REPORT

2023 Annual Facility Performance Review Summary Report

Tailings Management Facility, Quebrada Blanca 2

Submitted to:

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Distribution List

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Executive Summary

This report presents the summary of the 2023 annual facility performance review (AFPR) of the tailings management facility (TMF) at Quebrada Blanca 2 (QB2). The 2023 AFPR site visit was carried out between 28 November and 01 December 2023, inclusive of travel between Iquique and site, by WSP along with personnel from Compañía Minera Teck Quebrada Blanca S.A. (CMTQB) and Teck Resources Chile Ltda (TRCL). The Engineer of Record (EoR) and the Deputy Engineer of Record (DEoR) for the TMF, both of WSP, attended.

The 2023 AFPR is the second such review of the TMF. The initial construction of the TMF started in 2019 and was nearing completion at the time of the 2023 AFPR site visit.

No facility safety deficiencies were identified that require immediate action; ongoing hazard management and mitigation plans are providing appropriate controls. Construction quality monitoring confirms that construction of the sand dam is satisfying the design intent of the TMF.

If a discrepancy is identified between the English and Spanish versions of this document, WSP is to be notified in writing. WSP will provide written clarification. The Spanish version of this document will be included in Rev. 0.

This report and its attachments are to be read in full along with the Study Limitations. The Study Limitations follow the text and form an important part of this report.

Review of Key Hazards

Teck has a credible catastrophic failure mode (CCFM) assessment methodology that is based on the guidance provided by the Global Industry Standard on Tailings Management (GISTM). Catastrophic failure is defined as an uncontrolled loss of contents that has intolerable downstream impacts, which comprise: population-at-risk with life safety impacts, prioritizing human fatalities; significant and lasting environmental impacts; as well as significant and lasting social impacts. There are no CCFMs for the TMF in the period from Year 0 (2023) to Year 5 (Golder 2023e). The CCFM assessment completed in 2022 remains valid for the 2023 period.

Rockfall and slope stability can pose hazards to workers and equipment on natural and man-made slopes in roads and platforms; these hazards will be present throughout the life of the tailings management facility development and continued assessments and mitigation will be required. Periods of high precipitation, such as *invierno bolivano*, may increase this hazard. Controls for these hazards consist of Teck's rockfall hazard management plan to consider all the immediate-, short, and long-term perspectives in combination to develop the necessary management approaches. Teck has held training sessions for this plan with all stakeholders and contractors associated with the TMF during the initial construction period. CMTQB has taken over the rockfill management plan and assuming its ownership for implementation and continued development the plan throughout operations. These controls are viewed as sufficiently effective.

Start of Operation of Tailings Management Facility

During TMF operations, it is important to ensure that the sand produced and placed meets the mass balance and dam raising schedule requirements, while also providing the minimum required freeboard and beach length. Careful planning, tracking, and forecasting are crucial for sand production and raising throughout the TMF's lifetime. In April 2023, CMTQB initiated the initial commissioning and ramp-up of the TMF by placing tailings in the impoundment.

By September 2023, sand placement started in the paddocks downstream of the sand dam. The tailings distribution system was fully operational, enabling tailings to be placed from either the dam or Valley 3, and the temporal sand distribution system was operational, placing sand in all paddocks downstream of the sand dam during the 2023 AFPR.

During the initial months of cyclone station operation and sand placement, the construction of the paddock was faced with two main challenges: insufficient drainage and limited area for sand placement. The inadequate drainage was caused by an impermeable layer created by the protective layer over the drainage system, which is believed to be related to fines content or over-compaction from heavy equipment traffic, prior to operation. The impermeable layer presented challenges in the dewatering and initial sand placement process. Additionally, the limited space for proper flow into the basal drain has impacted the ability to place sand effectively. To address these issues, CMTQB is currently developing plans to enhance sand drainage and placement rates, while ensuring that all sand quality, compaction, placement rate, and location requirements are met, and paddock placement procedures followed.

To ensure that the pond elevations, including allowance for the Probable Maximum Flood (PMF), do not reach the starter dam crest before the sand dam construction is complete and ready for raising, it is important to carefully monitor the sand mass balance of the TMF both upstream and downstream. Sand that is deposited into the TMF instead of being placed on the dam will increase the rate of filling of the TMF, while delaying the dam raising. This may pose a challenge to achieving the mass balance of the TMF while maintain freeboard, particularly during the first year of the mine's operation.

Consequence Classification

Teck aims to eliminate any CCFM using the ALARP principle rather than adopting a classification system that has levels of potential human life. This approach meets or exceeds regulatory requirements and aligns with Teck's goal to eliminate any potential of loss of life, which is consistent with recognized industry good practice (e.g., GISTM).

The consequence classifications that follow are provided solely for consistency with previous work and for satisfying regulatory requirements. The consequence classifications for the TMF are:

- Chilean dam classification (DGA 2015): Category C.
- Canadian Dam Association (CDA) dam consequence classification (CDA 2014): Extreme.
- Global Industry Standard on Tailings Management dam consequence classification (GTR 2020): Extreme.

Refer to Golder (2023e) and Golder (2019) for more details regarding the dam consequence classifications.

Summary of Significant Changes

The initial operation of the TMF was in-progress during the 2023 AFPR site visit. Commissioning and ramp-up started in Q2 of 2023 and the operation started in Q4 of 2023.

