has been established on the closure cover.

A groundwater flow of approximately 100 L/s was observed from the old Lynx Pit wall in 2011 near elevation 352.5 m on the east side of the Lynx TDF, below WRD2. The Lynx Springs Drain is designed to convey the spring water below the tailings and through the Lynx Dam out of the facility by gravity drainage to reduce the potential for elevated pore pressures in the facility and/or piping erosion (Amec 2013). Construction of a portion of drain up to Sta. 0+263 was carried out in 2014, 2017, and 2018. Construction of the concrete sump box and 650 mm pipe between the sump box and Manhole 2 were carried out in 2019 to direct flows to Super Pond. The Lynx Springs

drain has been essentially complete since 2020. Should water quality meet direct discharge criteria a sump box outlet channel will be constructed to direct Lynx Springs Drain flows to Myra Creek.

The Lynx Springs Drain functioned as intended during 2023. WSP observed relatively clear flows reporting to the Lynx sump box during 2023 site inspections. A new vibrating wire piezometer (VWP) was installed near the Lynx Springs Drain in January 2024 (Section 8.0) to replace two previously installed VWPs that had stopped working.

6.3.2 Sinkholes in the Tailings Surface

Multiple depressions or sinkholes in the tailings surface have been observed during the Lynx TDF operations between 2008 and 2022. These depressions varied in size and location. Most of the sinkholes/depressions have disappeared during ongoing tailings deposition in the TDF.

One of the sinkholes has repeatedly formed in the paste surface near the north corner of the Lynx TDF (Drawing 010703). It was first observed in the spring of 2012 and has been persistent, re-forming after being covered with fresh tailings or pond dredging material. It has been surveyed on several occasions and the diameter ranges from about 10 to 15 m and the horizontal location appears to migrate slightly over time within a consistent general location. The area is observed weekly by MFM and quarterly by WSP, and the presence or absence of this sinkhole is noted, and photographs are taken. The recurring sinkhole was not observed during WSP inspections in 2023 and no new depressions or sinkholes were observed by WSP or reported to WSP in 2023.

Formation of the sinkhole was likely the result of internal erosion of the tailings associated with downward seepage, presumably into the underground workings. The formation of the sinkhole has not been observed to change in response to pond levels, and obvious signs of flow towards the sinkhole have not been observed, so seepage gradients associated with the pond may not be the main cause of the sinkhole. Erosion leading to the formation of the sinkhole may have been associated with groundwater seepage flows below the tailings.

Groundwater flow paths involved with any sinkhole or depression formation in Lynx TDF are likely complicated and could involve exposed stopes, intercepted drifts, manways, ore passes, mill holes, exploration drill holes, natural joints, or manmade fractures in the pit walls. Survey data and mine records indicate that this sinkhole overlies 12-Level stope, which is directly below the base of the Lynx TDF and was partly exposed during removal of the crown pillar. MFM indicated that entry into the underground mine below the facility for the purposes of investigation of the sinkhole is not safe as the area has not been maintained in decades. A bulkhead was constructed to prevent access to this area and protect people from potential inundation from water and/or tailings.

There could be a risk to upstream instability if there is a substantial flow path that could allow a large volume of tailings to suddenly flow into the underground creating the potential for a rapid draw down situation. The recurring sinkhole is distant from the dam which helps reduce the potential for impact to the dam. Internal erosion of the tailings into the underground could be a long-term issue associated with stability of the tailings surface and may influence closure cover designs. Mitigation of the sinkhole would likely be challenging due to access constraints and not knowing where the erosion is occurring at depth. Recommendations have been to monitor the depression/sinkhole with consideration for mitigation at closure if deemed necessary.

MFM and WSP will continue to actively monitor the occurrence and conditions of tailings sinkholes or depressions during routine inspections. Photographs will be taken from key vantage points to document the condition of the tailings surface as well as the presence or absence of the recurring sinkhole at the time of the inspections. MFM will notify WSP of new sinkholes observed during their weekly inspections.

6.4 Other Contact Water Management

Within the vicinity of the Lynx TDF there are surface water flows that are potentially impacted by acid rock drainage, such as the WRDs, haul roads, and the dam shells. These flows are directed to the treatment system by a combination of ditching, pumping, and decants.

6.5 Water Treatment

The water treatment system is based on mitigation of low pH water to reduce the solubility of dissolved metals. Lime is added in mixing tanks at the inlet of the treatment system at the head of the Super Pond which is the primary settling pond on the site. From the Super Pond the treated water flows through six additional polishing ponds to improve water clarity before release to Myra Creek. The locations of the Super Pond and the Polishing Ponds are shown in Drawing 010702. The water treatment system is inspected monthly by MFM personnel and annually reported to BC Ministry of Environment. WSP conducted geotechnical inspections of the Super Pond and the Polishing Ponds when on site to conduct inspections for the Lynx and Old TDFs. Observations from these site visits are presented under a separate cover (WSP 2024b).

7.0 DAM INSPECTIONS

Inspections of the Lynx TDF are completed by both MFM and WSP throughout the year as per the OMS Manual. This section provides a summary of the Lynx TDF DSIs performed during 2023.

7.1 Inspections by MFM

Routine inspections are conducted weekly and event-driven inspections are completed by MFM personnel following a high precipitation event or an earthquake. During 2023, MFM conducted routine TDF inspections approximately weekly and routine ULDD inspections at least monthly between April and December, except October. These frequencies meet or exceed what is in the OMS Manual. Inspections of the LLDD are reported in a separate document (WSP 2024a).

Inspection reports were completed with the inclusion of photographs. With respect to the Lynx TDF and the Lynx ULDD, the reviews were based on visual inspection of the following:

- The Lynx TDF for active areas of tailings deposition, the location, extent, and clarity of ponded water, and the function of the sump pump.
- The Lynx TDF Dam for surface erosion, settlement, depressions, cracks, bulges, or signs of seepage.
- The ULDD for flow rate and obstructions (e.g., slumps, fallen trees).
- Any other anomalies or changes for any of the above structures.

MFM reported 52 routine TDF inspections between January and December 2023. In addition, an event-driven inspection was completed on January 13, 2024, associated with a high precipitation/high flow event. MFM inspections are not always completed on weeks when WSP is performing their inspections; however, in general, the observations in MFM inspection reports are consistent with those made by WSP during quarterly inspections. Anomalies or key observations made by MFM are included within the appropriate sections of this report.

7.2 Inspections by WSP

The EoR or designate inspected the Lynx TDF and ULDD on a quarterly basis during the reporting period as outlined in the OMS Manual. Conditions are observed in and around the facilities, with emphasis on water management, dam safety, and seepage conditions. WSP personnel met with MFM staff during the inspection site visits to discuss any concerns or recommendations relating to the facility operation. WSP carried out four inspections of the Lynx TDF in February, May, July, and October 2023. Inspection forms for the May, July, and October 2023 site visits are included in Appendix A. Select photographs from each site visit are provided in Appendix A as well. Any outstanding actions/recommendations from previous years are summarized in Section 10.1 and the 2023 actions/recommendations are summarized in Section 11.2.

8.0 INSTRUMENTATION MONITORING

Instrumentation for monitoring performance of the Lynx TDF includes piezometers for measuring porewater pressures, survey monuments for tracking dam deformation and slope inclinometers for measuring lateral deformation. This section presents a summary of the instrumentation network and a summary of the observations from the data collected in 2023.

A summary of the operating status of the piezometers is provided in Appendix B1. Appendix B2 provides a summary of piezometer data for 2023.

No slope inclinometer readings were collected in 2023 due to concerns with getting a probe stuck in the casing. Shape accelerometer array instruments were scheduled for installation in Fall 2023; however, due to an error in the production of the instruments, they had to be re-constructed and are scheduled for installation in 2024.

Data is received and reviewed by WSP, typically monthly or as needed. Monitoring data includes:

- Rainfall and temperature records (Section 3.0).
- Vibrating wire piezometer readings.
- Deformation monument surveys.

As requested by MFM, WSP started preparing monthly piezometer data review summary memorandums. Memorandums were prepared for July to November 2023 inclusive. December 2023 data was reviewed as part of preparing this report. Prior to July 2023, instrumentation data review findings were communicated with MFM through emails or oral discussions. A summary of the instrumentation data received by WSP in 2023 are plotted and provided in Appendix B2.

The piezometers and weather station are connected to an automated network. The automated network records data at frequencies varying between hourly and daily for various piezometers. The maximum pressure readings for each week of the monitoring period are processed for review.

Some individual components of the automated network have occasionally malfunctioned resulting in some of the data recordings not being completed per the schedule outlined in the OMS Manual. The extent of missing data and its causes are summarized within the following sections. Causes of data loss are varied but mainly stem from solar charging, battery issues and power supply issues or temporary disconnection from the automated system to allow dam raise construction and extension of the piezometer leads. Progressive steps have been implemented to trouble shoot the system, improve its reliability, and reduce the occurrence of missed data records.

In October 2022, WSP conducted an instrumentation review which included a field review of the VWP network (WSP E&I 2023c). In December 2023, MFM started a field program to install six new VWPs within the Lynx TDF. These installations were the result of the review done in October 2022, which identified the need for more VWP coverage.

8.1 Piezometers

The Lynx TDF piezometer network consists of VWP's within the Lynx TDF Dam fills, the dam foundation materials, and upstream within the tailings deposit.

Piezometer installation details are found in the reports: 2011 Paste Investigation (Amec 2012), 2014 Lynx Foundation Investigation (Amec 2015a), 2015 Lynx Supplemental Drilling (Amec 2016a) and Lynx Starter Dam 2019 Site Investigation (Wood 2019d). Details of the installation of six new piezometers within the Lynx TDF Dam and foundation in 2023 and 2024 will be documented in a factual report that is in progress at the time of writing this report.

The configuration of the network is shown in Drawing 010702. Cross-sections along Instrumentation Planes D, E and F are provided in Drawings 010703, 010704, and 010706. The Lynx piezometer levels are typically influenced by seasonal precipitation and generally follow a repeatable trend through the wet and dry season cycle. Pressure levels during the dry season (typically April to September) are typically negative (dry) or marginally above zero in the dam fills and shallow foundation. The piezometers in the deep foundation are typically stabilized at the minimum level of the Myra Valley aquifer. Pressure levels are influenced by precipitation trends in the wet season. The sensitivity to precipitation trends varies amongst the piezometer groups depending on their location, with the response in the deep aquifer being the strongest. Porewater pressures in the tailings gradually increase over time as the tailings deposit builds and the pond surface increases. The piezometers in the tailings deposit show moderate response relative to precipitation and pond level fluctuations in the wet season. Since the mine production restarted in 2019, the piezometers in the tailings have shown more muted response to precipitation.

The monitoring thresholds for Lynx TDF were updated in February 2024 for the dam geometry associated with the crest raise to elevation 378 m (WSP E&I 2024b). Notification thresholds were developed based on a review of the historical maximum pressures measured at the piezometers. Limit equilibrium stability models were used to assess the effect of increased porewater pressures on the slope stability design factor of safety relative to the design criteria to set threshold trigger levels for the piezometers. The notifications and trigger thresholds are intended to flag potentially changed conditions to identify when piezometer data should be reviewed in detail to evaluate if there may be impacts on dam safety. The thresholds should be reviewed after each raise and the OMS Manual revised appropriately. The thresholds should also be reviewed if piezometric data indicates significant changes to the average or maximum measured pressures have occurred.

In 2023, piezometer readings within the foundation remained relatively stable with a moderate increase in the deep foundation piezometers of about 3 m and an increase in the shallow foundation of about 1 to 1.5 m in Q4, which is interpreted to be associated with the wet season. Piezometers in the dam fills remained dry over the reporting period. Pore pressures recorded in the Lynx TDF and foundation during the reporting period generally showed similar trends consistent with previous years.

The pressure head in VW17731 installed in the upstream tailings increased by about 1.2 m during 2023. VW17727 is also installed in the upstream tailings and it has shown fluctuations, but no overall increasing trend since late 2021. This may be because it is located further from where the pond which is typically located on the west side of the facility.

No threshold trigger levels were recorded for any of the Lynx TDF piezometers in 2023.

8.2 Survey Deformation Monuments

Eleven survey deformation monuments along the Lynx Dam crest were surveyed each month from January to June 2023 when they were removed to allow the dam crest raise construction to elevation 378 m. Thirteen survey deformation monuments were re-established on the dam crest in early October 2023. Readings were taken in October and November 2023. No readings were collected in December 2023 due to MFM going into care and maintenance and reorganization of mine and consultant personnel. Survey of the monuments is expected to recommence in Q1 2024.

Position data and calculated cumulative displacements in the traverse (i.e., perpendicular to the dam alignment), longitudinal (i.e., parallel to the dam alignment) and vertical directions are presented in Tables B-2 and B-3 in Appendix B3 in tabulated form.

The cumulative recorded settlement of the monuments between late August 2022 and June 2023 ranged from 2.6 to 5.5 cm. Lateral movement perpendicular to the dam alignment (transverse direction) ranged from 0.02 to 1 cm and was mostly in the upstream direction. The cumulative settlement of the monuments re-established after construction was complete in September 2023, was 0.03 to 2.6 cm from early October to end of November 2023. Lateral movements of the monuments perpendicular to the dam alignment ranged from 0.1 to 0.9 cm and were mostly in the upstream direction, during the same time period. The monuments that were re-established in October 2023 were installed within a couple of metres of the temporary upstream crest which is over steepened with cracking observed during the October 2023 inspection. Small upstream movement may be a result of the minor slope deformation associated with the temporarily over steepened slope.

9.0 SUMMARY OF CONSTRUCTION

Details of construction activities on the site are provided in the 2023 Construction Record Report (WSP E&I 2024a). An overview of construction activities is provided in the following subsections.

2023 Lynx TDF construction at Myra Falls Mine included raising the Lynx Dam crest, the operations spillway, and the downstream dam shell. The Lynx Dam, except for the upstream shell, was raised from the Stage 8 crest elevation of 373.5 m to the Stage 9 crest elevation of 378.0 m.

The operations spillway was constructed to an invert crest elevation of 376.75 m and includes a fully armoured channel running from the crest of the dam to the toe of the dam. The spillway invert across the dam crest is lined with geomembrane which wraps over concrete median barriers at the downstream crest which form the control point of the spillway. The downstream channel of the spillway extends over the downstream slope of the Lynx TDF dam and is aligned to direct flows away from the dam toe.

The downstream shell was constructed of compacted Zone A fill (west and south arms) and nominally compacted Zone A fill (east arm). The downstream shell was raised from an elevation of 351.5 m to an elevation of 373.5 m. Once elevation 373.5 m was reached the crest raise commenced concurrent to raising the downstream shell to elevation 378.0 m.

WSP provided EoR, Design Engineer and construction monitoring and geotechnical laboratory services. This comprised preparation of construction drawings and specifications, monitoring construction, and conducting geotechnical quality control testing in an on-site laboratory. Construction and construction management along with procurement services were carried out by MFM. Survey control was provided by Mifflin Surveys Ltd. of Campbell River, British Columbia.

Construction monitoring staff included junior geotechnical engineers/EITs and a senior civil technician from WSP. Senior engineers from WSP provided support to the construction monitors, reviewed weekly reports, and responded to information requests from MFM. The May and July dam inspection site visits by the EoR also coincided with dam construction and allowed for inspection of the construction.

WSP was not involved with other construction activities that occurred during the time in which WSP personnel were on the site. For example, design oversight and record reporting related to the mill, underground, site infrastructure, treatment ponds, and sealing of portals were completed by others and are not documented in this report.

9.1 Lynx Dam Raise

Work on the Lynx Dam was performed by MFM, between April 12 and September 16, 2023. Construction activities are summarized below.

Compacted Zone A fill was used to raise the downstream shell along the west and south arms from elevation 351.5 to 373.5 m. Fill was compacted in 0.5 m lifts with a minimum of six passes of a 10 –t vibratory roller. The construction monitor assessed the state of compaction of each lift by observing proof rolls using a loaded 30 or 40 t haul truck. Nominally compacted Zone A fill was used to raise the downstream shell along the east arm to 373.5 m elevation. The east arm is sloped at 4H:1V and ties into WRD1. Once the downstream shell widening to elevation 373.5 m was completed the Lynx Dam crest was raised concurrent with the downstream dam shell to elevation 378.0 m.

Construction of the Lynx Dam crest started on July 5 and ended on September 16, 2023. Compacted Zone A fill was used to raise the crest to an elevation of 378.0 m. Nominally compacted Zone J fill was used to raise the dam filter. Prior to placement of Zone J material, the 2022 dam filter surface was reviewed by the construction monitor, and any loose material that was placed at the end of 2022 was scraped off. Following this review, the surface was scarified, and Zone J material placed in 0.5 m lifts and nominally compacted with six to eight passes of a bulldozer. Compaction of each lift was reviewed and approved by the construction monitor per the issued for construction specifications for nominally compacted fill.

The WRD1 Zone J filter upstream of the east arm abutment was raised from elevation 373.5 to 378.0 m using nominally compacted Zone J.

The upstream shell within the vertical crest raise was constructed from elevation 373.5 to 378.0 m with a temporary over steepened slope to allow the crest raise to be completed prior to the upstream push out over tailings. The lower portion of the upstream shell was constructed with Zone A; however, as the width of the upstream shell narrowed, the Zone J filter lifts were extended across the upstream shell. Along the east arm Zone J was placed in the upstream shell above elevation 376.0 m and along the south arm, Zone J lifts were placed in the upstream shell above elevation 375.5 m.

Construction of the upstream push out over the tailings beach began on August 7, 2023, when the elevation of the tailings beach was approximately 371 to 373 m (highest along the east arm and lowest along the west arm). The push out was constructed of nominally compacted Zone A material (or coarser). Boulders were selectively placed using an excavator bucket in areas where the tailings were soft, particularly upstream of the west arm and a portion of the south arm. The initial Zone A lift was levelled and advanced by placing Zone A rockfill and boulders mostly with an excavator to reduce equipment traffic on the push out. Heavy weight geotextile was placed by hand on the initial lift of rockfill placed along the west arm. An excavator was used to cover the geotextile in the west arm with an approximate 0.5 m thick layer of Zone A rockfill material. Nominally compacted Zone A rockfill was placed on the push out in 0.5 m lifts to elevation 374 m using a D6 dozer and following the minimum recommended waiting period between lifts of five days.

Construction of the remainder of the upstream shell push out was to be completed in sequence with tailings deposition to minimize the height differential and risk of slope instability for construction safety. Since MFM have suspended operations, a new plan for completing the upstream shell is required as the current upstream slope is over steepened and only intended to be temporary.

The 10 L portal was plugged and backfilled in 2023 (design and construction quality control / quality assurance completed by others) to allow the west abutment tie in of the Lynx TDF dam raise to elevation 378 m. The west abutment and 10 L portal plug tie in began on September 3, 2023, following the requirements outlined in RFI Lynx2023-04 of the 2023 Lynx TDF Record report (WSP E&I 2024a). WSP was in general agreement with the abutment and portal plug tie in construction layout and method proposed by MFM that included placement of a minimum 4 m width of Zone J (2 m of 100 mm minus screened Zone J and 2 m of regular Zone J filter material) in front of the 10 L portal plug and bedrock abutment for the full width of the dam crest. WSP advised that 100 mm screened Zone J could be placed in 300 mm lifts when compacted with a smooth drum vibratory roll compactor, or maximum 150 mm loose lifts when compacted with a walk behind packer, for placement against the abutment and portal plug. The west abutment and 10 L portal plug tie in were completed by September 16, 2023.

9.2 Foundation Preparation

Most of the foundation preparation had been completed to the ultimate dam toe in previous years. The required foundation preparation area for the 378.0 m dam raise was limited to the west abutment area where the dam fill tied into the rock face and 10 L portal plug. Test pits were excavated in the west abutment to provide additional information in areas of the panel 1 footprint which extended into a historic ramp leading from the 10 L portal opening to Lynx Crusher Hill. WSP also completed inspection of the west abutment bedrock face and provided recommendations to MFM for cleaning the bedrock to remove loose soils from the bedrock face prior to placement of compacted dam fills. Approval forms were filled out by the construction monitor and can be found in the 2023 Lynx Construction Record Report (WSP E&I 2024a).

9.3 Lynx Operation Spillway and Auxiliary Swale

The Lynx operations spillway was raised to an invert elevation of 376.75 m across the dam crest between August 25 and September 21, 2023, as detailed in the 2023 Lynx TDF construction record report (WSP E&I 2024a).

To mitigate a potential failure of the west arm due to overtopping or by failure of the spillway, the Lynx TDF Dam Raise 9 design included a low area on the east arm crest so that overtopping would occur on the east arm, well away from the camp and mill downstream of the west arm where lives could be at risk.

To mitigate a potential overtopping failure of the West Arm, the Lynx TDF Dam Raise 9 design (WSP E&I 2023a,d) included an auxiliary swale on the East Arm to provide an area that would overtop first; away from the camp and mill where a permanent population may be at risk.

Review of a 2023 construction record survey indicated that the capping layer was not built to the design elevation 378.5 m between the operation spillway and the west abutment. Additional material placement will be required in this area to control a theoretical overtopping failure occurring at the east arm.

10.0 REVIEW OF OPERATION DOCUMENTS

10.1 Operation, Maintenance, and Surveillance Manual

The OMS Manual was reviewed and updated by MFM in March 2023. WSP provided comments on the update in November 2023. The OMS Manual includes dam safety requirements for the Lynx TDF.

MFM entering care and maintenance in December 2023 will require an update to the OMS Manual to reflect changes in on-site staffing and operation associated with the change in operating status.

10.2 Emergency Preparedness and Response Plan

MFM Emergency Procedures indicate that once an emergency has been declared, the site will execute established response practices and procedures. These form the core of the Emergency Management Program, comprised of these separate manuals: the Emergency Preparedness Plan, the Emergency Response Plan (ERP), the Emergency Communications Plan, the Environmental ERP, the Tailings Facility ERP and Mine Shutdown Emergency Procedures.

The Emergency Preparedness and Response Plan was reviewed and updated by MFM in March 2023. WSP reviewed the Tailings ERP in November 2023.

These documents provide the detailed action plans and the notification procedures in the event of an emergency and will need to be updated to reflect changes since MFM has suspended operations and entered care and maintenance.

10.3 Dam Safety Review

A Dam Safety Review (DSR) should be carried out at a minimum frequency of every five years per EMLI (2022). The most recent DSR for the tailings facilities was carried out in 2020 by Thurber Engineering Ltd. and was submitted to EMLI in March 2021 to meet regulatory requirements. The next DSR should be completed in 2025.

Formal DSRs were completed in 2013 by RGC (2014) and in June 2016 by Tierra Group International Ltd (Tierra 2017). These reviews were completed at a higher frequency than the minimum frequency recommended by EMLI (2022) or the Canadian Dam Association guidelines (2013). A summary tracking the status of open recommendations as well as those closed in 2023 is provided in Section 11.1.

11.0 SUMMARY OF RECOMMENDATIONS

The following sections provide a summary of the outstanding recommendations for the Lynx TDF. Outstanding recommendations from previous DSIs and DSRs are summarized in Section 11.1 and new recommendations from the 2023 DSI are summarized in Section 11.2. Where the change in operation status of the mine to care and maintenance impacts the original recommendation from the DSI site visits, an updated recommendation is provided. A complete table of recommendations is provided in Appendix C.

Recommendations have been assigned Priority Levels from 1 to 4 as defined by EMLI (2022) and as follows:

- Priority Level 1 – A high probability or actual dam safety issues considered immediately dangerous to life, health or the environment, or a significant risk of regulatory enforcement.
- Priority Level 2 – If not corrected, could likely result in dam safety issues leading to injury, environmental impact or significant regulatory enforcement, or a repetitive deficiency that demonstrates a systematic breakdown of procedures.
- Priority Level 3 – Single occurrences of deficiencies or non-conformances that [alone] would not be expected to result in dam safety issues.
- Priority Level 4 – Best Management Practice – further improvements are necessary to meet industry best practices or reduce potential risks.

11.1 Previous Recommendations

Outstanding recommendations from previous DSIs and DSRs or that have been completed during the reporting period are provided in Table 6. The table includes the recommendations, an update to progress to resolve the recommendation and the status and priority of the recommended actions.

Recommendations that were indicated in the previous report as completed have been omitted from the table.

Table 6: Summary of Previous Recommendations

Structure	Tracking Number	Previous Recommendation	Update	Status/Priority
2013 Lynx TDF DSR (RGC 2014)				
Lynx TDF	2013-23	Consider relocating the WRDs [above Lynx TDF] as soon as is practical.	Removal of WRD2 and WRD3 continued in 2022.	In Progress Priority 2
			Removal of WRD3 was completed in 2022.	
			Additional work is planned for 2023 and beyond as WRD2 is used as a material source for dam raise construction.	
2018 DSI Report (Wood 2019c)				
All	2018-06	Carry out detailed review of instrumentation data logger wiring.	Schematic review completed by WSP and MFM.	In Progress Priority 2
		Create a wiring diagram and operation manual for each instrumentation hut.	Incomplete	
		Prepare updated scripts for all data loggers which are consistent in functionality and appropriate to the hardware.	Incomplete	

Table 6: Summary of Previous Recommendations

Structure	Tracking Number	Previous Recommendation	Update	Status/Priority
2020 DSR Report (Thurber 2021)				
Lynx TDF	2020-04T	In addition to any internal training initiatives completed by NMF, the EoR should oversee informal “refresher” training sessions with monitoring and surveillance staff every 2 to 3 years to reinforce the objectives of monitoring activities and how they relate to specific failure modes.	Once MFM has solidified plans for site monitoring under care and maintenance conditions and updated the Operation, Maintenance and Surveillance Manual, a training session should be organized for staff who will be conducting monitoring and surveillance.	Update OMS Manual and then remove from recommendations Q3 2024
Lynx TDF	2020-06T	It is recommended that the Amec (2016b) seismic hazard values be reviewed following the release of the 6 th Generation GSC1 seismic hazard model (expected later in 2021). We understand that the GSC model will incorporate updated GMPEs2 and assumes an increased frequency for CSZ3 earthquakes. The recurrence rates and GMPEs used in Amec’s (2016b) seismic assessment were developed prior to 2012 and may require updating based on recent research.	WSP recommended to MFM that this update to the seismic hazard evaluation be completed in 2023, but it has not been completed. MFM should plan to complete this update which is needed to confirm stability of the facility under seismic loading and inform development of closure designs.	Incomplete Priority 4
2021 DSI Report (Wood 2022)				
Lynx TDF	2021-06	Backfill 10 L portal and complete the 373.5 m raise in this area to the lines and grades shown on the drawings.	10 L portal was plugged and backfilled and Lynx Dam was raised to El. 378 m by September 2023. As-built reporting for the plugs and backfill should be signed by an Engineer and provided to the EoR to confirm completion to design.	Superseded by 2023-08
Lynx TDF	2021-07	Install a permanent staff gauge, possibly on the rock face opposite the pumping area.	Install a permanent staff gauge possibly on the rock face opposite the pumping area. Temporary staff gauges are currently being used.	Q3 2024 Priority 4

Table 6: Summary of Previous Recommendations

Structure	Tracking Number	Previous Recommendation	Update	Status/Priority
2022 DSI Report (WSP E&I 2023b)				
Lynx TDF	2022-02	Unsupported upstream slope in the area of the pump barge is greater than that recommended by WSP.	Pump barge was moved to back of TDF in 2023. MFM did not develop a beach sloping away from the West Arm and part of the South Arm prior to suspending operations and it will not be possible to change the tailings beach geometry now that operations have been suspended.	Complete
Lynx TDF	2022-03	SI BH14-08a is obstructed at a depth of about 45 m and cannot be monitored.	Installation of shape accelerometer array instruments in SI casings was scheduled for 2023, but has been delayed and is scheduled for completion in 2024.	2024 Q2/Q3 Priority 2
Lynx TDF	2022-04	Many VWPs were determined to be non-functioning based on the field review conducted by WSP in 2022 (Lynx TDF 2021-09).	Six new VWPs were installed in Lynx Dam fills and foundation in 2023/2024.	Complete

GSC = Geological Survey of Canada; GMPE = Ground Motion Prediction Equation; CSZ = Cascadia Subduction Zone; DSI = Dam Safety Inspection; VWP = vibrating wire piezometer; TDF = tailings disposal facility; SI = slope inclinometer; DSR = Dam Safety Review; EoR = Engineer of Record; WRD = waste rock dump; El. = elevation.

11.2 Recommendations from 2023

Table 7 summarizes WSP's recommendations with respect to the operation, maintenance and surveillance of the Lynx TDF based on visual observations from DSIs completed in 2023 and review of instrumentation data.

In addition, CDA has recently published Technical Bulletin *Revision to the Consequences of Failure – Environmental Consequence Classification* (CDA 2023). Although this bulletin has not been incorporated into the regulatory requirements for mines in BC, MFM should consider reviewing the environmental consequence classifications of the Lynx TDF Dam in consideration of this document as best practice.

Table 7: New Recommendations 2023

Structure	Tracking Number	Site Visit	Deficiency or Non-Conformance	Recommended Action from Site Visit	Updated Recommended Action for Mine Shut Down and Care and Maintenance Operation Status	Priority	Recommended Deadline/ Status
Lynx TDF	2023-01	October	Relatively minor tension cracks observed in the upstream slope of the dam (Zone J used to construct the upstream shell above approximately El. 376 m).	Monitor cracking. If cracking or deformation in the upstream slope are minor, the slope can be repaired as the upstream Zone A shell is raised to 378 m sequentially with tailings deposition.	Now that mine production/tailings production has ceased, MFM will need to develop and implement a new plan for completing the upstream Zone A shell.	3	2024 Q3
Lynx TDF	2023-02	October	Tailings deposition and pond management.	Tailings deposition from the dam crest should be established as soon as possible, particularly in the southwest corner. Beaches that slope away from the dams should be developed along all dams.	<ul style="list-style-type: none"> ▪ MFM ceased operations prior to developing a beach that sloped away from the dam along the West Arm and the west end of the South Arm. ▪ Photos from November 2023 provided by MFM show pond at back of facility and not along upstream dam face. ▪ As per OMS manual, pond shall be kept away from upstream slope of dam except under high precipitation events. 	3	Complete
Lynx TDF	2023-03	October	WRD2 Seepage flows bypassing Upper Lynx Diversion Ditch and being directed over the abutment of the East Arm and down the toe of the 4H:1V slope and WRD1.	MFM reported and provided photos that followed WSP's recommendation to redirect the WRD2 seepage runoff flows into the Lynx TDF by late October. To be validated during next Engineer of Record inspection.	No change in recommendation.	3	MFM Reports this is complete

Table 7: New Recommendations 2023

Structure	Tracking Number	Site Visit	Deficiency or Non-Conformance	Recommended Action from Site Visit	Updated Recommended Action for Mine Shut Down and Care and Maintenance Operation Status	Priority	Recommended Deadline/ Status
Lynx TDF	2023-04	October	Run-off and/or seepage water observed coming down the gully on the downstream side of the West Arm Dam abutment.	It is recommended that this water is managed in a more controlled manner so that under a larger storm event flows do not impact the downstream shell of the dam.	No change in recommendation.	3	2024 Q3
Lynx TDF	2023-05	October	Ponding was observed in the area at the toe of the Lynx TDF near the northeast corner of the Super Pond. No signs of seepage from dam toe.	Grade the area so that water does not pond at the toe of the dam and monitor for any signs of seepage.	No change in recommendation.	3	2024 Q3
Lynx TDF	2023-06	General	Some VWP's are not reporting data.	Trouble shoot to re-establish readings from VWP's that have not been reporting data for several months. If readings from instruments cannot be re-established, new/replacement instrumentation may be necessary.	No change in recommendation.	3	2024 Q2
Lynx TDF	2023-07	General	OMS Manual and ERP	OMS manual and ERP need to be updated to reflect care and maintenance status of the mine.	No change in recommendation.	3	2024 Q2
Lynx TDF	2023-08	General	10 L portal plugs and backfill.	Provide as-built record of 10 L portal plugs and backfill which should be sealed by a qualified Engineer.	No change in recommendation.	3	2024 Q2

Table 7: New Recommendations 2023

Structure	Tracking Number	Site Visit	Deficiency or Non-Conformance	Recommended Action from Site Visit	Updated Recommended Action for Mine Shut Down and Care and Maintenance Operation Status	Priority	Recommended Deadline/ Status
Lynx TDF	2023-09	General	Upstream Zone A shell push out over tailings completed to El. 374 m. Temporary over steepened upstream slope constructed to allow crest raise to El. 378 m.	Construction of upstream shell was planned to be sequenced with tailings deposition	Revised plan required to complete construction of the upstream shell or develop a revised geometry that is considered stable for care and maintenance, since sequencing construction with tailings deposition no longer feasible with mine shut down.	3	2024 Q4
Lynx TDF	2023-10	General	Insufficient capping layer to El. 378.5 m between spillway and West Arm abutment.	Review of as-built surveys indicates that the capping layer was underbuilt between the spillway and the abutment. The capping layer should be topped up to El. 378.5 m so that the auxiliary swale will function as intended.	No change in recommendation.	3	2024 Q3

Note: Priority Levels are defined by EMLI (2022) as follows:

Priority Level 1 = A high probability or actual dam safety issues considered immediately dangerous to life, health or the environment, or a significant risk of regulatory enforcement.

Priority Level 2 = If not corrected, could likely result in dam safety issues leading to injury, environmental impact or significant regulatory enforcement, or a repetitive deficiency that demonstrates a systematic breakdown of procedures.

Priority Level 3 = Single occurrences of deficiencies or non-conformances that [alone] would not be expected to result in dam safety issues.

Priority Level 4 = Best Management Practice – further improvements are necessary to meet industry best practices or reduce potential risks.

ERP = emergency response plan; El. = elevation; TDF = tailings disposal facility; OMS = Operation, Maintenance and Surveillance; WRD = waste rock dump; VWP = vibrating wire piezometer.