The EoR conducted 4 site visits during the initial operation of the TMF period prior to the 2023 AFPR site visit. The results of these site visits and associated reviews of construction quality assurance (CQA) reports confirm that the TMF has been constructed and operated in general accordance with the design requirements and meets the design intent.

The EoR is currently contributing and preparing the construction records report (CRR) for the initial construction period; this report will be issued under a separate cover. Subsequent CRRs will be prepared to document the development and construction of the TMF over its life cycle; these are expected to be prepared at specific sand dam configurations or key milestones for the TMF during its development.

Significant Changes in Instrumentation or Visual Monitoring Records

No significant changes were noted during the 2023 AFPR for either instrumentation or visual inspection, based on the data that was provided. The geotechnical instrumentation installation was operational during the 2023 AFPR site visit; data baselines are being developed. The instruments that are not operating properly require immediate repair or replacement.

A trigger-action-response plan (TARP) is in-place for the geotechnical instrumentation (Golder 2022b) and all functioning instruments are within the “acceptable” levels.

Quality inspections and assessments will continue throughout the TMF operation. A series of 4 site visits by the EoR were carried out during the initial operation of the TMF before the 2023 AFPR site visit. The quality inspections and EoR site visits confirmed that the design requirements and design intent for the 2023 period were met.

Significant Changes to Stability or Surface Water Control

No significant changes were noted for either stability or surface water control during the 2023 AFPR site visit relative to the 15 previous EoR site visits carried out during the initial construction period and 5 as part of the TMF operation, including the site visit for the 2023 AFPR.

Operation, Maintenance, and Surveillance Manual and Emergency Plans

CMTQB provided the operation, maintenance, and surveillance (OMS) manual for the TMF, Revision 1 dated 20 March 2024, to WSP for review as part of the 2023 AFPR. The emergency preparedness plan and the emergency response plan—the emergency plans— is included in the OMS manual. WSP provided review comments to CMTQB for consideration. In general, WSP considers the OMS manual appropriate for operations.

Global Industry Standard on Tailings Management Documentation

The design basis report (DBR) for the TMF (Golder, 2023e) and the deviance accountability report (DAR) for the TMF (Golder, 2023c) have been prepared by the EoR. These reports will be regularly reviewed and updated, as necessary, by the EoR throughout the life cycle of the TMF.

Schedule for Upcoming Facility Performance Reviews

Teck uses the terms AFPR and periodic facility performance review (PFPR) in lieu of dam safety inspection (DSI) and dam safety review (DSR). The reason for the use of these terms is to clarify that the scope of the reviews is the TMF in totality rather than solely the dam.

The next AFPR for the TMF will occur in late 2024 and will be carried out by the EoR.

The first TMF facility safety review will occur in 2028 as these are required every five years for the TMF as per Per GISTM (2022). This will be the expected fifth year of TMF operation.

Comments and Recommendations

Comments and recommendations developed during the 2023 AFPR are presented in Section 11.0. A priority and recommended deadline/status are provided for each recommendation. The priority 1 and 2 recommendation are enumerated in the following table.

Recommendation No.	Recommended Action	Priority (refer to Table 6)	Recommended Deadline / Status
2023-AFPR-01	Continue efforts on operational improvements and regular reporting to meet sand quality, sand compaction, and sand placement (rate and location). Meeting sand placement location and quality targets is essential to maintain safe fluid containment	2	Q2 2024. Work is in-progress. CMTQB continues the improvements to the construction practices.
2023-AFPR-02	Develop, use, and maintain a single dataset for sand dam construction and TMF development, and develop a plan, track against plan, and reforecast based on actual performance for sand dam construction and TMF development.	2	Q2 2024. Work is in-progress. CMTQB continues the improvements to the construction practices.
2023-AFPR-03	Repair geotechnical instrumentation, VWPs, inclinometers, and SAA	2	Q4 2024. Work is in-progress.
2023-AFPR-04	Implement a workflow to provide the EoR with a complete and accurate set of instrumentation data in a timely manner.	2	Q2 2024.

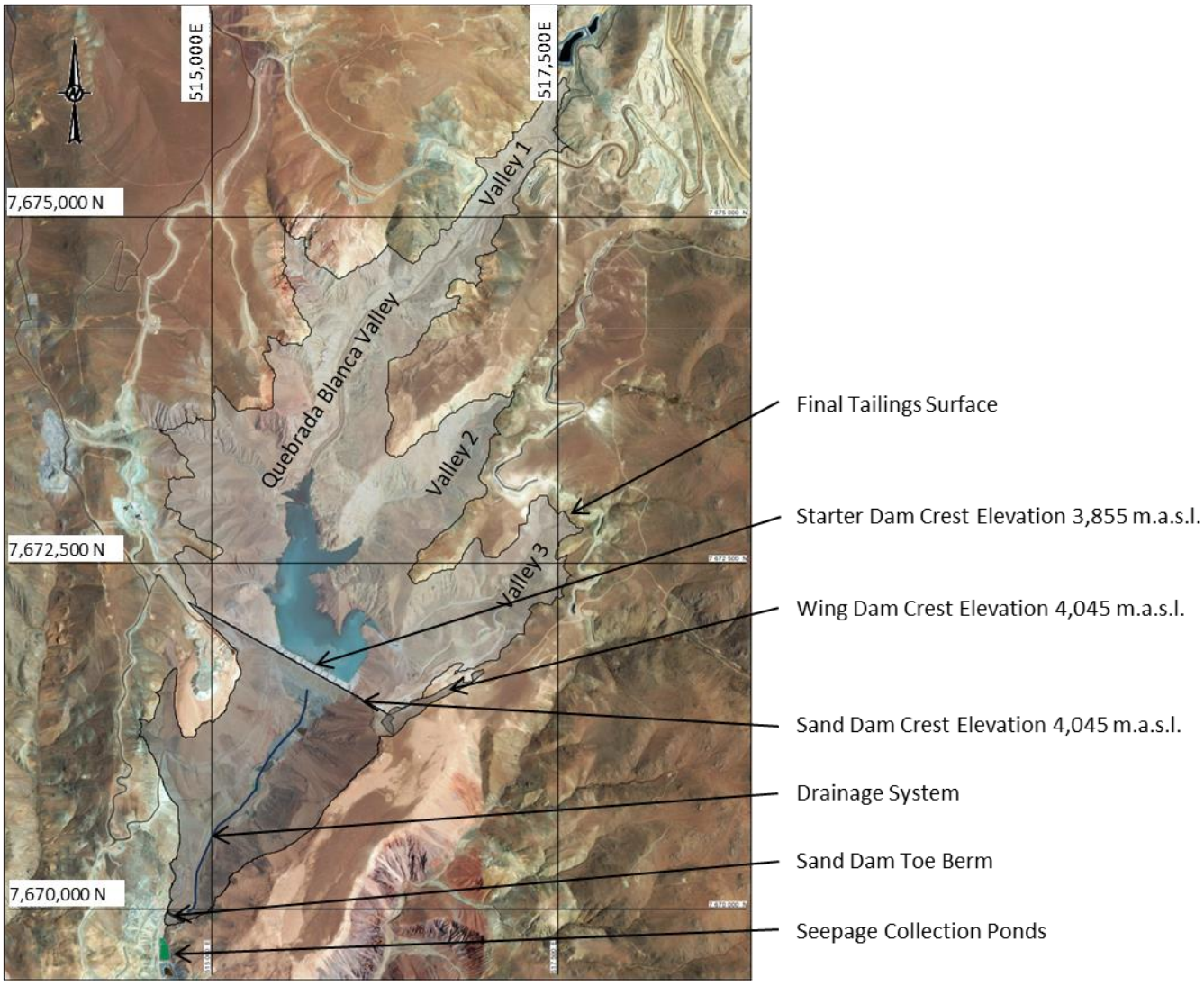
Subsequent AFPR reports will include an assessment of recommendations from previous AFPRs as proper resolution of each recommendation is required.

The priorities for CMTQB Ops, working with the support of WSP, is to implement construction practices that simultaneously address sand quality, sand compaction, and sand placement (rate and location) requirements, including improved water management to prevent sand transport water from the paddocks flowing on slopes and develop, use, and maintain a single dataset for sand dam construction and TMF development, and develop a plan, track against plan, and reforecast based on actual performance for sand dam construction and TMF development.

Table of Contents

TABLES

FIGURES



APPENDICES

APPENDIX A
Selected Photographs from the 2023 AFPR Site Visit

APPENDIX B

Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

APPENDIX C
Crest Settlement Profile as of 23 December 2023

1.0 INTRODUCTION

This report presents the summary of the 2023 annual facility performance review (AFPR), that covers the period from January 1, 2023 to December 31, 2023, for the tailings management facility (TMF) at Quebrada Blanca 2. The 2023 AFPR is the second review for the QB2 TMF. The initial construction of the TMF started in 2019 and was almost complete (QB2 TMF was officially operating) for the TMF at the time of the 2023 AFPR site visit.

The 2023 AFPR site visit was carried out between 28 November and 01 December 2023, inclusive of travel days between site and Iquique, by the engineer of record (EoR), Paul Bedell, and the deputy engineer of record (DEoR), Manuel Troncoso, both of WSP. Key personnel from Teck who participated in the 2023 AFPR site visit were John Pottie, Geotechnical Engineering Manager for TRCL, and Sergio Valdebenito, Responsible Tailings Facility Engineer (RTFE) during operations. The RTFE during the construction period, Giancarlo Zuccone of Teck, was unable to participate in the 2023 AFPR.

This report includes:

- A summary of site conditions observed during the 2023 AFPR and background information.
- Select photographs from the 2023 AFPR site visit (APPENDIX A).
- A review of:
  - Key hazards and credible catastrophic failure modes.
  - Facility consequence classification.
- As part of the 2023 AFPR, the following information was requested from CMTQB but was not provided at the time this report was prepared. The following information was not reviewed as part of the 2023 AFPR:
  - Water balance
    - The average daily pumping rate from the Seepage Collection Pond to the Dilution Tank was provided by Teck, as requested by the EoR.
- Evaluation of safety, failure modes, and statement on dam safety.
- 2022 AFPR recommendation assessment.
- Comments and prioritized recommendations.

Reference to the facility codes of the project is made in this report. The facility codes are listed in Table 1.