12.0 CLOSURE

The reader is referred to the Study Limitations section, which follows the text and forms an integral part of this report.

This report has been prepared for the exclusive use of Myra Falls Mine Ltd., for the specific application described herein. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibility of such third parties. WSP Canada Inc. accepts no responsibility for damages suffered by any third party as a result of decisions made or actions based on this report.

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STUDY LIMITATIONS

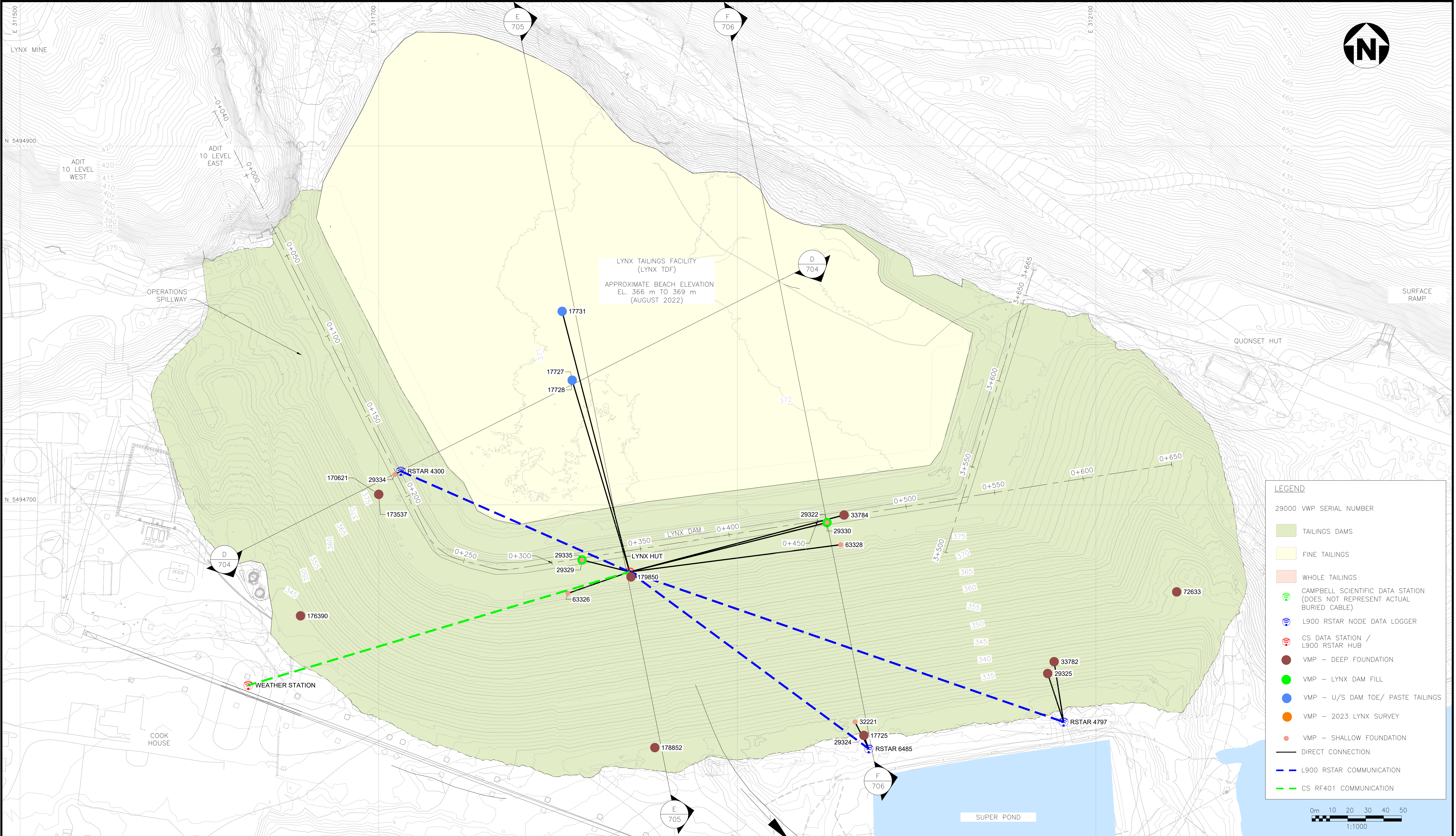
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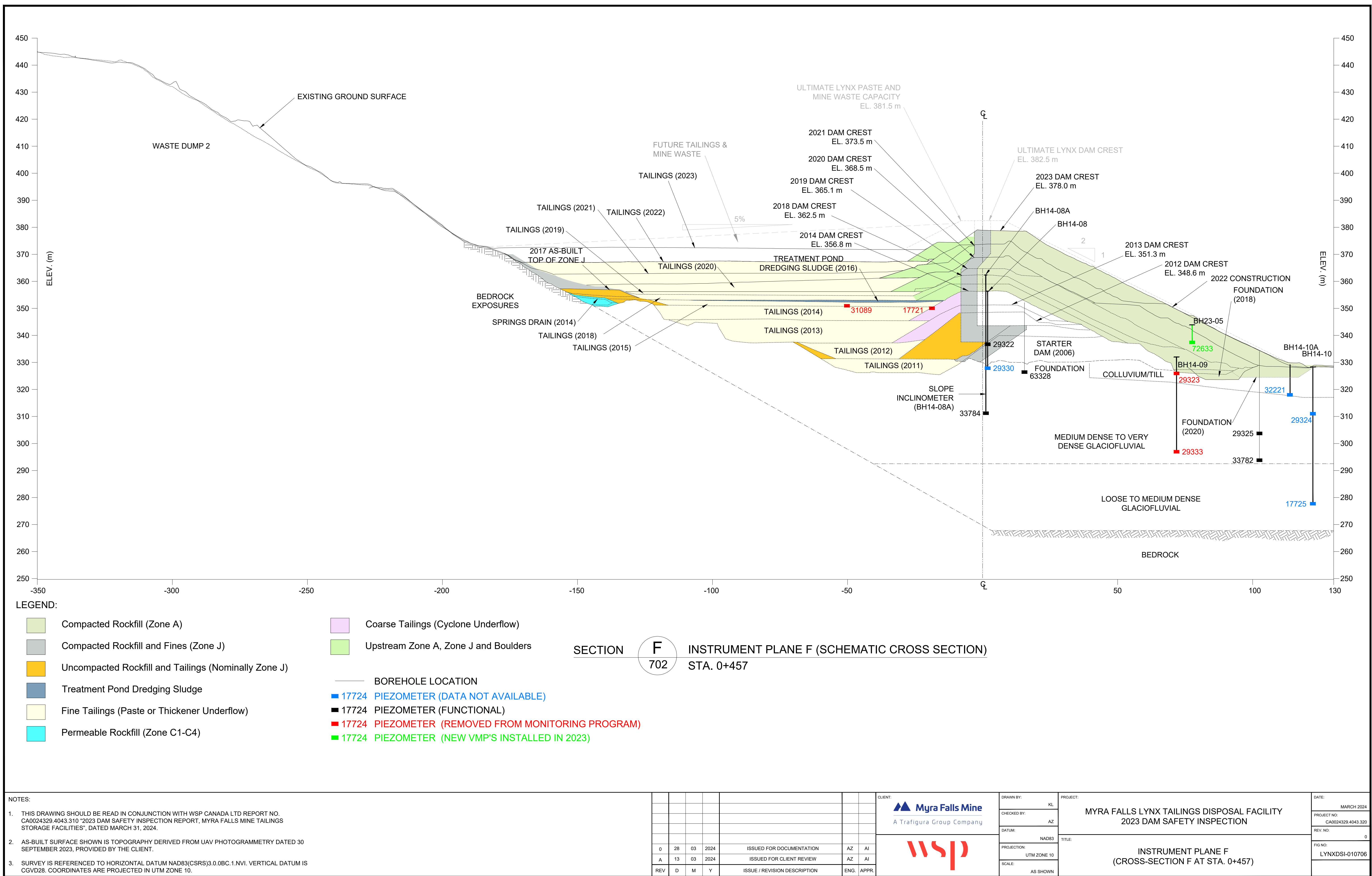
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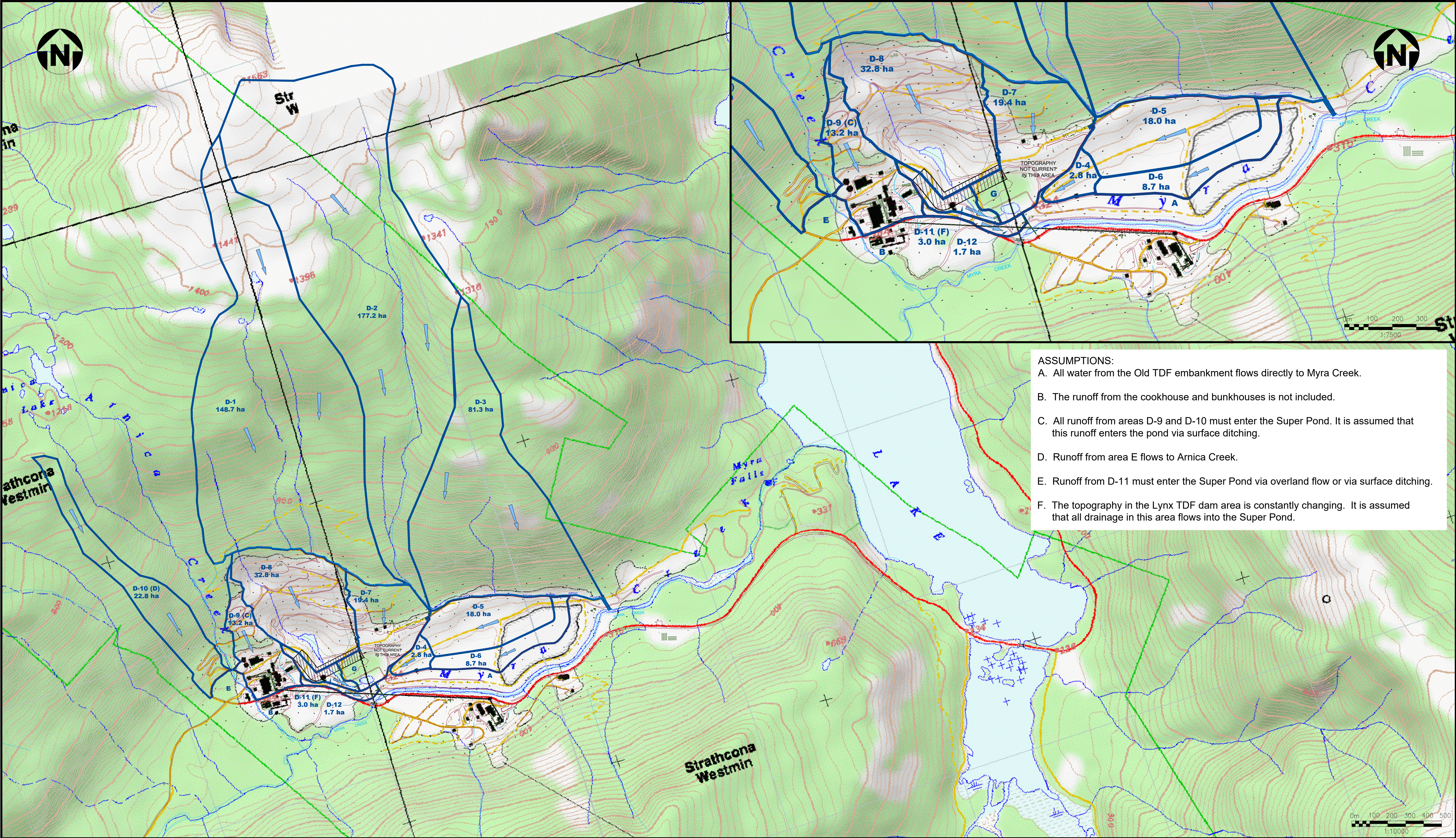
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DRAWINGS



NOTES: 1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH WSP LETTER NO. CA0024239.4043.310 '2023 LYNX DSI REPORT'. 2. AS-BUILT SURFACE SHOWN IS TOPOGRAPHY DERIVED FROM UAV PHOTOGRAMMETRY DATED 30 SEPTEMBER 2023, PROVIDED BY THE CLIENT. 3. SURVEY IS REFERENCED TO HORIZONTAL DATUM NAD83(CSRS)3.0.0BC.1.NVI. VERTICAL DATUM IS CGVD28. COORDINATES ARE PROJECTED IN UTM ZONE 10. 4. CONTOUR INTERVAL: 1 m.				CLIENT: Myra Falls Mine A Trafigura Group Company		DRAWN BY: KL CHECKED BY: AZ DATUM: NAD83 PROJECTION: UTM ZONE 10 SCALE: AS SHOWN	PROJECT: MYRA FALLS LYNX TAILINGS DISPOSAL FACILITY 2023 DAM SAFETY INSPECTION TITLE: PIEZOMETERS PLAN LAYOUT	DATE: MARCH 2024 PROJECT NO: CA0024329.4043.320 REV NO: 0 FIG NO: LYNXDSI-010702
REV	D	M	Y	ISSUE / REVISION DESCRIPTION		ENG.	APPR.	
0	28	03	2024	ISSUED FOR DOCUMENTATION		AZ	AI	
A	13	03	2024	ISSUED FOR CLIENT REVIEW		AZ	AI	





- ASSUMPTIONS:
- A. All water from the Old TDF embankment flows directly to Myra Creek.
 - B. The runoff from the cookhouse and bunkhouses is not included.
 - C. All runoff from areas D-9 and D-10 must enter the Super Pond. It is assumed that this runoff enters the pond via surface ditching.
 - D. Runoff from area E flows to Arnica Creek.
 - E. Runoff from D-11 must enter the Super Pond via overland flow or via surface ditching.
 - F. The topography in the Lynx TDF dam area is constantly changing. It is assumed that all drainage in this area flows into the Super Pond.

NOTES:

- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH WSP CANADA LTD. REPORT NO. CA0024329.4043.310 "2023 DAM SAFETY INSPECTION REPORT, MYRA FALLS MINE TAILINGS STORAGE FACILITY", DATED MARCH 31, 2024.
- SURFACE TOPOGRAPHY BASED ON 2006 SURVEY DATA.
- THIS SURVEY IS REFERENCED TO MINE DATUM (MASL + 3047.5 m).
- THE IMAGE PROVIDES CONTOUR INFORMATION OUTSIDE OF THE SURVEY DATA. THIS INFORMATION IS ON MASL DATUM. THE IMAGE WAS OBTAINED FROM SPECTRUM DIGITAL IMAGING LTD.

LEGEND

- DRAINAGE BOUNDARY
- FLOW DIRECTION
- DRAINAGE AREA ID
DRAINAGE AREA
(in Hectares)

REV	D	M	Y	ISSUE / REVISION DESCRIPTION	ENG.	APPR.
0	28	03	2024	ISSUED FOR DOCUMENTATION	AZ	AI
A	13	03	2024	ISSUED FOR CLIENT REVIEW	AZ	AI

CLIENT:

Myra Falls Mine
A Trafigura Group Company

DRAWN BY: KL

CHECKED BY: AZ

DATUM: NAD83

PROJECTION: UTM ZONE 10

SCALE: AS SHOWN

PROJECT:

**MYRA FALLS LYNX TAILINGS DISPOSAL FACILITY
2023 DAM SAFETY INSPECTION**

TITLE: **DRAINAGE AREA MAP**

DATE: MARCH 2024

PROJECT NO: CA0024329.4043.320

REV. NO: 0

FIG. NO: LynxDSI-010707

APPENDIX A

**Photographs and WSP
Inspection Checklists**

Lynx Tailings Disposal Facility Inspection

Inspection By WSP: Dixie Ann Simon (23 and 24 May)
Allison Isidoro (24 May)

Date: 23 and 24 May 2023


Accompanied By: Lukas Agagnier (MFM)

Weather Conditions: Sunny

Temperature: 8-25°C

INSPECTION ITEM	YES	NO	PHOTO	COMMENTS AND OTHER DATA
1. DAM CREST 1.1 Surface Cracking 1.2 Settlement 1.3 Lateral Movement 1.4 Pond Location & Freeboard 1.5 Other Unusual Conditions	X	X X X X	1, 2, 3	<ul style="list-style-type: none"> El. 373.5 m Dam crest in good condition Water ponded in southwest corner of the facility against the dam and along the West Arm. Looks to be shallow.
2. UPSTREAM SLOPE 2.1 Signs of Erosion 2.2 Cracking 2.3 Signs of Movement (Deformation) 2.4 Other Unusual Conditions		X X X X		<ul style="list-style-type: none"> Zone A shell at El. 373.5 m with approximately 2H:1V slope. Good condition.
3. DOWNSTREAM SLOPE 3.1 Signs of Erosion 3.2 Signs of Movement (Deformation) 3.3 Cracks 3.4 Seepage or Wet Areas 3.5 Vegetation 3.6 Other Unusual Conditions		X X X X X X	4	<ul style="list-style-type: none"> Widening of downstream Zone A shell under construction, raising to crest El. 373.5 m to allow dam crest raise to El. 378 m. Good condition. Localized small clear seepage observed by WSP construction QA team on 19 May 2023, at Stn. 0+035 at an elevation of approximately 360 m. Wet dam fill material removed and replaced with coarser, free draining Zone A material. Seepage may have been associated with melting of snow or ice within voids of Zone A shell.
4. DOWNSTREAM TOE AREA 4.1 Seepage from Dam 4.2 Signs of Turbidity in Seepage Water 4.4 Vegetation 4.6 Other Unusual Conditions		X X X X X		<ul style="list-style-type: none"> Dried mud/sediment observed at southeast toe. This is a low area where run-off water tends to pond. No signs of seepage observed.
5. EMERGENCY SPILLWAY 5.1 Signs of Erosion 5.2 Signs of Movement (Deformation) 5.3 Cracks 5.4 Settlement 5.5 Vegetation 5.6 Presence of Debris or Blockage 5.7 Other Unusual Conditions		X X X X X X X	2	<ul style="list-style-type: none"> Good condition.

INSPECTION ITEM	YES	NO	PHOTO	COMMENTS AND OTHER DATA
6. INSTRUMENTATION				
6.1 VWP	X			<ul style="list-style-type: none"> VWP data being reviewed monthly.
6.2 Settlement Monuments	X			<ul style="list-style-type: none"> Settlement monuments to be surveyed monthly once reinstated on the crest after 2023 construction.
6.3 Slope Inclinator	X			<ul style="list-style-type: none"> Slope Inclinator to be retrofitted with Shape Arrays in 2023.

7. Additional Observations and Recommendations			
Inspector's Signature:		Date:	March 27, 2024



Photograph 1: Water Pounded along west arm and in southwest corner of facility with well established beach along east arm. Looking east from west arm abutment



Photograph 2: Operational spillway across 373.5 m crest of west arm dam, looking south



Photograph 3: Point discharge of tailings off of WRD1 filter upstream of east arm abutment



Photograph 4: Downstream slope of 4H:1V east arm downstream slope, looking west. Truck hauling Zone A for raising of south arm downstream shell



Photograph 5: Clear seepage flow entering Lynx Springs Drain

Lynx Tailings Disposal Facility Inspection

Inspection By WSP: Dixie Ann Simon and Allison Isidoro

Date: 25 to 27 July 2023


Accompanied By: Lukas Agagnier (MFM)

Weather Conditions: Sunny

Temperature: 10-26°C

INSPECTION ITEM	YES	NO	PHOTO	COMMENTS AND OTHER DATA
1. DAM CREST 1.1 Surface Cracking 1.2 Settlement 1.3 Lateral Movement 1.4 Pond Location & Freeboard 1.5 Other Unusual Conditions	X	X X X X	1,2,4	<ul style="list-style-type: none"> Dam crest raise to El. 378 m in progress. Small pond at very north end of West Arm Dam. Dry and desiccated beach along East Arm and east end of South Arm. Fresher beach in southwest corner. Low point in beach mid-way along South Arm.
2. UPSTREAM SLOPE 2.1 Signs of Erosion 2.2 Cracking 2.3 Signs of Movement (Deformation) 2.4 Other Unusual Conditions		X X X X	5	<ul style="list-style-type: none"> Initial lift of upstream shell push out constructed over tailings beach along East and South Arms and in progress on West Arm. Upstream slope temporarily being constructed with steeper slope (1.6H:1V slope defined in RFI for Lynx Construction) to allow crest raise to proceed ahead of upstream push out over tailings.
3. DOWNSTREAM SLOPE 3.1 Signs of Erosion 3.2 Signs of Movement (Deformation) 3.3 Cracks 3.4 Seepage or Wet Areas 3.5 Vegetation 3.6 Other Unusual Conditions		X X X X X X	4	<ul style="list-style-type: none"> Good condition.
4. DOWNSTREAM TOE AREA 4.1 Seepage from Dam 4.2 Signs of Turbidity in Seepage Water 4.4 Vegetation 4.6 Other Unusual Conditions		X X X X X		<ul style="list-style-type: none"> Dried mud/sediment observed at southeast toe. This is a low area where run-off water tends to pond. No signs of seepage observed, area was drying out.
5. EMERGENCY SPILLWAY 5.1 Signs of Erosion 5.2 Signs of Movement (Deformation) 5.3 Cracks 5.4 Settlement 5.5 Vegetation 5.6 Presence of Debris or Blockage 5.7 Other Unusual Conditions		X X X X X X X		<ul style="list-style-type: none"> Operational spillway across crest was removed to allow dam crest raise to El. 378 m, which is in progress. Operational spillway invert across crest to be constructed at El. 376.75 m as part of dam crest raise. Downstream channel of spillway in good condition.

INSPECTION ITEM	YES	NO	PHOTO	COMMENTS AND OTHER DATA
6. INSTRUMENTATION 6.1 VWP 6.2 Settlement Monuments 6.3 Slope Inclinator	X			<ul style="list-style-type: none"> VWP data being reviewed monthly. Some VWPs are off line due to dam raise construction. Settlement monuments have been removed from crest to allow construction. To be re-established once 378 m crest raise is complete. Shape Array Instruments to be installed in Slope Inclinator in 2023.

7. Additional Observations and Recommendations Monitor southeast dam toe area for signs of seepage and consider grading to avoid ponding.			
Inspector's Signature:		Date:	March 27, 2024



Photograph 1: Excavator placing boulders for initial lift of push out on tailings, looking south from upstream side of west arm abutment. D6 dozer in background placing Zone A rockfill over material initially placed by excavator



Photograph 2: Overview of Lynx TDF from top of WRD2. Tailings beach has been developed in southwest corner of facility since May visit



Photograph 3: Gully at downstream side of west abutment looking north.



Photograph 4: Crest of south arm dam looking west. Crest raise to El. 378 m in progress



Photograph 5: Temporary over steepened upstream slope constructed to facilitate crest raise to El. 378 m ahead of constructing shell push out over tailings. Initial lift of push out complete

Lynx Tailings Disposal Facility Inspection

Inspection By WSP: Allison Isidoro and Amir Zahedi

Date: 24 and 25 October 2023

Accompanied By: n/a

Weather Conditions: 24th: Cloudy, snow/sleet,
25th: foggy, clearing in afternoon

Temperature: 0-5°C

INSPECTION ITEM	YES	NO	PHOTO	COMMENTS AND OTHER DATA
1. DAM CREST 1.1 Surface Cracking 1.2 Settlement 1.3 Lateral Movement 1.4 Pond Location & Freeboard 1.5 Other Unusual Conditions	X	X X X X	10 to 14	<ul style="list-style-type: none"> Dam crest raise to El. 378 m complete, including 0.5 m capping layer to 378.5 m. Auxiliary swale constructed with invert at 378 m on East Arm. Seepage run-off water from WRD2 is being directed across the East Arm crest and down the toe of the 4H:1V slope at intersection with WRD1. Minor erosion observed. Pond along West Arm and half of South Arm. Looks shallow.
2. UPSTREAM SLOPE 2.1 Signs of Erosion 2.2 Cracking 2.3 Signs of Movement (Deformation) 2.4 Other Unusual Conditions	X	X X X	6, 8, 9, 14	<ul style="list-style-type: none"> Upstream shell push out over tailings at approximately El. 374 m. Upstream slope temporarily constructed with steeper slope (1.6H:1V slope defined in RFI for Lynx Construction) to allow crest raise to proceed ahead of upstream push out over tailings. Zone J used to construct upstream shell above approximately El. 376 m due to narrow width of underbuild shell. Cracking observed in upstream crest of Zone J temporary over steepened slope.
3. DOWNSTREAM SLOPE 3.1 Signs of Erosion 3.2 Signs of Movement (Deformation) 3.3 Cracks 3.4 Seepage or Wet Areas 3.5 Vegetation 3.6 Other Unusual Conditions		X X X X X X	2, 7, 21	<ul style="list-style-type: none"> Good condition. Run-off water flowing through gully on downstream side of West Arm abutment tie-in. Water was flowing along intersection of downstream shell and access road along abutment and then crossed the road to flow down into crusher area. Flow generally appears to be away from dam shell.
4. DOWNSTREAM TOE AREA 4.1 Seepage from Dam 4.2 Signs of Turbidity in Seepage Water 4.4 Vegetation 4.6 Other Unusual Conditions		X X X X X	3, 4, 5, 16	<ul style="list-style-type: none"> Muddy water ponded at southeast toe. This is a low area where run-off water tends to pond. No signs of seepage observed, area was drying out.

INSPECTION ITEM	YES	NO	PHOTO	COMMENTS AND OTHER DATA
5. EMERGENCY SPILLWAY 5.1 Signs of Erosion 5.2 Signs of Movement (Deformation) 5.3 Cracks 5.4 Settlement 5.5 Vegetation 5.6 Presence of Debris or Blockage 5.7 Other Unusual Conditions		X X X X X X X	11 and 17 to 20	<ul style="list-style-type: none"> Operational spillway invert across crest was completed at invert El. 376.75 m. Downstream channel of spillway in good condition.
6. INSTRUMENTATION 6.1 VWP 6.2 Settlement Monuments 6.3 Slop Inclinator	X X	X		<ul style="list-style-type: none"> VWP data being reviewed monthly. Some VWPs are off line due to dam raise construction, to be spliced and reconnected in October 2023. Settlement monuments were removed from crest to allow construction. To be re-installed in October 2023. Shape Array Instruments to be installed in Slope Inclinator in 2023.

7. Additional Observations and Recommendations


WRD2 seepage run-off water needs to be redirected into the facility and not directed over the crest.

Monitoring cracking in upstream crest of Zone J temporary over steepened slope until Zone A shell is completed to the full design width. As long as there is no substantial slumping, the slope can be mitigated as part of construction of the Zone A shell upstream.

Tailings deposition should be re-established along dam crest (currently from single point discharge off upstream WRD1 filter) to push pond away from West and South Arms of the dam.

Monitor southeast dam toe area for signs of seepage and consider grading to avoid ponding.

Run-off and/or seepage water observed coming down the gully on the downstream side of the West Arm Dam abutment. It is recommended that this water is managed in a more controlled manner so that during larger storm events, flows do not impact (erode) the downstream shell of the dam.

Inspector's Signature:		Date:	March 27, 2024
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Photograph 1: Overview of Lynx TDF



Photograph 2: Downstream slope of South Arm from crest, looking east



Photograph 3: Downstream slope and toe of South Arm, looking east



Photograph 4: Water ponding at southeast toe of dam, looking east



Photograph 5: Cover Trials on Downstream Slope at southwest corner of facility, looking northwest



Photograph 6: Run-off water from WRD2 being directed over crest near East Arm abutment, looking east



Photograph 7: Run-off water from WRD2 flowing down toe of 4H:1V East Arm and WRD1



Photograph 8: Cracking in Temporary upstream slope on East Arm looking south



Photograph 9: Cracking in Temporary upstream slope on South Arm looking east



Photograph 10: Crest of South Arm looking west – Crest raise to El. 378 m complete, including capping layer to 378.5 m. Safety berm in place on downstream



Photograph 11: Auxiliary Swale on East Arm looking south. Minor ponding within swale



Photograph 12: North Abutment WRD1 Zone J filter at El. 378. Looking west.



Photograph 13: West Arm abutment tie in, looking northwest and northeast



Photograph 14: West Arm crest and abutment tie-in, looking north



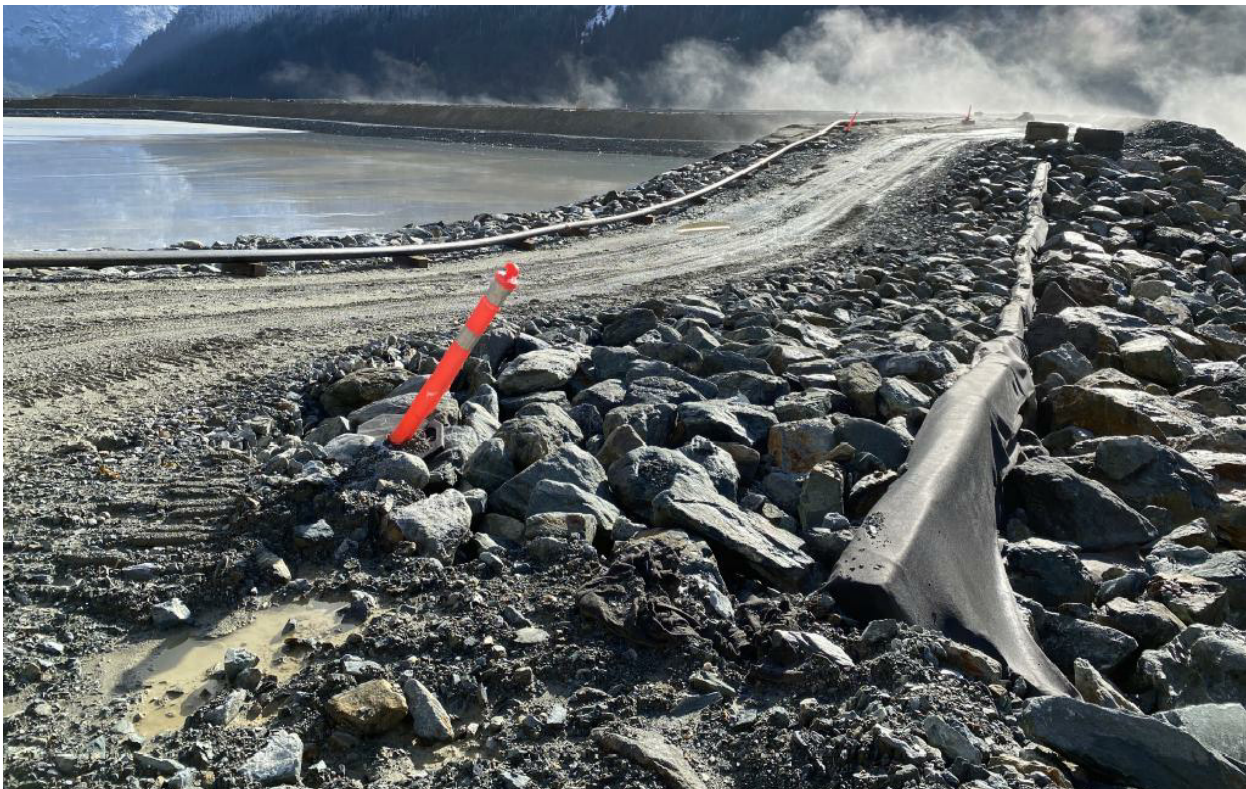
Photograph 15: Run-off water through gully on downstream of West Arm abutment tie in, looking north



Photograph 16: Minor ponding of run-off water downstream of West Arm abutment tie-in, looking west



Photograph 17: Spillway invert across West Arm crest, looking south. Upstream push out not complete



Photograph 18: Spillway invert across West Arm, looking southeast. Fabric over concrete Lock Blocks