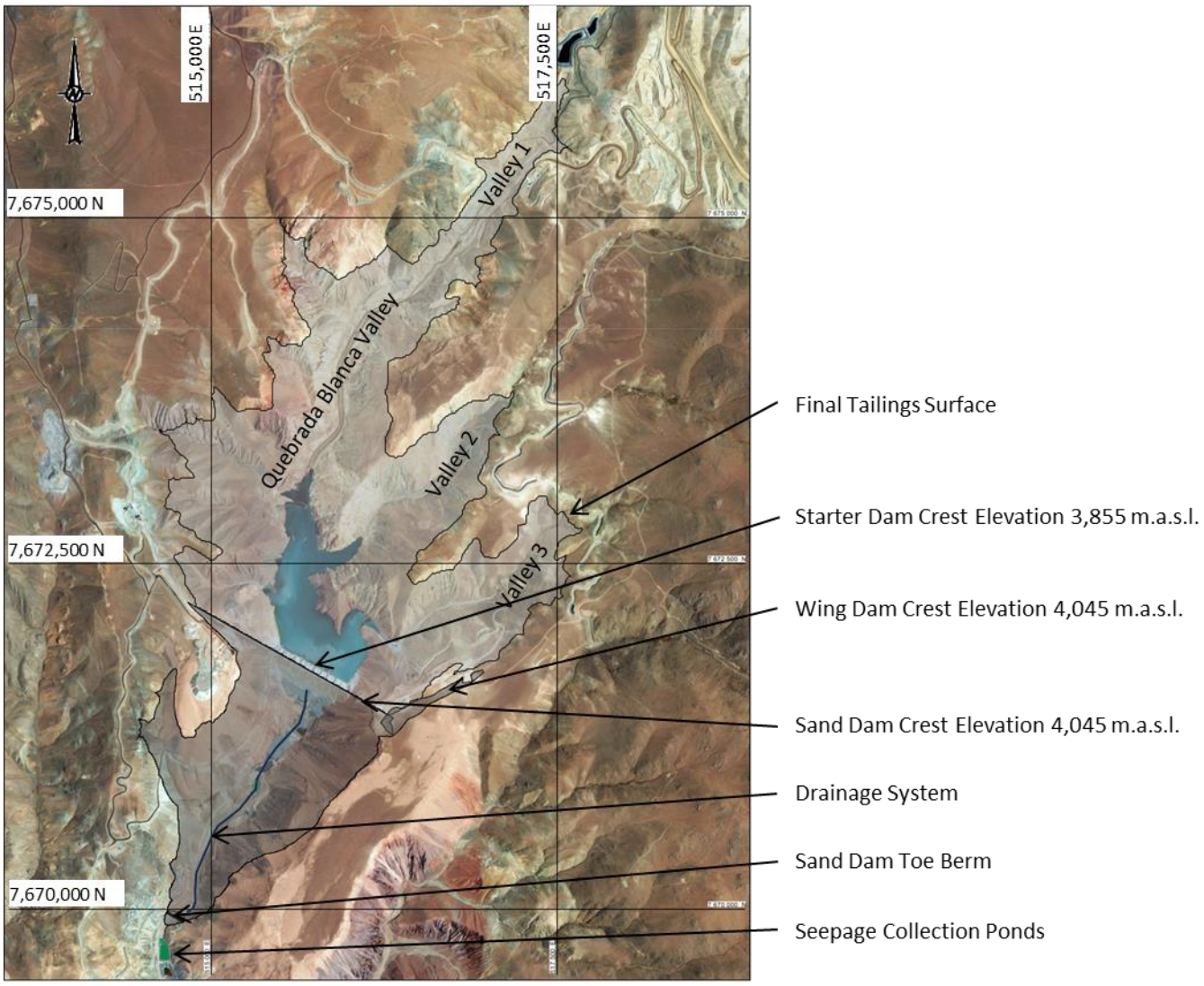
This report was prepared using the guidance provided in the documents listed in Table 2.

This report and its attachments are to be read in full along with the Study Limitations. The Study Limitations follow the text and form an important part of this report.

2.0 QUEBRADA BLANCA 2 TAILINGS MANAGEMENT FACILITY DESCRIPTION

2.1 Site

The QB2 TMF site is in the Quebrada Blanca valley. The site is approximately 7 km from the upstream end of the impoundment to the downstream dam toe, with average grades of 5% to 8% along the valley bottom. The QB2 TMF dam is in the lower portion of the valley, below a confluence of two smaller valleys. The elevation in the valley bottom at the dam centreline is about 3,735 masl (metres above sea level), and the valley walls extend up steeply to plateaus at approximately 4,020 masl. The QB2 TMF area is shown in Figure 1.



NOTE: Satellite Photo from January, 2024

Figure 1: QB2 Tailings Management Facility Final Arrangement (Year 25) (Golder, 2019).

The geology of the proposed sand dam site foundation includes 10 to 20 m of alluvial and colluvial sediments in the valley bottom and 1 to 5 m of colluvium over the valley walls. The main rock types in the foundation are conglomerate and sandstone of the Papajoy Formation, capped by approximately 20 to 50 m of Carcote Formation ignimbrite on the abutment plateaus.