Photograph 19: Spillway channel on downstream slope of West Arm, looking south



Photograph 20: Spillway channel outlet at toe of West Arm, looking north



Photograph 21: West Arm downstream slope at corner with South Arm, looking east

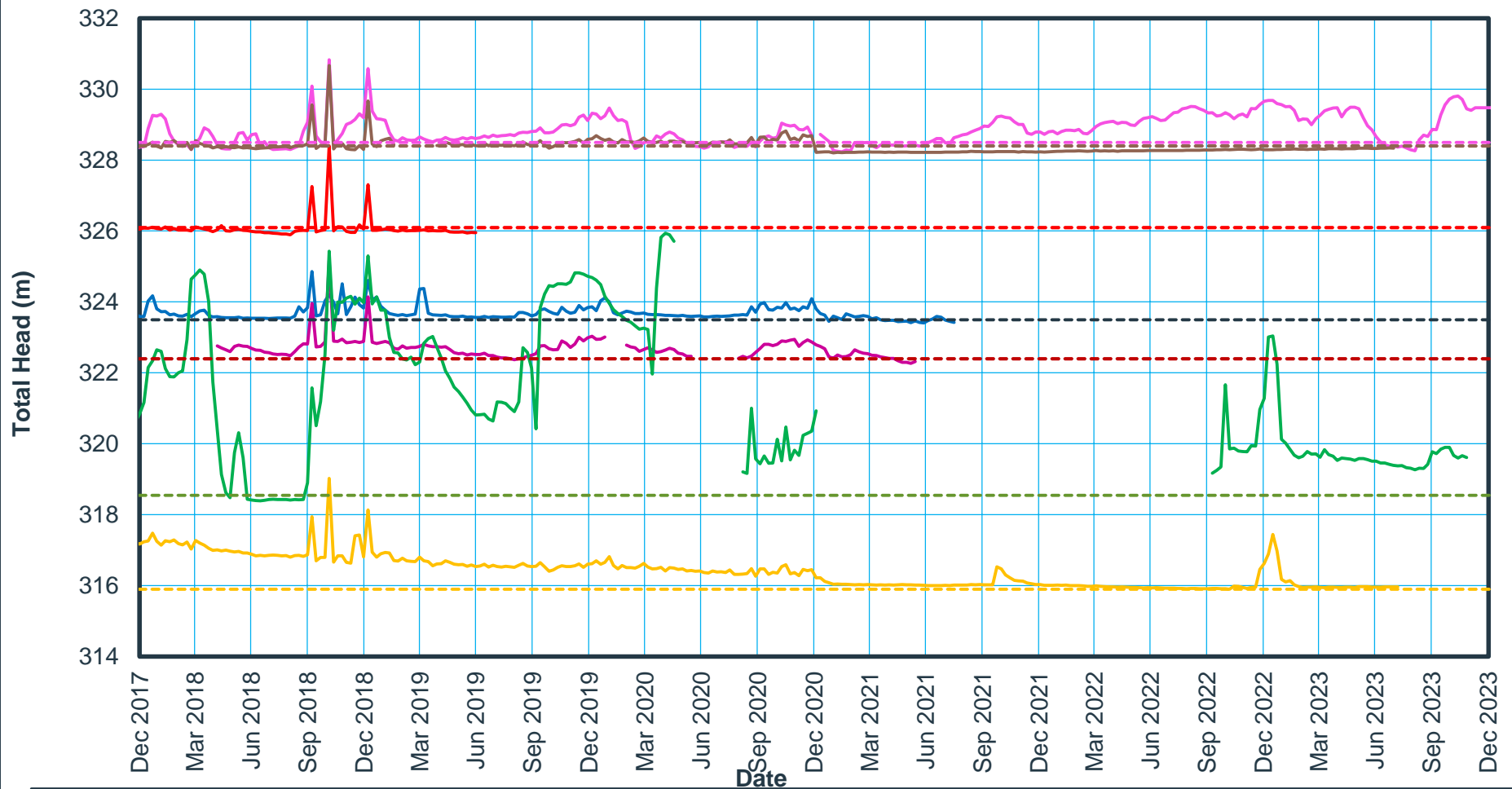
APPENDIX B

Instrumentation


**Table B-1 : Vibrating Wire Piezometers
Operational Status**

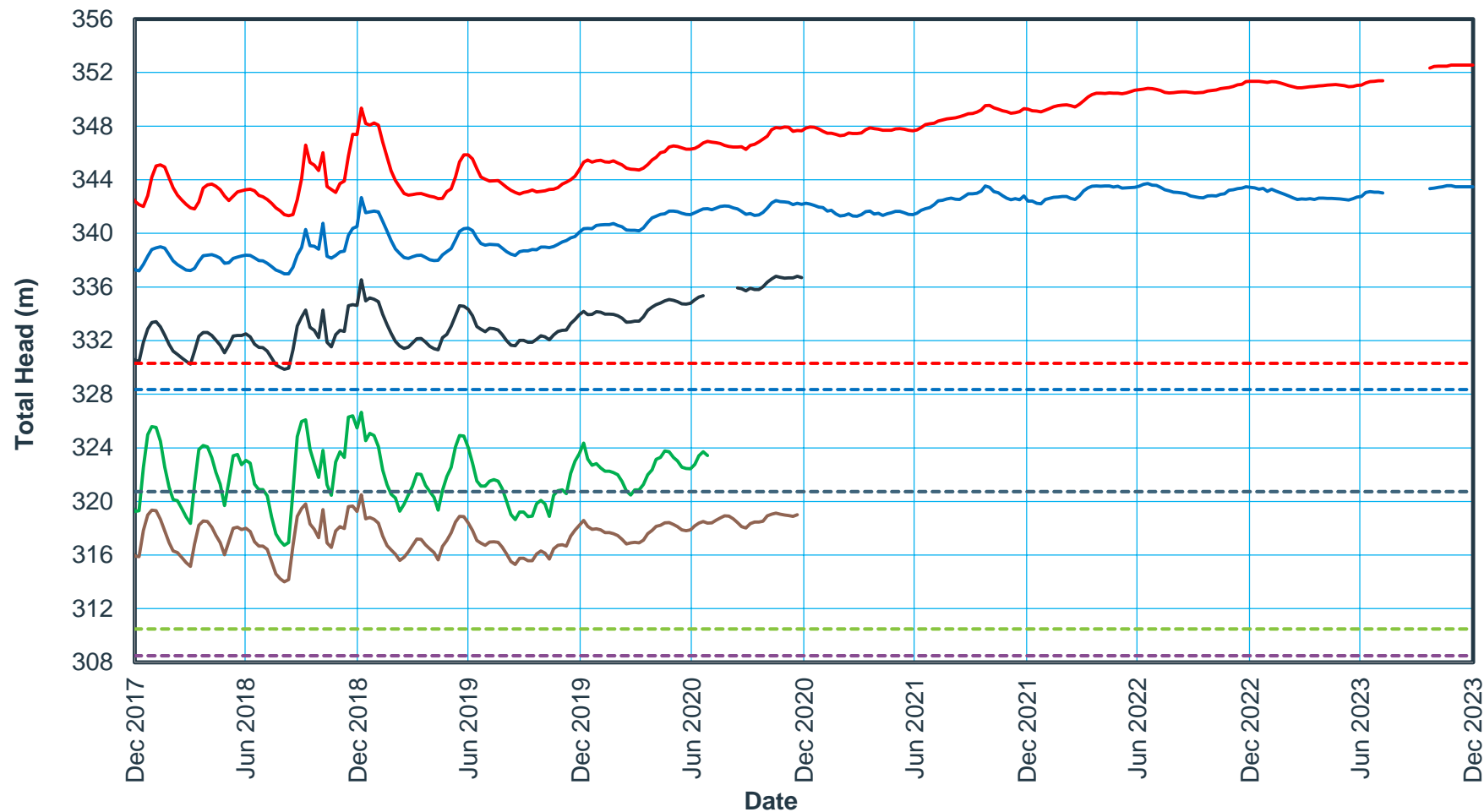


Piezometer Number	Tip Elevation Geodetic (m)	Thermistor Status	Transducer Status	Piezometer Status
Lynx TDF - Plane D				
29334	328.4	OK	OK	Functioning as intended. Stopped reporting on December 20 2023 (2pm). Battery to be replaced by MFM.
29326	350.0	-	-	Not functioning - failed on September 27, 2019 (10 pm) and was disconnected.
170621	356.0	OK	OK	Installed on 17 December 2023
173537	325.5	OK	OK	Installed on 17 December 2023
176390	322.1	OK	OK	Installed on 14 Jan 2024
Lynx TDF - Plane E				
17727	328.3	OK	OK	Functioning as intended.
17728	320.7	-	OK	Partially functioning - Thermistor not functioning, Transducer functioning in 2022.
17731	330.3	OK	OK	Functioning as intended.
17732	322.6	-	-	Not functioning - confirmed during October 2022 review.
17733	308.5	-	-	Not functioning - confirmed during October 2022 review.
17734	310.5	-	-	Not functioning - confirmed during October 2022 review.
29321	322.4	-	-	Not functioning - Failed on June 23, 2021 (9 am).
29329	336.9	OK	OK	Manual readings before and after splicing determined VWP is functioning but not reporting once reconnected to the Lynx Hut. Directions given to MFM to troubleshoot.
29332	305.2	-	-	Not functioning - failed on June 22, 2021 (11 am)
29335	315.9	OK	OK	Manual readings before and after splicing determined VWP is functioning but not reporting once reconnected to the Lynx Hut. Directions given to MFM to troubleshoot.
17723	350.7	-	-	Not functioning since September 2019.
33783	351.6	-	-	Not functioning.
63326	331.3	OK	OK	Functioning as intended.
179850	315.0	OK	OK	Installed on 21 December 2023
170621	292.9	OK	OK	Installed on 12 Jan 2024
Lynx TDF - Plane F				
17725	278.3	OK	OK	Functioning as intended. Stopped reporting on December 1 2023 (2pm). Battery to be replaced by MFM.
29322	337.3	OK	OK	Functioning as intended.
29323	326.1	-	-	Not functioning since July 2019.
29324	311.6	OK	OK	Functioning as intended. Stopped reporting on December 1 2023 (2pm). Battery to be replaced by MFM.
29330	328.4	OK	OK	Manual readings before and after splicing determined VWP is functioning but not reporting once reconnected to the Lynx Hut. Directions given to MFM to troubleshoot.
29333	296.7	-	-	Not functioning - failed on June 19, 2021 (4 pm)
29336	311.1	-	-	Removed from monitoring program March 2017.
31089	351.2	-	-	Not functioning after September 2017. Removed from program May 2018.
17721	350.9	-	-	Not functioning after September 2017. Removed from program May 2018.
32221	318.6	OK	OK	Functioning as intended. Stopped reporting on December 1 2023 (2pm). Battery to be replaced by MFM.
33784	311.8	OK	OK	Functioning as intended.
63328	327.1	OK	OK	Functioning as intended.
Operational Status of Lynx TDF - Panel 15				
29325	304.3	OK	OK	Functioning as intended.
33782	294.4	OK	OK	Functioning as intended.




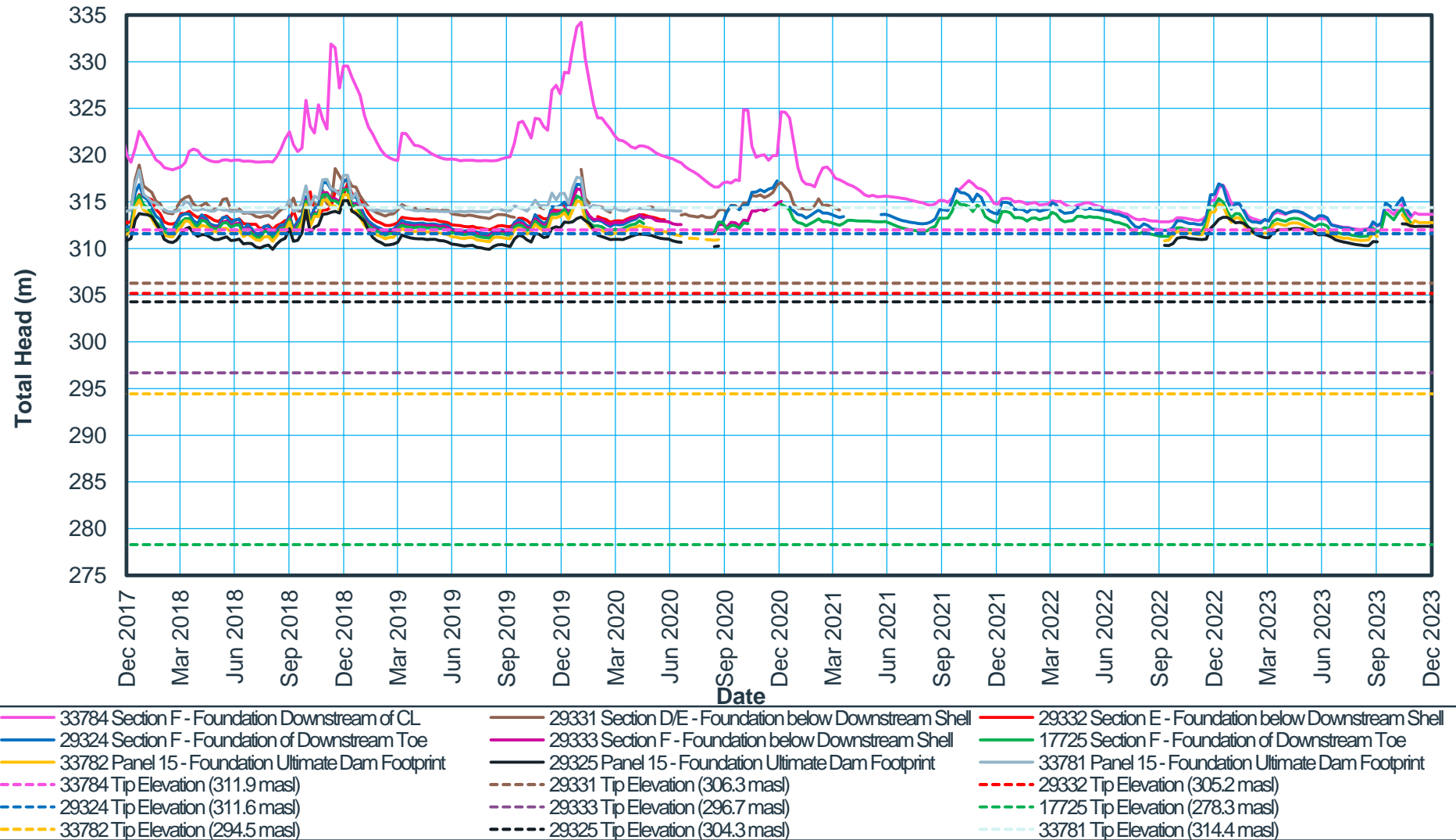
- | | |
|---|---|
| — 29334 Section D - Foundation below CL | — 29330 Section F - Foundation below CL |
| — 29323 Section F - Foundation below Downstream Shell | — 29320 Section D/E - Foundation Ultimate Dam Footprint |
| — 29321 Section E - Foundation below Downstream Shell | — 32221 Section F - Foundation below downstream toe |
| — 29335 Section E - Foundation below CL | — 29334 Tip Elevation (328.4 masl) |
| — 29330 Tip Elevation (328.4 masl) | — 29323 Tip Elevation (326.1 masl) |
| — 29320 Tip Elevation (323.5 masl) | — 29321 Tip Elevation (322.4 masl) |
| — 32221 Tip Elevation (318.6 masl) | — 29335 Tip Elevation (315.9 masl) |



<div>  </div> <div> <div>CLIENT:</div> <div>  </div> </div>	PROJECT: MFM Lynx TDF 2023 DSI Report				
	TITLE: Lynx TDF - Shallow Foundation VWP Data				
	DATE: March 2024	JOB No.: CA0024329.4043.310	FILE: B2 Reporting Lynx TDF VWP - 2023_Dec.xlsx	FIGURE No.: B2	REV. 0

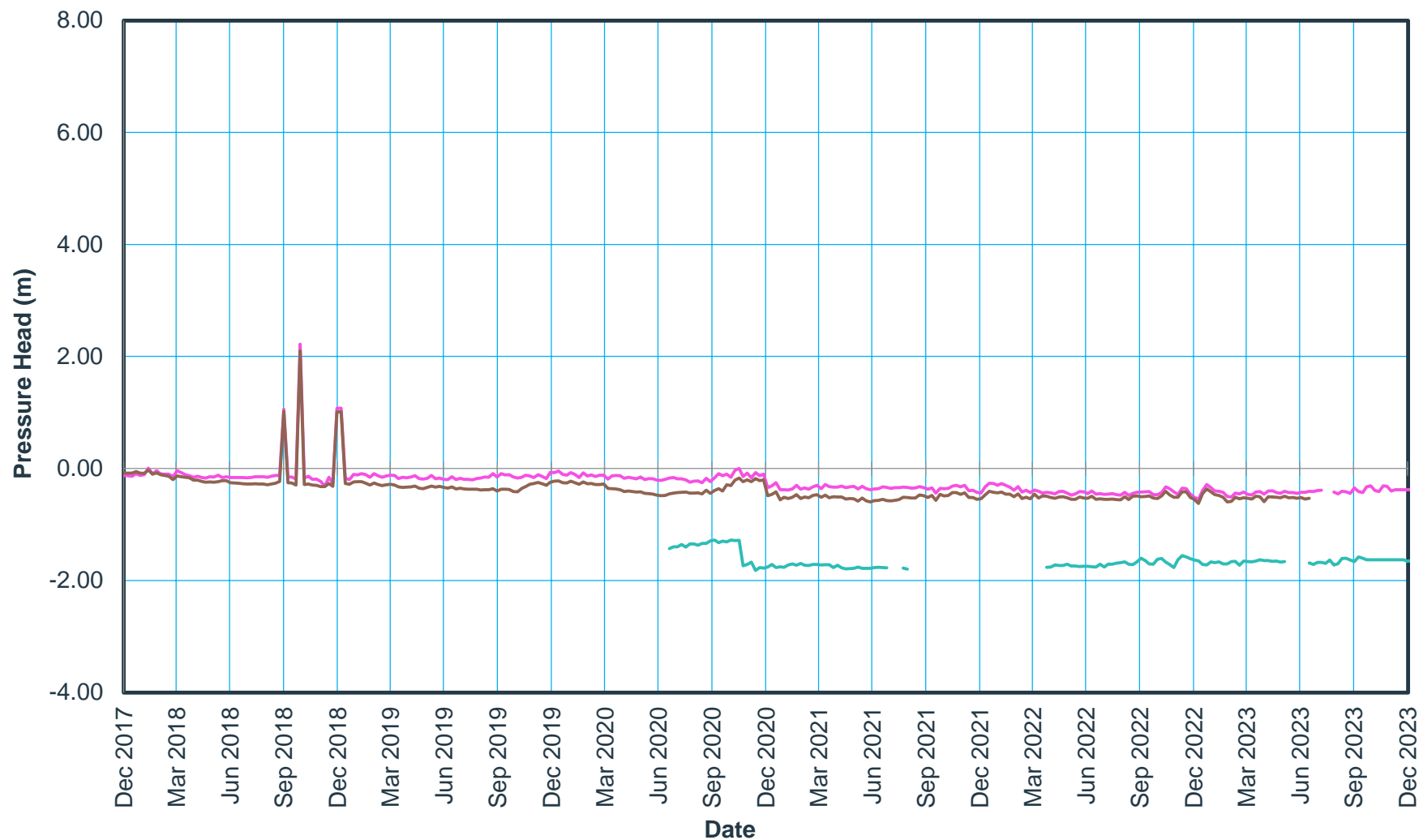


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| — 17731 Section E - Upstream Impoundment | — 17727 Section D/E - Upstream Impoundment |
| — 17728 Section D/E - Upstream Impoundment Piezometers | — 17734 Section D/E - Deep Tailings |
| — 17733 Section D/E - Upstream Impoundment Piezometers | - - - 17731 Tip Elevation (330.3 masl) |
| - - - 17727 Tip Elevation (328.4 masl) | - - - 17728 Tip Elevation (320.7 masl) |
| - - - 17734 Tip Elevation (310.5 masl) | - - - 17733 Tip Elevation (308.5 masl) |



 Myra Falls Mine A Trifigura Group Company	PROJECT: MFM Lynx TDF 2023 DSI Report				
	TITLE: Lynx TDF -Tailing Paste VWP Data				
CLIENT:	DATE: March 2024	JOB No.: CA0024329 .4043.310	FILE: B2 Reporting Lynx TDF VWP - 2023_Dec.xlsx	FIGURE No.: B1	REV. 0

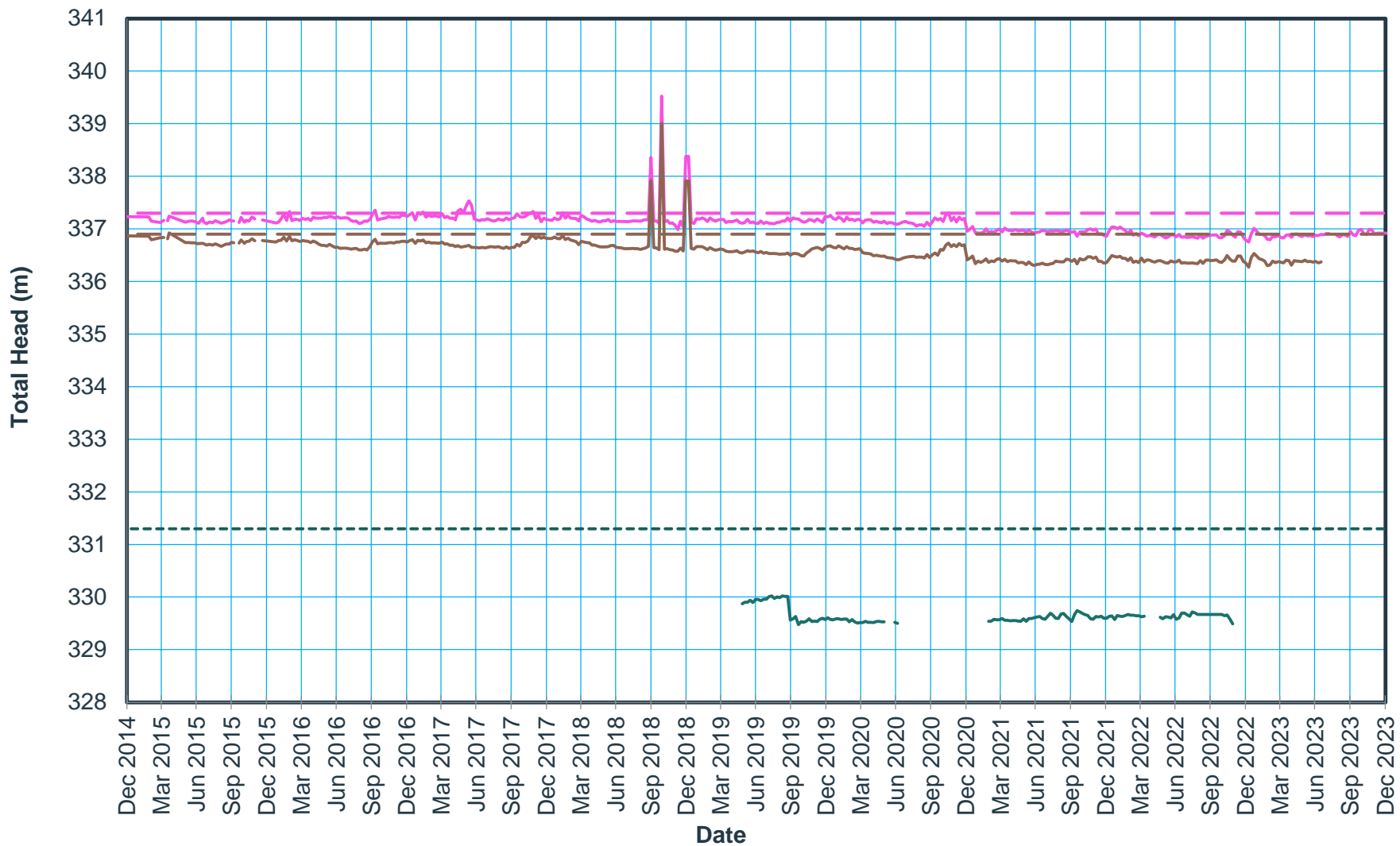


	PROJECT: Myra Falls Quarterly Report				
	TITLE: Lynx TDF - Deep Foundation VWP Data				
CLIENT:  Myra Falls Mine A Trafigura Group Company	DATE:	JOB No.:	FILE:	FIGURE No.:	REV.
	March 2024	CA0024329 .4043.310	B2 Reporting Lynx TDF VWP - 2023_Dec.xlsx	B3	0



29322 Section F - Zone J upstream of Starter Dam
 29329 Section E - Zone J upstream of Starter Dam
 63326 Section E - Starter Dam Shell downstream of CL

 CLIENT:  Myra Falls Mine A Trafigura Group Company	PROJECT: MFM Lynx TDF 2023 DSI Report				
	TITLE: Lynx TDF - Dam Fill VWP Data				
DATE: March 2024	JOB No.: CA0024329 .4043.310	FILE: B2 Reporting Lynx TDF VWP - 2023_Dec.xlsx	FIGURE No.: B4	REV. 0	



29322 Section F - Zone J upstream of Starter Dam
 29329 Section E - Zone J upstream of Starter Dam
 63326 Section E - Starter Dam Shell downstream of CL
 29322 Tip Elevation (337.3 masl)
 29329 Tip Elevation (336.9 masl)
 63326 Tip Elevation (331.3 masl)



 CLIENT:  Myra Falls Mine A Trafigura Group Company	PROJECT: MFM Lynx TDF 2023 DSI Report				
	TITLE: Lynx TDF - Dam Fill VWP Data				
DATE: March 2024	JOB No.: CA0024329	FILE: B2 Reporting Lynx TDF VWP - 2023_Dec.xlsx	FIGURE No.: B5	REV.: 0	



Table B-2: Lynx TDF - Monument Monitoring Summary - Raw Data

	Lynx21-01			Lynx21-02			Lynx21-03			Lynx21-04			Lynx21-05		
	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation
31-Aug-22	5494762.011	312043.882	374.454	5494724.195	312032.066	374.315	5494700.571	312005.203	374.444	5494696.458	311979.559	374.375	5494690.638	311940.220	374.496
30-Sep-22	5494762.009	312043.880	374.451	5494724.195	312032.058	374.307	5494700.574	312005.199	374.438	5494696.463	311979.559	374.368	5494690.643	311940.220	374.489
31-Oct-22	5494762.010	312043.878	374.450	5494724.196	312032.057	374.305	5494700.577	312005.199	374.437	5494696.467	311979.558	374.365	5494690.647	311940.221	374.489
28-Nov-22	5494762.009	312043.878	374.450	5494724.196	312032.053	374.305	5494700.579	312005.200	374.436	5494696.475	311979.556	374.361	5494690.650	311940.222	374.487
31-Dec-22	5494762.006	312043.880	374.451	NA	NA	NA	5494700.578	312005.199	374.431	NA	NA	NA	5494690.648	311940.220	374.481
31-Jan-23	5494762.007	312043.879	374.449	5494724.196	312032.047	374.297	5494700.581	312005.200	374.426	5494696.479	311979.556	374.348	5494690.649	311940.223	374.474
24-Feb-23	5494762.008	312043.876	374.450	5494724.198	312032.043	374.294	5494700.583	312005.198	374.425	5494696.483	311979.553	374.346	5494690.653	311940.222	374.474
30-Mar-23	5494762.009	312043.879	374.447	5494724.195	312032.044	374.292	5494700.580	312005.199	374.422	5494696.483	311979.553	374.342	5494690.650	311940.222	374.471
30-Apr-23	5494762.006	312043.876	374.447	5494724.194	312032.040	374.290	5494700.578	312005.197	374.421	5494696.483	311979.550	374.340	5494690.651	311940.220	374.468
7-May-23	NA	NA	NA	5494724.195	312032.040	374.290	5494700.579	312005.196	374.420	5494696.484	311979.550	374.340	5494690.652	311940.220	374.468
10-May-23	5494761.957	312043.868	374.442												
14-May-23	5494761.957	312043.866	374.446	5494724.195	312032.038	374.293	5494700.581	312005.195	374.422	5494696.487	311979.548	374.342	5494690.654	311940.219	374.471
21-May-23	5494761.958	312043.869	374.441	5494724.195	312032.043	374.287	5494700.579	312005.200	374.418	5494696.484	311979.553	374.336	5494690.650	311940.224	374.465
28-May-23	5494761.957	312043.870	374.442	5494724.194	312032.043	374.288	5494700.577	312005.200	374.419	5494696.482	311979.553	374.338	5494690.648	311940.223	374.464
4-Jun-23	5494761.959	312043.869	374.442	5494724.196	312032.040	374.288	5494700.575	312005.201	374.416	5494696.481	311979.554	374.337	5494690.647	311940.222	374.465
11-Jun-23	5494761.958	312043.866	374.441	5494724.195	312032.040	374.290	5494700.573	312005.199	374.414	5494696.481	311979.554	374.334	5494690.648	311940.224	374.465
18-Jun-23	5494761.958	312043.867	374.440	5494724.189	312032.037	374.283	5494700.568	312005.199	374.409	5494696.477	311979.552	374.327	5494690.642	311940.223	374.458
25-Jun-23	5494761.956	312043.866	374.438	5494724.189	312032.036	374.281	5494700.566	312005.198	374.405	5494696.475	311979.550	374.323	5494690.642	311940.223	374.455
3-Jul-23	5494761.997	312043.767	374.469	5494724.185	312032.036	374.278	5494700.563	312005.198	374.405	5494696.475	311979.551	374.321	5494690.642	311940.222	374.454
5-Oct-23	5494759.415	312045.828	378.682	5494721.959	312034.471	379.673	5494697.561	312003.853	379.571	5494693.863	311981.080	379.483	5494687.202	311938.889	379.569
31-Oct-23	5494759.403	312045.824	378.671	5494721.954	312034.472	379.675	5494697.557	312003.852	379.560	5494693.860	311981.081	379.485	5494687.200	311938.888	379.573
30-Nov-23	5494759.402	312045.822	378.671	5494721.951	312034.467	379.658	5494697.558	312003.850	379.551	5494693.861	311981.077	379.461	5494687.202	311938.887	379.548

	Lynx21-06			Lynx21-07			Lynx21-08			Lynx21-09			Lynx21-10		
	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation
31-Aug-22	5494683.880	311900.364	374.556	5494677.614	311861.170	374.605	5494671.338	311822.621	374.523	5494665.748	311787.103	374.686	5494670.021	311745.100	374.623
30-Sep-22	5494683.881	311900.366	374.552	5494677.613	311861.170	374.602	5494671.348	311822.618	374.516	5494665.749	311787.101	374.681	5494670.022	311745.099	374.617
31-Oct-22	5494683.883	311900.367	374.552	5494677.615	311861.171	374.600	5494671.353	311822.618	374.516	5494665.751	311787.102	374.680	5494670.025	311745.102	374.617
28-Nov-22	5494683.884	311900.365	374.551	5494677.619	311861.171	374.602	5494671.361	311822.619	374.510	5494665.751	311787.102	374.683	5494670.028	311745.105	374.621
31-Dec-22	5494683.886	311900.364	374.546	5494677.624	311861.170	374.599	5494671.367	311822.619	374.502	NA	NA	NA	NA	NA	NA
31-Jan-23	5494683.886	311900.366	374.540	5494677.627	311861.170	374.590	5494671.372	311822.618	374.492	5494665.754	311787.103	374.674	5494670.116	311745.155	374.610
24-Feb-23	5494683.890	311900.364	374.538	5494677.639	311861.168	374.586	5494671.380	311822.620	374.488	5494665.756	311787.104	374.672	5494670.121	311745.156	374.606
30-Mar-23	5494683.890	311900.363	374.535	5494677.641	311861.167	374.583	5494671.381	311822.619	374.484	5494665.755	311787.102	374.670	5494670.122	311745.155	374.605
30-Apr-23	5494683.891	311900.360	374.533	5494677.643	311861.166	374.582	5494671.382	311822.618	374.481	5494665.755	311787.101	374.668	5494670.124	311745.156	374.604
7-May-23	5494683.894	311900.360	374.533	5494677.643	311861.164	374.581	5494671.386	311822.617	374.481	5494665.757	311787.102	374.669	5494670.126	311745.157	374.604
14-May-23	5494683.897	311900.360	374.536	5494677.647	311861.164	374.583	5494671.389	311822.617	374.480	5494665.763	311787.101	374.672	5494670.133	311745.153	374.606
21-May-23	5494683.892	311900.364	374.530	5494677.641	311861.167	374.578	5494671.383	311822.618	374.477	5494665.754	311787.101	374.664	5494670.126	311745.151	374.602
28-May-23	5494683.890	311900.364	374.532	5494677.640	311861.168	374.580	5494671.380	311822.620	374.477	5494665.759	311787.103	374.666	5494670.114	311745.154	374.598
4-Jun-23	5494683.890	311900.363	374.531	5494677.637	311861.168	374.578	5494671.380	311822.620	374.476	5494665.748	311787.102	374.663	5494670.113	311745.153	374.595
11-Jun-23	5494683.890	311900.364	374.530	5494677.637	311861.168	374.577	5494671.379	311822.621	374.475	5494665.747	311787.103	374.664	5494670.115	311745.152	374.595
18-Jun-23	5494683.885	311900.362	374.525	5494677.633	311861.166	374.574	5494671.376	311822.617	374.470	5494665.738	311787.100	374.659	5494670.111	311745.147	374.589
25-Jun-23	5494683.885	311900.362	374.522	5494677.633	311861.167	374.568	5494671.373	311822.622	374.468	5494665.735	311787.101	374.655	5494670.110	311745.148	374.581
3-Jul-23	5494683.885	311900.360	374.522	5494677.630	311861.167	374.569	5494668.651	311822.620	374.465	5494665.733	311787.102	374.654	5494670.107	311745.150	374.580
5-Oct-23	5494680.923	311900.470	379.543	5494674.727	311860.549	379.607	5494668.651	311823.525	379.642	5494663.161	311786.828	379.495	5494666.582	311743.735	379.480
31-Oct-23	5494680.920	311900.468	379.546	5494674.727	311860.544	379.595	5494668.654	311823.522	379.628	5494663.164	311786.823	379.483	5494666.584	311743.729	379.472
30-Nov-23	5494680.926	311900.468	379.517	5494674.733	311860.541	379.584	5494668.663	311823.523	379.615	5494663.167	311786.826	379.473	5494666.583	311743.735	379.460

	Lynx21-11			Lynx21-12			Lynx21-13		
	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation
31-Aug-22	5494818.733	311662.730	374.890	NA	NA	NA	NA	NA	NA
30-Sep-22	5494818.682	311662.709	374.883	NA	NA	NA	NA	NA	NA
31-Oct-22	5494818.687	311662.719	374.881	NA	NA	NA	NA	NA	NA
28-Nov-22	5494818.697	311662.723	374.884	NA	NA	NA	NA	NA	NA
31-Dec-22	5494818.689	311662.729	374.880	NA	NA	NA	NA	NA	NA
31-Jan-23	5494818.685	311662.731	374.875	NA	NA	NA	NA	NA	NA
24-Feb-23	5494818.686	311662.736	374.867	NA	NA	NA	NA	NA	NA
30-Mar-23	5494818.685	311662.738	374.868	NA	NA	NA	NA	NA	NA
30-Apr-23	5494818.687	311662.740	374.867	NA	NA	NA	NA	NA	NA
7-May-23	5494818.690	311662.741	374.868	NA	NA	NA	NA	NA	NA
14-May-23	5494818.694	311662.746	374.871	NA	NA	NA	NA	NA	NA
21-May-23	5494818.693	311662.741	374.866	NA	NA	NA	NA	NA	NA
28-May-23	5494818.689	311662.740	374.868	NA	NA	NA	NA	NA	NA
4-Jun-23	5494818.690	311662.743	374.867	NA	NA	NA	NA	NA	NA
11-Jun-23	5494818.691	311662.748	374.867	NA	NA	NA	NA	NA	NA
18-Jun-23	5494818.691	311662.743	374.866	NA	NA	NA	NA	NA	NA
25-Jun-23	5494818.692	311662.745	374.864	NA	NA	NA	NA	NA	NA
3-Jul-23	5494818.693	311662.748	374.864	NA	NA	NA	NA	NA	NA
5-Oct-23	5494705.373	311712.550	379.489	5494741.570	311694.364	379.464	5494833.954	311652.300	379.156
31-Oct-23	5494705.367	311712.547	379.474	5494741.570	311694.365	379.454	5494833.955	311652.300	379.153
30-Nov-23	5494705.370	311712.549	379.463	5494741.573	311694.373	379.445	5494833.955	311652.305	379.149