The topography rises to the east, north, and west of the Quebrada Blanca Valley. Groundwater typically mirrors topography, with flow of groundwater and surface water into the proposed TMF area, draining through Valley 1 (the main valley of Quebrada Blanca) to the south. A groundwater table is perched in the alluvial soils above bedrock, near 10 m depth below valley bottom, and 75 m depth below the abutment plateaus.

2.2 QB2 Tailings Management Facility Dam

The QB2 TMF dam will be developed during operations and includes a cofferdam, starter dam, and sand dam with a wing dam constructed of rockfill on the east abutment. The cofferdam and starter dam construction were completed at the time of this report, and the sand dam will be constructed during the QB2 project operation. The wing dam will be required for Year 25 of the mine of life.

The drainage system will be in the valley bottom below the starter dam and the sand dam shells.

The cofferdam was built as the upstream toe of the starter dam. The cofferdam was constructed of rockfill with an upstream slope of 2H:1V with granular filter, transition and lined with linear low-density polyethylene (LLDPE) geomembrane, a downstream slope of 2.H:1V, a crest width of 36 m, and a height of approximately 33 m at elevation 3,768 masl.

The starter dam was constructed of rockfill with upstream and downstream slopes of 1.4H:1V, a crest width of 15 m, and a height of 120 m at crest elevation 3,855 masl. The cofferdam was raised to 3,770 masl to form the upstream toe berm for the starter dam, and a downstream toe berm was constructed to elevation 3,750 masl. The starter dam upstream face above the toe buttress (cofferdam) included an LLDPE geomembrane liner, concrete curb, filter, and transition zones over rockfill.

The cofferdam, starter dam, and sand dam Year 2 drainage system were part of the construction stage.

The sand dam is located across the valley to retain the tailings in the TMF. The dam is constructed using sand recovered from the tailings by the cyclone classification. The project also has a requirement to store additional sand to meet the storage criteria. The additional sand is stored downstream of the dam, which has the benefit of improving its safety by creating a relatively flat overall slope of 4.7H:1V that includes a bench over 500 m wide. Figure 2 shows the final sand dam configuration for the QB2 project.

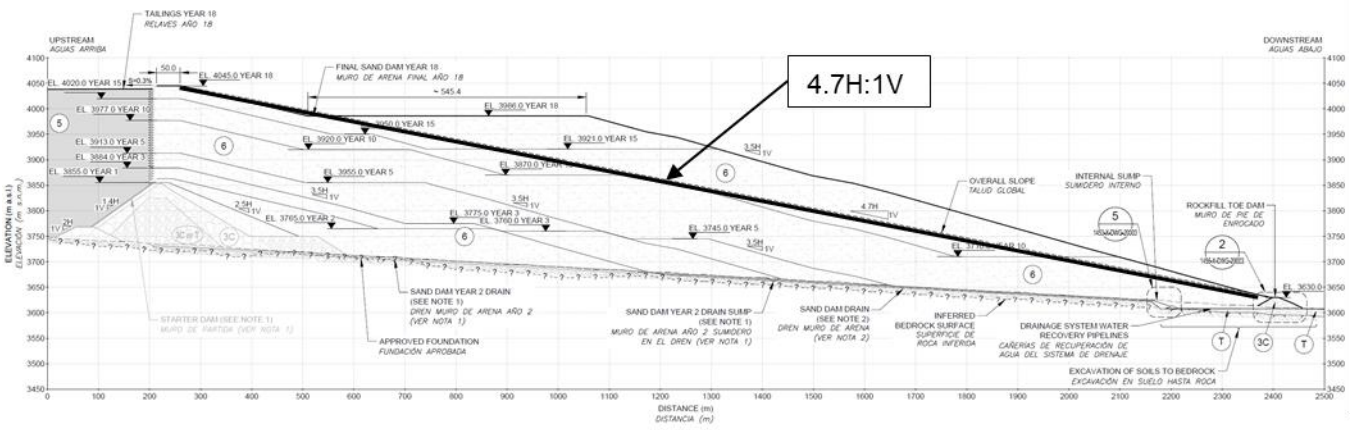


Figure 2: Sand Dam typical Section Year 25 Final Configuration.

3.0 APPROACH AND METHODOLOGY

WSP interacted with CMTQB in its role as design engineer and EoR from July 2020 to the end of 2023 through the following major activities:

- Site visits (19 plus the 2023 AFPR; refer to Table 3 for the complete listing).
- Regularly scheduled monthly meetings (monthly EoR services and TMF development meetings).
- Participation in Geotechnical Review Board (GRB) meetings.
- Participation in as-requested meetings with CMTQB.
- Review of quality assurance activities (these are being provided by WSP).
- Preparing the design basis report (DBR) for the TMF (Golder 2023d).
- Preparing the deviance accountability report (DAR) for the TMF (Golder, 2023c).
- Preparing, alongside Teck, the construction records report (CRR) for the initial construction period of the TMF. This report is in development and has not been issued in final at the time of the preparation of this report.
- Provision of engineering services, as required by Teck.

3.1 Governance

The following governance roles are filled for the TMF, during the period of the AFPR:

- Accountable Executive: Red Conger of Teck Resources Ltd. during most of 2023 and Shezad Bharmal confirmed as AE on December 2023.
- Responsible Tailings Facility Engineer—Construction: Giancarlo Zuccone of Teck.
- Responsible Tailings Facility Engineer—Operations: Sergio Valdebenito of CMTQB.
- Engineer of Record: Paul Bedell of WSP.

- Deputy Engineer of Record: Manuel Troncoso of WSP.

3.2 Information Provided to WSP

The following information was provided to WSP as part of the 2023 AFPR from CMTQB:

- Piezometer data (Vibrating Wire Piezometer (VWP) and Casagrande type piezometer) and water elevations of the reclaim pond.
- Precipitation data.
- The average daily pumping rate from the Seepage Collection Pond to the Dilution Tank.
- Operational and emergency plans documents.

Seismic events in the area were sourced online at *evtdb.csn.uchile.cl*. No data from the site seismograph was available at the date of writing of this report.

The following information was not provided to WSP as part of the 2023 AFPR:

- Water balance.

4.0 BACKGROUND

This section presents an overview of the activities during the initial operational period during 2023 and the status of other activities in relation to the development of the TMF.

4.1 Initial Construction of Tailings Management Facility

The initial construction of the TMF started in 2019 and was nearing to completion in December 2023, missing the sand transport line from the starter dam crest to the sand dam.

During the 2023 AFPR site visit, the TMF was in operation, tailings were being placed in the impoundment, sand was being produced in the cyclone station and placed in paddocks in the sand dam downstream of the starter dam. The civil earthworks had been completed and the majority of the remaining construction works consisted of piping and cabling activities.

Based on the construction quality assurance and EoR services provided by WSP and the construction quality services provided by Ausenco Chile Limitada (Ausenco) from the start of initial construction through the end of 2023, the construction is meeting the requirements and intent of the design.

4.2 Global Industry Standard on Tailings Management Documentation

Key documentation continues to be maintained and developed for the TMF per the requirements of the Global Industry Standard on Tailings Management (GISTM 2020). Three major reports were in development and preparation by the EoR at the time of the 2023 AFPR:

1) Design basis report (DBR). Issued and in final revision. The EoR will regularly review and update, as necessary, this report during the development of the TMF.

2) Deviance accountability report (DAR). Issued and in final revision. The EoR will regularly review and update, as necessary, this report during the development of the TMF.

3) Construction records report (CRR). Under development. The CRR for the initial construction of the TMF will be the first in a series of such reports during the development of the TMF. This report will be co-authored by the RTFE—Construction and the EoR. It is expected to be issued in in the first semester of 2024 following the completion of construction.

These reports assist Teck with its requirement to demonstrate conformance with GISTM. Teck made a declaration and disclosure on conformance with the GISTM for QB2 TMF in July 2023[1].

4.3 Key Hazards of Tailings Management Facility

Rockfall and slope stability pose hazards to the safety of the workers and equipment; these hazards will be present throughout the life of the tailings management facility development and continued assessments and mitigation will be required. Periods of high precipitation, such as *invierno bolivano*, may increase this likelihood. CMTQB has a rockfall hazard management plan to consider all the immediate-, short, and long-term perspectives in combination to develop the necessary hazard management approaches. CMTQB has held training sessions for this plan with all stakeholders and contractors associated with the TMF during the initial construction period.

CMTQB has assumed responsibility for the implementation and ongoing development of the rockfall hazard management plan throughout the operation.

Teck has a credible catastrophic failure mode (CCFM) assessment methodology that is based on the guidance provided by the Global Industry Standard on Tailings Management (GISTM). Catastrophic failure is defined as an uncontrolled loss of contents that has intolerable downstream impacts. Intolerable downstream impacts comprise: population-at-risk with life safety impacts, prioritizing human fatalities; significant and lasting environmental impacts; significant and lasting social impacts; and significant business interruption. To avoid catastrophic failure, it is required that CCFMs are either eliminated or properly managed. A potential CCFM that is determined to be credible is actioned to reduce its likelihood of occurrence to as low as reasonably practicable (ALARP) and to mitigate potential impacts to acceptable levels.

The three potential failure modes that could result in catastrophic failure are:

1) Instability: Of the dam or its foundation.

2) Overtopping: Of the dam.

3) Internal Erosion: Within the dam fill materials.

Each potential CCFM is assessed independently. Various triggering hazards and mechanisms are evaluated for each potential CCFM. Failure processes are also described for each potential CCFM.

Teck carried out a CCFMs assessment for the development period from Year 0 to Year 5 for the TMF. The assessment was carried out in August and September 2022 involving key personnel from Teck and Golder, including the responsible tailings facility engineer (RTFE) for operations from Teck and the engineer of record (EoR) from Golder. The EoR agrees with the determination and endorses the outcome of the 2022 CCFM assessment that there are no CCFMs for the TMF in the period from Year 0 to Year 5 (Golder 2023e). The CCFM assessment completed in 2022 remains valid for the 2023 period.

[1] https://www.teck.com/media/Tailings-Storage-Facility-Disclosure-QB-TMF_Final.pdf

4.4 Start of Operation of Tailings Management Facility

During TMF operations, it is important to ensure that the sand produced and placed meets the mass balance and dam raising schedule requirements, while also providing the minimum required freeboard and beach length. Careful planning, tracking, and forecasting are crucial for sand production and raising throughout the TMF's lifetime.