Table B-3: Lynx TDF - Monument Monitoring Summary - Cumulative Displacement (Change from Initial Location)

	Lynx21-01					Lynx21-02				
	Magnitude (cm)	Direction 2 (deg)	Transverse ³ (cm)	Longitudinal ⁴ (cm)	Vertical ⁵ (cm)	Magnitude (cm)	Direction 2 (deg)	Transverse ³ (cm)	Longitudinal ⁴ (cm)	Vertical ⁵ (cm)
31-Aug-22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-Sep-22	0.3	216.9	-0.1	-0.2	-0.2	0.8	273.6	-0.8	-0.2	-0.7
31-Oct-22	0.4	254.1	-0.3	-0.2	-0.3	0.9	279.5	-0.9	-0.1	-1.0
28-Nov-22	0.4	240.3	-0.3	-0.3	-0.3	1.3	276.6	-1.3	-0.3	-1.0
31-Dec-22	0.5	196.7	0.0	-0.5	-0.2	NA	NA	NA	NA	NA
31-Jan-23	0.5	212.0	-0.1	-0.5	-0.4	1.9	274.5	-1.9	-0.4	-1.7
24-Feb-23	0.6	241.4	-0.4	-0.5	-0.3	2.3	278.7	-2.3	-0.4	-2.1
30-Mar-23	0.3	231.3	-0.2	-0.3	-0.6	2.2	271.3	-2.1	-0.6	-2.3
30-Apr-23	0.7	227.7	-0.4	-0.6	-0.6	2.6	268.9	-2.5	-0.8	-2.4
7-May-23	NA	NA	NA	NA	NA	2.6	271.1	-2.5	-0.7	-2.4
10-May-23	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	NA
14-May-23	5.6	196.0	0.2	-5.6	-0.7	2.8	271.0	-2.7	-0.8	-2.2
21-May-23	5.4	193.3	0.4	-5.4	-1.2	2.3	271.2	-2.2	-0.6	-2.8
28-May-23	5.5	192.0	0.5	-5.5	-1.1	2.3	268.8	-2.2	-0.7	-2.6
4-Jun-23	5.3	193.5	0.4	-5.3	-1.1	2.6	273.3	-2.5	-0.6	-2.6
11-Jun-23	5.5	196.3	0.1	-5.5	-1.2	2.6	271.1	-2.5	-0.7	-2.4
18-Jun-23	5.5	195.3	0.2	-5.5	-1.3	3.0	259.3	-2.6	-1.4	-3.1
25-Jun-23	5.7	195.7	0.2	-5.7	-1.5	3.0	259.6	-2.7	-1.4	-3.4
3-Jul-23	11.5	263.0	-10.5	-4.8	1.6	3.1	252.4	-2.6	-1.8	-3.6
5-Oct-23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31-Oct-23	0.0	0.0	0.0	0.0	0.0	0.5	163.3	0.3	-0.4	0.2
30-Nov-23	0.3	240.3	-0.2	-0.2	0.0	0.9	203.6	-0.1	-0.9	-1.5

	Lynx21-03					Lynx21-04				
	Magnitude (cm)	Direction 2 (deg)	Transverse ³ (cm)	Longitudinal ⁴ (cm)	Vertical ⁵ (cm)	Magnitude (cm)	Direction 2 (deg)	Transverse ³ (cm)	Longitudinal ⁴ (cm)	Vertical ⁵ (cm)
31-Aug-22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-Sep-22	0.5	310.6	-0.4	0.2	-0.6	0.6	5.2	-0.1	0.5	-0.7
31-Oct-22	0.7	329.7	-0.5	0.5	-0.7	1.0	357.0	-0.3	0.9	-1.0
28-Nov-22	0.8	342.6	-0.5	0.7	-0.8	1.8	351.9	-0.8	1.6	-1.4
31-Dec-22	0.8	333.4	-0.5	0.6	-1.3	NA	NA	NA	NA	NA
31-Jan-23	1.0	346.0	-0.5	0.9	-1.8	2.2	353.4	-0.9	2.0	-2.7
24-Feb-23	1.3	339.4	-0.8	1.0	-1.9	2.6	347.8	-1.3	2.3	-2.9
30-Mar-23	1.0	338.7	-0.6	0.8	-2.2	2.6	347.8	-1.3	2.3	-3.3
30-Apr-23	0.9	321.8	-0.7	0.5	-2.3	2.7	341.6	-1.6	2.2	-3.5
7-May-23	1.0	320.9	-0.9	0.6	-2.4	2.8	342.2	-1.6	2.3	-3.5
10-May-23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14-May-23	1.2	323.1	-1.0	0.7	-2.2	3.1	340.4	-1.9	2.5	-3.3
21-May-23	0.8	342.6	-0.5	0.7	-2.6	2.7	348.3	-1.3	2.4	-3.9
28-May-23	0.6	337.4	-0.4	0.5	-2.5	2.5	347.3	-1.3	2.2	-3.7
4-Jun-23	0.4	339.4	-0.3	0.3	-2.8	2.4	349.2	-1.1	2.1	-3.8
11-Jun-23	0.4	299.7	-0.4	0.1	-3.0	2.4	349.2	-1.1	2.1	-4.1
18-Jun-23	0.5	229.4	-0.2	-0.4	-3.5	2.1	341.6	-1.2	1.7	-4.8
25-Jun-23	0.7	222.0	-0.3	-0.6	-3.9	1.9	334.1	-1.3	1.4	-5.2
3-Jul-23	0.9	209.4	-0.2	-0.9	-3.9	1.9	336.8	-1.2	1.4	-5.4
5-Oct-23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31-Oct-23	0.4	194.0	0.0	-0.4	-1.1	0.3	158.2	0.2	-0.2	0.2
30-Nov-23	0.4	225.0	-0.2	-0.4	-2.0	0.3	234.5	-0.2	-0.3	-2.2

	Lynx21-05					Lynx21-06				
	Magnitude (cm)	Direction 2 (deg)	Transverse ³ (cm)	Longitudinal ⁴ (cm)	Vertical ⁵ (cm)	Magnitude (cm)	Direction 2 (deg)	Transverse ³ (cm)	Longitudinal ⁴ (cm)	Vertical ⁵ (cm)
31-Aug-22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-Sep-22	0.5	5.7	-0.5	0.1	-0.7	0.3	53.1	-0.1	0.2	-0.4
31-Oct-22	0.9	9.5	-0.9	0.3	-0.7	0.5	40.6	-0.3	0.3	-0.4
28-Nov-22	1.2	11.8	-1.2	0.4	-0.9	0.5	12.5	-0.4	0.2	-0.5
31-Dec-22	1.0	2.9	-1.0	0.2	-1.5	0.7	0.0	-0.6	0.1	-1.0
31-Jan-23	1.2	17.7	-1.0	0.5	-2.2	0.7	17.1	-0.6	0.3	-1.6
24-Feb-23	1.5	9.5	-1.4	0.5	-2.2	1.0	0.0	-1.0	0.2	-1.8
30-Mar-23	1.2	11.8	-1.2	0.4	-2.5	1.1	354.6	-1.1	0.1	-2.1
30-Apr-23	1.3	2.2	-1.3	0.2	-2.8	1.2	340.8	-1.2	-0.2	-2.3
7-May-23	1.4	2.0	-1.4	0.3	-2.8	1.5	344.6	-1.5	-0.2	-2.3
10-May-23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14-May-23	1.6	358.2	-1.6	0.2	-2.5	1.8	347.1	-1.8	-0.1	-2.0
21-May-23	1.3	20.6	-1.1	0.6	-3.1	1.3	0.0	-1.2	0.2	-2.6
28-May-23	1.1	19.3	-0.9	0.5	-3.2	1.0	0.0	-1.0	0.2	-2.4
4-Jun-23	0.9	15.5	-0.9	0.4	-3.1	1.1	354.6	-1.1	0.1	-2.5
11-Jun-23	1.1	24.2	-0.9	0.6	-3.1	1.0	0.0	-1.0	0.2	-2.6
18-Jun-23	0.5	41.2	-0.3	0.4	-3.8	0.6	340.0	-0.6	-0.1	-3.1
25-Jun-23	0.5	41.2	-0.3	0.4	-4.1	0.6	340.0	-0.6	-0.1	-3.4
3-Jul-23	0.5	32.0	-0.4	0.3	-4.2	0.7	324.0	-0.6	-0.3	-3.4
5-Oct-23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31-Oct-23	0.2	213.7	0.1	-0.1	0.4	0.3	211.0	0.3	-0.2	0.3
30-Nov-23	0.2	284.0	-0.1	-0.2	-2.1	0.3	329.0	-0.3	-0.1	-2.6

	Lynx21-07					Lynx21-08				
	Magnitude (cm)	Direction 2 (deg)	Transverse ³ (cm)	Longitudinal ⁴ (cm)	Vertical ⁵ (cm)	Magnitude (cm)	Direction 2 (deg)	Transverse ³ (cm)	Longitudinal ⁴ (cm)	Vertical ⁵ (cm)
31-Aug-22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-Sep-22	0.1	180.0	0.1	0.0	-0.3	1.1	344.1	-1.1	-0.1	-0.7
31-Oct-22	0.1	45.0	-0.1	0.1	-0.5	1.6	349.0	-1.6	-0.1	-0.7
28-Nov-22	0.5	11.3	-0.5	0.2	-0.3	2.4	355.1	-2.4	0.1	-1.3
31-Dec-22	1.0	0.0	-1.0	0.1	-0.6	3.0	356.1	-2.9	0.2	-2.1
31-Jan-23	1.3	0.0	-1.3	0.2	-1.5	3.5	355.0	-3.5	0.2	-3.1
24-Feb-23	2.5	355.4	-2.5	0.2	-1.9	4.3	358.7	-4.2	0.5	-3.5
30-Mar-23	2.7	353.7	-2.7	0.1	-2.2	4.4	357.4	-4.3	0.4	-3.9
30-Apr-23	2.9	352.1	-2.9	0.0	-2.3	4.5	356.1	-4.4	0.3	-4.2
7-May-23	3.0	348.3	-3.0	-0.2	-2.4	4.9	355.3	-4.9	0.3	-4.2
10-May-23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14-May-23	3.4	349.7	-3.4	-0.1	-2.2	5.2	355.6	-5.2	0.3	-4.3
21-May-23	2.7	353.7	-2.7	0.1	-2.7	4.6	356.2	-4.5	0.4	-4.6
28-May-23	2.6	355.6	-2.6	0.2	-2.5	4.3	358.7	-4.2	0.5	-4.6
4-Jun-23	2.3	355.0	-2.3	0.1	-2.7	4.3	358.7	-4.2	0.5	-4.7
11-Jun-23	2.3	355.0	-2.3	0.1	-2.8	4.1	0.0	-4.1	0.6	-4.8
18-Jun-23	1.9	348.1	-1.9	-0.1	-3.1	3.9	354.1	-3.9	0.2	-5.3
25-Jun-23	1.9	351.0	-1.9	0.0	-3.7	3.6	1.6	-3.5	0.6	-5.5
3-Jul-23	1.6	349.4	-1.6	-0.1	-3.6	3.7	358.4	-3.6	0.4	-5.8
5-Oct-23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31-Oct-23	0.5	270.0	-0.1	-0.5	-1.2	0.4	312.3	-0.3	-0.3	-1.4
30-Nov-23	1.0	306.9	-0.7	-0.7	-2.3	1.2	349.1	-1.2	-0.1	-2.7

	Lynx21-09					Lynx21-10				
	Magnitude (cm)	Direction 2 (deg)	Transverse ³ (cm)	Longitudinal ⁴ (cm)	Vertical ⁵ (cm)	Magnitude (cm)	Direction 2 (deg)	Transverse ³ (cm)	Longitudinal ⁴ (cm)	Vertical ⁵ (cm)
31-Aug-22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-Sep-22	0.2	296.6	-0.1	-0.2	-0.5	0.2	326.3	-0.2	-0.1	-0.5
31-Oct-22	0.3	341.6	-0.3	-0.1	-0.5	0.5	24.0	-0.4	0.3	-0.5
28-Nov-22	0.3	341.6	-0.3	-0.1	-0.2	0.9	33.7	-0.7	0.6	-0.2
31-Dec-22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
31-Jan-23	0.6	0.0	-0.6	0.1	-1.2	11.0	29.9	-8.7	6.8	-1.2
24-Feb-23	0.8	7.1	-0.8	0.2	-1.3	11.5	29.1	-9.1	7.0	-1.7
30-Mar-23	0.7	351.9	-0.7	0.0	-1.5	11.5	28.5	-9.3	6.9	-1.7
30-Apr-23	0.7	344.1	-0.7	-0.1	-1.7	11.8	28.4	-9.4	7.0	-1.9
7-May-23	0.9	353.7	-0.9	0.0	-1.7	12.0	28.4	-9.6	7.2	-1.9
10-May-23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14-May-23	1.5	352.4	-1.5	0.0	-1.3	12.4	25.2	-10.4	6.9	-1.7
21-May-23	0.6	341.6	-0.6	-0.1	-2.2	11.7	25.8	-9.7	6.6	-2.1
28-May-23	1.1	0.0	-1.1	0.2	-1.9	10.8	30.0	-8.5	6.7	-2.4
4-Jun-23	0.1	270.0	0.0	-0.1	-2.2	10.7	29.8	-8.4	6.6	-2.7
11-Jun-23	0.1	180.0	0.1	0.0	-2.2	10.8	28.8	-8.6	6.5	-2.7
18-Jun-23	1.0	196.7	0.9	-0.4	-2.6	10.2	27.4	-8.3	6.0	-3.4
25-Jun-23	1.3	188.7	1.3	-0.4	-3.1	10.2	28.2	-8.2	6.0	-4.1
3-Jul-23	1.5	183.8	1.5	-0.3	-3.1	10.0	30.0	-7.8	6.2	-4.3
5-Oct-23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31-Oct-23	0.6	302.0	-0.4	-0.4	-1.2	0.6	288.4	-0.3	-0.6	-0.7
30-Nov-23	0.6	343.3	-0.6	-0.1	-2.2	0.1	0.0	-0.1	0.0	-1.9

	Lynx21-11					Lynx21-12				
	Magnitude (cm)	Direction 2 (deg)	Transverse ³ (cm)	Longitudinal ⁴ (cm)	Vertical ⁵ (cm)	Magnitude (cm)	Direction 2 (deg)	Transverse ³ (cm)	Longitudinal ⁴ (cm)	Vertical ⁵ (cm)
31-Aug-22	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	NA
30-Sep-22	5.5	202.4	5.5	-0.6	-0.7	NA	NA	NA	NA	NA
31-Oct-22	4.7	193.4	4.7	0.2	-0.9	NA	NA	NA	NA	NA
28-Nov-22	3.7	191.0	3.7	0.3	-0.6	NA	NA	NA	NA	NA
31-Dec-22	4.4	181.3	4.3	1.1	-1.0	NA	NA	NA	NA	NA
31-Jan-23	4.8	178.8	4.6	1.4	-1.5	NA	NA	NA	NA	NA
24-Feb-23	4.7	172.7	4.4	1.8	-2.3	NA	NA	NA	NA	NA
30-Mar-23	4.9	170.5	4.4	2.1	-2.2	NA	NA	NA	NA	NA
30-Apr-23	4.7	167.7	4.2	2.2	-2.3	NA	NA	NA	NA	NA
7-May-23	4.4	165.7	3.8	2.2	-2.2	NA	NA	NA	NA	NA
10-May-23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14-May-23	4.2	157.7	3.3	2.6	-1.9	NA	NA	NA	NA	NA
21-May-23	4.1	164.6	3.6	2.1	-2.4	NA	NA	NA	NA	NA
28-May-23	4.5	167.2	4.0	2.2	-2.2	NA	NA	NA	NA	NA
4-Jun-23	4.5	163.2	3.8	2.4	-2.3	NA	NA	NA	NA	NA
11-Jun-23	4.6	156.8	3.6	2.9	-2.3	NA	NA	NA	NA	NA
18-Jun-23	4.4	162.8	3.7	2.4	-2.4	NA	NA	NA	NA	NA
25-Jun-23	4.4	159.9	3.5	2.6	-2.6	NA	NA	NA	NA	NA
3-Jul-23	4.4	155.8	3.4	2.8	-2.6	NA	NA	NA	NA	NA
5-Oct-23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31-Oct-23	0.7	206.6	0.7	-0.1	-1.4	0.1	90.0	-0.1	0.0	-1.0
30-Nov-23	0.3	198.4	0.3	0.0	-2.5	0.9	71.6	-0.9	0.1	-1.9