In April 2023, CMTQB initiated the operation of the TMF by placing tailings in the impoundment. By September 2023, sand placement started in the paddocks downstream of the sand dam. At the time of the inspection for the AFPR in November 2023, the tailings distribution system was fully operational, enabling tailings to be placed from either the dam or Valley 3, and the temporal sand distribution system was operational, placing sand in all paddocks downstream of the sand dam.

During the initial months of cyclone station operation and sand placement, the construction of the paddock was faced with two main challenges: insufficient drainage and limited area for sand placement. The inadequate drainage was potentially caused by a low permeability layer created by the protective layer of the drainage system, which is believed to be related to fines content or over-compaction, of the protective layer, from heavy equipment traffic. The low permeability layer has presented challenges in the dewatering and sand placement process. Additionally, the limited space for proper flow into the basal drain has impacted the ability to place sand effectively. To address these issues, CMTQB is currently developing plans to enhance sand drainage and placement rates, while ensuring that all sand quality, compaction, placement rate, and location requirements are met.

To ensure that the deposited materials, including the PMF allowance, do not reach the starter dam crest before the sand dam construction is complete and ready for raising, it is important, for CMTQB, to carefully monitor the mass balance of the TMF both upstream and downstream. Therefore, it is crucial to maintain a balance and ensure that the sand is placed in the dam as intended. A potential construction shortfall in the wedge can cause a vertical deficit that affects the sand dam freeboard. Any sand that is deposited into the TMF instead of being placed in the dam will increase the rate of filling of the TMF while delaying the dam raising. This may pose a challenge to achieving the mass balance of the TMF and maintaining freeboard, particularly during the initial stages of the mine's operation.

4.5 Consequence Classification

Teck aims to eliminate any CCFM using the ALARP principle rather than adopting a classification system that has levels of potential human life. This approach meets or exceeds regulatory requirements and aligns with Teck’s goal to eliminate any potential of loss of life, which is consistent with recognized industry good practice (e.g., GISTM).

The consequence classifications that follow are provided solely for consistency with previous work and for satisfying regulatory requirements. The consequence classifications for the TMF are:

- Chilean dam classification (DGA 2015): Category C.
- Canadian Dam Association (CDA) dam consequence classification (CDA 2014): Extreme.
- Global Industry Standard on Tailings Management dam consequence classification (GTR 2020): Extreme.

Refer to Golder (2023e) and Golder (2019) for more details regarding the dam consequence classifications.

4.6 Precipitation

The monthly precipitation data collected by Teck on-site for the 2019 to 2023 period are shown in Figure 3 along with the average monthly values from Golder (2023d). The monthly precipitation values shown in the graphic correspond to the average values.