	Lynx21-13				
	Magnitude (cm)	Direction 2 (deg)	Transverse ³ (cm)	Longitudinal ⁴ (cm)	Vertical ⁵ (cm)
5-Oct-23	0.0	0.0	0.0	0.0	0.0
31-Oct-23	0.1	26.6	-0.1	-0.1	-0.3
30-Nov-23	0.6	79.7	-0.5	0.2	-0.7

- Notes:
1. The combined measurement error (total of instrument, human and network) for the Lynx TDF monument survey is approximately 1.5 cm and 1.0 cm for horizontal and vertical displacement, respectively.
 2. Negative values are in the upstream direction, positive values are in the downward direction.
 3. Negative values are descending stations along dam centerline and positive values are for ascending stations.
 4. Green shading indicates monument was placed, replaced, or re-set on that date. Displacement after that date is calculated with respect to the initial survey reading on the replacement date.
 5. 'NA' indicates no survey data available for that date. Displacement values are based on changes from the last available readings.
 6. **Bold** numbers indicate upstream monument location on dam, regular numbers indicate downstream location on dam

APPENDIX C

Dam Safety Inspection Recommendations

All Lynx TDF DSI Recommendations



Structure	Tracking Number	Previous Recommendation	Update	Status/Priority
2013 Lynx TDF DSR (RGC 2014a)				
Lynx TDF	2013-23	Consider relocating the waste rock dumps [above Lynx TDF] as soon as is practical.	Removal of WRD2 and WRD3 continued in 2022. Removal of WRD3 was completed in 2022. Additional work is planned for 2023 and beyond as WRD 2 is used as material source for dam raise construction.	In Progress Priority 2
Lynx TDF	2014-09	Investigate options for dewatering of dredge material prior to deposition in Lynx TDF.	Dewatering is not a feasible option.	Complete
Old TDF & Lynx TDF	2014-11	Connect all piezometers to an automated logging system. Implement real-time networking and internet access to the system to improve the timely availability and use of data.	Instrumentation is connected to an automated logging system. Internet access via Environmental Team's SharePoint is in real-time and has been available for about a year.	Complete
2015 DSI Report (Amec Foster Wheeler 2016d)				
Old TDF & Lynx TDF	2015-01	Where possible, adopt updated design criteria derived from CDA guidelines and EMPR/MOE requirements.	Completed for Lynx TDF and for Old TDF upslope and internal water management. Outstanding for Myra Creek at the toe of the Old TDF (see Recommendation 2016-10).	Complete
2016 DSI Report (Amec Foster Wheeler 2017c)				
All	2016-01	Some OMS Manual Holders do not have a current registered hard copy of the document.	The OMS manual was updated in March 2019 and April 2020 and distributed electronically to manual holders. Hard copies were distributed to manual holders on site.	Complete
All	2016-02	Data loggers run out of battery power in the winter, resulting in loss of critical weather and/or piezometer monitoring information.	Work to improve the battery reliability in Lynx Hut and the Weather Station was completed in May 2018 by an external contractor. This work did not follow manufacturer's set up instructions and resulted in additional loss of data from Lynx Hut and the Weather Station. Repairs were made by Wood in Q1-2019 and the system is being monitored for performance. The weather station was relocated in 2020 and is now connected to the site electrical grid, with solar batteries installed for back-up power use only.	Complete
All	2016-05	Lynx TDF does not currently have a defined piezometer threshold framework or instrumentation-based alarm system.	Thresholds were created for the Lynx TDF Piezometers. A memorandum documenting this work and the new thresholds is provided in Appendix E.	Complete
2016 DSR Report (Tierra Group, 2017)				
Lynx TDF	2016-13	Nyrstar to address this minor issue [sinkhole] prior to closure if the feature does not stabilize naturally.	Mitigation of the persistent depression in Lynx TDF to be addressed at or prior to closure planning. Recommendations for monitoring and mitigation are provided by Wood in 2015 (Amec Foster Wheeler 2015c) and Nyrstar has included them in their Mine Plan.	Complete In current mine plan Priority 4

All Lynx TDF DSI Recommendations



Structure	Tracking Number	Previous Recommendation	Update	Status/Priority
2017 DSI Report (Amec Foster Wheeler, 2018b)				
All	2017-02	Assess piezometers for functionality. EOR to evaluate spatial piezometer coverage. Replace or repair broken piezometers that are missing from essential monitoring areas.	Three VWP were installed at the Lynx starter dam foundation through the downstream shell during the 2019 site investigation. (Tracking number 2017-05)	Complete
Lynx TDF	2017-03	Replace survey monuments and complete a baseline survey.	Survey monuments need to be replaced and re-surveyed after each dam raise.	Complete
Lynx TDF	2017-04	Tailings samples collected semi-annually for lab testing. Tailings surface surveys carried out quarterly to assess dry density and consolidation. Detailed investigation of whole tailings every 5 m of placement.	Tailings samples are collected and tested on a monthly basis for grain size and moisture content and analyzed for ABA & metals externally. Sampling recommendations to be added to the 2021 OMS update. Wood completed a detailed site investigation of the tailings in 2020 (Wood 2020h). Tailings surface surveys are carried out quarterly.	Complete
Lynx TDF	2017-05	Geotechnical and geophysical investigation of original starter dam. Install vibrating wires and slope inclinometers outlined in proposed investigation plan.	Starter dam investigation was completed in December 2019.	Complete
Lynx TDF	2017-07	Construct an Operations Spillway to discharge the IDF.	A spillway was constructed through the dam crest and on the downstream dam shell for the 365.1 m dam raise in 2019, which can discharge the IDF.	Complete
2018 DSI Report (Wood, 2019d)				
Lynx TDF	2018-01	Water levels in Lynx TDF should be measured relative to a geodetic reference and recorded daily as part of routine facility surveillance. Update the OMS to reflect this requirement.	A staff gauge was installed during March 2019 and pond levels recorded during weekly inspections.	Complete
Lynx TDF	2018-02	Install markers around the perimeter of the impoundment that clearly identify maximum normal operating water level. Expedite pumping of Lynx TDF to the limit of the treatment system capacity when the NOWL markers are exceeded.	Markers were not installed around the perimeter of the impoundment, but the water level was brought down to the maximum operating level in April 2019 and has been maintained as low as practical. Following 2020 lift, staff gauge was re-assessed for levels and is used to ensure pumping is completed.	Complete
Lynx TDF	2018-03	Document a risk assessment with respect to the condition of the spillway between now and the construction period, when it would normally be removed for dam raising.		Complete/ Obsolete
LLDD	2018-04	Carry out a detailed condition assessment and comprehensive repair program in the concrete cloth section of the Lower Lynx Diversion Ditch. Repairs must be completed prior to the next wet season.	Repairs were completed in 2019 and conditions are being monitored with repairs implemented as needed.	Complete

All Lynx TDF DSI Recommendations



Structure	Tracking Number	Previous Recommendation	Update	Status/Priority
All	2018-06	<ol style="list-style-type: none"> 1. Carry out detailed review of instrumentation data logger wiring. 2. Create a wiring diagram and operation manual for each instrumentation hut. 3. Prepare updated scripts for all data loggers which are consistent in functionality an appropriate to the hardware. 	<ol style="list-style-type: none"> 1. Schematic review complete by WSP and MFM. 2. Not complete. 3. Not complete. 	<p>In progress</p> <p>Priority 2</p>
All	2018-07	Assess flood impacts to infrastructure adjacent to Myra Creek including buildings and bridges. Update Emergency Response Plan.	Complete	Complete
Lynx TDF	2018-13	Add an R-Star data logger for the Lynx Springs Drain VWP.	Complete	Complete
2019 DSI Report (Wood 2020e)				
Lynx TDF	2019-01	Pond levels in Lynx TDF were not regularly measured accurately throughout 2019.	Water levels in Lynx TDF were measured relative to a geodetic reference and recorded as part of routine facility surveillance. OMS updated in 2020 to reflect this requirement.	Complete
LLDD	2019-02	Delamination between the shingles of the Lower Lynx Diversion Drain concrete cloth liner have periodically been observed and repaired.	<p>Carry out a detailed condition assessment yearly after the freshet. Repairs must be completed prior to the next wet season.</p> <p>Completed and added to 2020 OMS update.</p>	Complete
2020 DSR Report (Thurber 2021)				
Lynx TDF	2020-01T	Although the observed cracking along the upstream edge of the crest is not unexpected, it should be evaluated and remediated under the direction of the EoR prior to the placement of any new dam fill on the crest.	Cracking along the crest has been assessed by the EoR and remediated during 2021 construction activities. The conditions of the crest will continue to be monitored during MFM weekly inspections and WSP quarterly inspections.	Complete
Lynx TDF	2020-02T	The location of the newest camp buildings should be reviewed to check whether their presence could justify an increase in the downstream consequence classification for the Lynx TDF. Similarly, NMF should evaluate whether changes in haul road traffic patterns since 2015 could result in a larger number of workers being in the inundation area during a potential dam breach situation.	A dam breach assessment was completed by WSP in Nov 2022. The consequence classification was confirmed as high with consideration to operation controls and contingency measures included in the dam design.	Complete
Lynx TDF	2020-03T	<p>Minor updates/revisions to the OMS Manual are recommended, including:</p> <ul style="list-style-type: none"> • Provide consistent information in the OMS Manual and the Field Manual. • Emergency contact information needs to be updated. • Photos in Appendix C should be reviewed and updated as necessary. • The list of supporting documents list in Appendix F needs updating. 	Updates to the OMS manual were completed by MFM and reviewed by WSP in both 2021 and 2022.	Complete

All Lynx TDF DSI Recommendations



Structure	Tracking Number	Previous Recommendation	Update	Status/Priority
Lynx TDF	2020-04T	In addition to any internal training initiatives completed by NMF, the EoR should oversee informal "refresher" training sessions with monitoring and surveillance staff every 2 to 3 years to reinforce the objectives of monitoring activities and how they relate to specific failure modes.	Once MFM has solidified plans for site monitoring under care and maintenance conditions and updated the Operation, Maintenance and Surveillance Manual, a training session should be organized for staff who will be conducting monitoring and surveillance.	Update OMS Manual and then remove from recommendations Q3 2024
Lynx TDF	2020-05T	With respect to the risk assessment completed in 2020, clarification should be provided regarding the justification for reducing consequence ratings for some of the "current risk" scenarios, compared to the corresponding "inherent risk" scenarios.		Complete
Lynx TDF	2020-06T	It is recommended that the Amec (2016b) seismic hazard values be reviewed following the release of the 6th Generation GSC1 seismic hazard model (expected later in 2021). We understand that the GSC model will incorporate updated GMPEs2 and assumes an increased frequency for CSZ3 earthquakes. The recurrence rates and GMPEs used in Amec's (2016b) seismic assessment were developed prior to 2012 and may require updating based on recent research.	WSP recommended to MFM that this update to the seismic hazard evaluation be completed in 2023, but it has not been completed. MFM should plan to complete this update which is needed to confirm stability of the facility under seismic loading and inform development of closure designs.	Incomplete Priority 4
2020 DSI Report (Wood 2021d)				
General	2020-05	OMS Manual not updated after 368.5 m raise 2020. OMS Manual should be updated yearly.	MFM updated the manual in March 2022.	Complete
2021 DSI Report (Wood 2022)				
Lynx TDF	2021-06	Backfill 10 L portal and complete the 373.5 m raise in this area to the lines and grades shown on the drawings.	10 L portal was plugged and backfilled and Lynx Dam was raised to El. 378 m by September 2023. As built reporting for the plugs and backfill should be signed by an Engineer and provided to the EoR to confirm completion to design.	Superseded by 2023 08
Lynx TDF	2021-07	Install a permanent staff gauge, possibly on the rock face opposite the pumping area.	Install a permanent staff gauge possibly on the rock face opposite the pumping area. Temporary staff gauges are currently being used.	Q3 2024 Priority 4
Lynx TDF	2021-08	Ponding of water near Panel 15 drain standpipe.	Grade the toe area of the Lynx dam such that water does not pond in and around the standpipe intended to monitor water levels in the Panel 15 Drain.	Complete
Lynx TDF	2021-09	Lynx instrument upgrades and data gaps.	Assess existing operational instrumentation on Lynx given dam raises and instrument losses over the years. Field review of VWP's completed by WSP in 2022.	Complete
2022 DSI Report				
Lynx TDF	2022-01	El. 376.5 m dam raise crest tie in to the 10L portal is to be completed.	10L portal was plugged and backfilled and Lynx Dam was raised to El. 378 m by September 2023. As-built reporting for the plugs and backfill should be signed by an Engineer and provided to EoR to confirm completion to design.	Partially Complete Q2 2024

All Lynx TDF DSI Recommendations



Structure	Tracking Number	Previous Recommendation	Update	Status/Priority
Lynx TDF	2022-02	Unsupported upstream slope in the area of the pump barge is greater than that recommended by WSP.	Pump barge was moved to back of TDF in 2023. MFM did not develop a beach sloping away from the West Arm and part of the South Arm prior to suspending operations and it will not be possible to change the tailings beach geometry now that operations have been suspended.	Complete
Lynx TDF	2022-03	SI BH14 08a is obstructed at a depth of about 45 m and cannot be monitored.	Installation of shape accelerometer array instruments in SI casings was scheduled for 2023, but has been delayed and is scheduled for completion in 2024.	2024 Q2/Q3 Priority 2
Lynx TDF	2022-04	Many VVPs were determined to be non functioning based on the field review conducted by WSP in 2022 (Lynx TDF 2021 09).	Six new VVPs were installed in Lynx Dam fills and foundation in 2023/2024.	Complete
2023 DSI Report				
Lynx TDF	2023-01	Relatively minor tension cracks observed in the upstream slope of the dam (Zone J used to construct the upstream shell above approximately El. 376 m).	Now that mine production/tailings production has ceased, MFM will need to develop and implement a new plan for completing the upstream Zone A shell.	2024 Q3 Priority 3
Lynx TDF	2023-02	Tailings deposition and pond management	MFM ceased operations prior to developing a beach that sloped away from the dam along the West Arm and the west end of the South Arm. Photos from November 2023 provided by MFM show pond at back of facility and not along upstream dam face. As per OMS manual, pond shall be kept away from upstream slope of dam except under high precipitation events.	Complete
Lynx TDF	2023-03	WRD2 Seepage flows bypassing ULDD and being directed over the abutment of the East Arm and down the toe of the 4H:1V slope and WRD1.	MFM reported and provided photos that the WRD2 seepage runoff flows had been redirected into the Lynx TDF by late October. To be validated during next Engineer of Record inspection.	MFM reported as complete
Lynx TDF	2023-04	Run-off and/or seepage water observed coming down the gully on the downstream side of the West Arm Dam abutment.	It is recommended that this water is managed in a more controlled manner so that under a larger storm event flows do not impact the downstream shell of the dam.	2024 Q3 Priority 3
Lynx TDF	2023-05	Ponding was observed in the area at the toe of the Lynx TDF near the northeast corner of the Super Pond. No signs of seepage from dam toe.	Grade the area so that water does not pond at the toe of the dam and monitor for any signs of seepage.	2024 Q3 Priority 3
Lynx TDF	2023-06	Some VVPs are not reporting data.	Trouble shoot to re establish readings from VVPs that have not been reporting data for several months. If readings from instruments cannot be re-established, new/replacement instrumentation may be necessary.	2024 Q2 Priority 3
Lynx TDF	2023-07	OMS Manual and ERP	OMS manual and ERP need to be updated to reflect care and maintenance status of the mine.	2024 Q2 Priority 3

All Lynx TDF DSI Recommendations



Structure	Tracking Number	Previous Recommendation	Update	Status/Priority
Lynx TDF	2023-08	10L portal plugs and backfill	Provide as-built record of 10 L portal plugs and backfill which should be sealed by a qualified Engineer.	2024 Q2 Priority 3
Lynx TDF	2023-09	Upstream Zone A shell push out over tailings completed to El. 374 m. Temporary over steepened upstream slope constructed to allow crest raise to El. 378 m.	Revised plan required to complete construction of the upstream shell or develop a revised geometry that is considered stable for care and maintenance, since sequencing construction with tailings deposition no longer feasible with mine shut down.	2024 Q4 Priority 3
Lynx TDF	2023-10	Insufficient capping layer to El. 378.5 m between spillway and West Arm abutment.	Review of as-built surveys indicates that the capping layer was underbuilt between the spillway and the abutment. The capping layer should be topped up to El. 378.5 m so that the auxiliary swale will function as intended.	2024 Q3 Priority 3



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