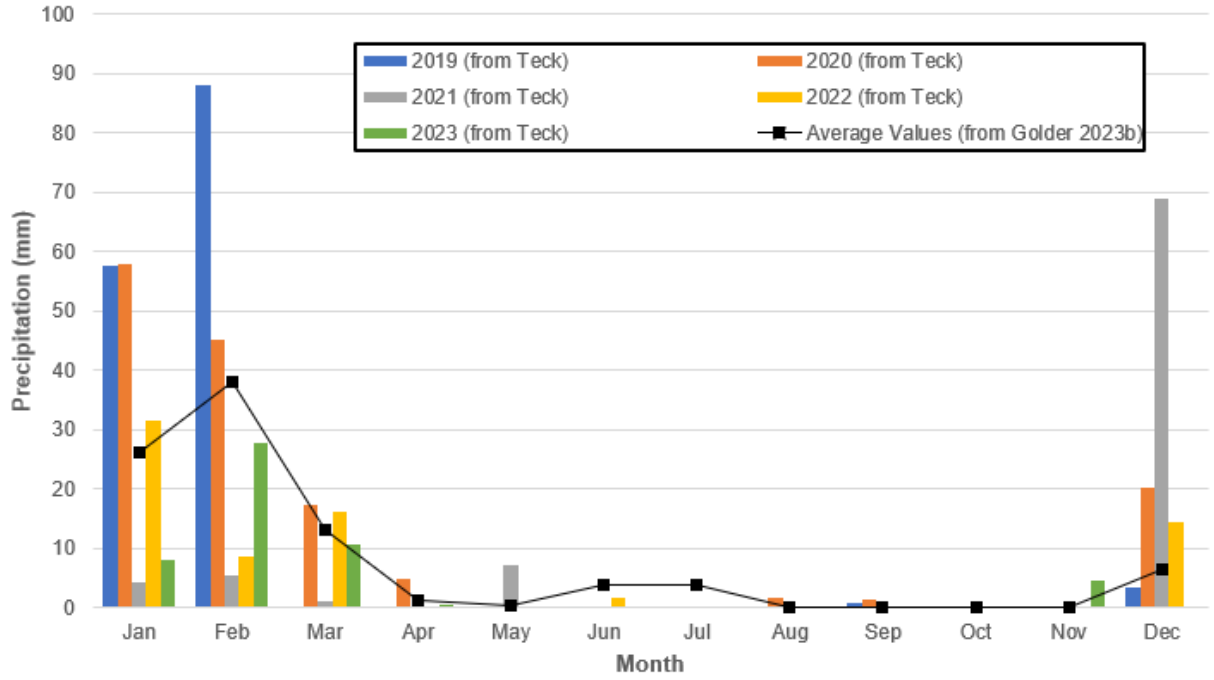


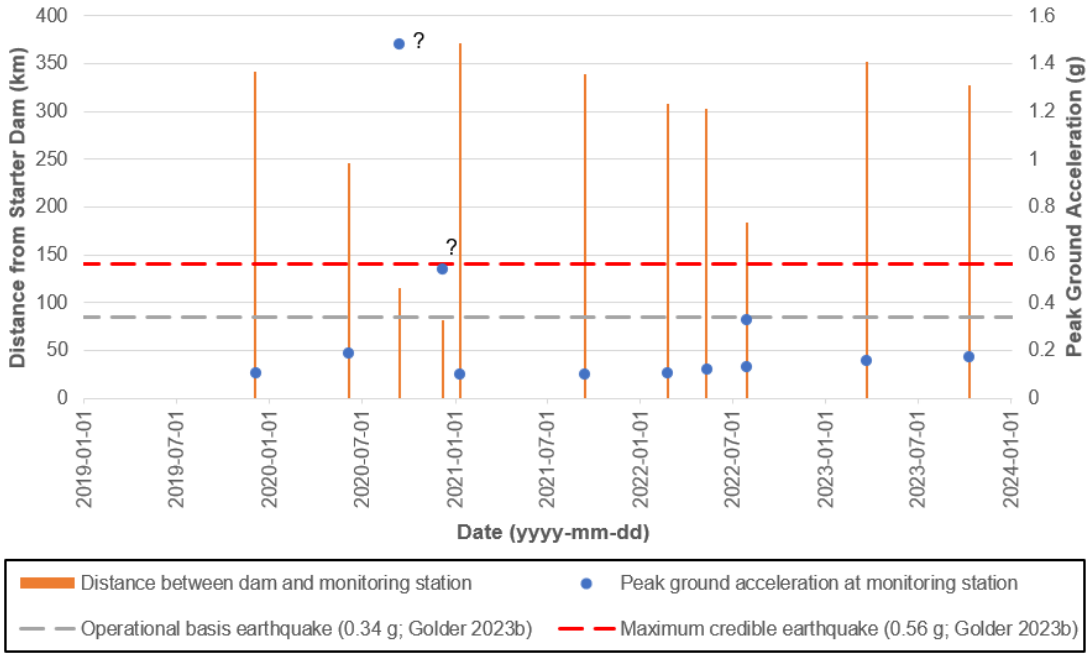
Figure 3: Monthly Precipitation for 2019 to 2023 with Average Values.

4.7 Seismicity

A seismograph was installed above the west abutment of the starter dam in early 2023 and an on-crest seismograph will be installed as part of the initial construction. These instruments will be part of the geotechnical monitoring program of the TMF and will provide more meaningful seismic data in the future. No Seismic event data clearly Registered from the seismographs installed on site.

Seismic events in the area were sourced online at *evtdb.csn.uchile.cl*. Seismic events of Magnitude 6.0 (M≤6.0) were assessed to determine ground accelerations in consideration of the operational basis earthquake (OBE) ground acceleration of 0.34 g and the maximum credible earthquake (MCE) ground acceleration of 0.56 g used for the TMF design.

Figure 4 shows the ground accelerations for these events, and their distance from the sand dam, along with the OBE and MCE ground accelerations. The two higher ground accelerations reported in late 2020 are questioned as no effects were reported at site.



NOTES:

a) Data presented form the figure from Centro Sismologico Nacional Universidad de Chile (*evtdb.csn.uchile.cl*)

b) No data from the seismographs installed on site were available at the time of preparation of this report.

Figure 4: Ground Accelerations near Starter Dam for Period 2019 to 2023.

5.0 ANNUAL FACILITY PERFORMANCE REVIEW SITE VISIT SUMMARY

This section provides a summary of the conditions observed during the 2023 AFPR site visit, from November 28 to December 1, 2023, at each facility. Select photographs are included in Appendix A; references to specific plates are made.

5.1 Starter Dam (1452)

- Stater dam performing as expected.
- No evidence of instability on the upstream slope, crest, downstream slope, or buttress.
- Damage to liner (east and west ends of dam) to be repaired (Plate 9).
- Sand lines: construction nearing completion.
- CMTQB advancing repairs to VWPs, inclinometers, and SAA.
- Seismograph installed on crest.
- Downcomers on upstream slope functioning well.

5.2 Sand Dam (1465)

- Sand placement continues in paddocks.
- Drainage improved in Paddocks 2, 3, and 4 to acceptable rates that will allow the rate of placement of sand to be increased and maintained at the design rate (paddock elevation rate of 10 meters per month).
- Paddock 1 drainage and development is key focus.
- Construction practices continue to be improved such that concurrent requirements of quality sand, sand compaction, and sand placement (rate and location) are always satisfied. Expansion of sand footprint for placement aids in this.
- CMTQB to arrange for extension of IN-02.
- Use of portable pumps will assist with management of sand transport water.
- Seepage reporting to Paddock 1 from starter dam is decreasing. Use of sumps and pumps immediately adjacent to starter dam downstream slope will improve water management (Plate 19).
- Sand placement deficit in sand dam being quantified by CMTQB with assistance from EoR.

5.3 Reclaim Pond (1424)

- Position 2 of the barge pumps was being brought into operation, while position 1 was in the process of being decommissioned. (Plate 5).
- Pond size and location as expected covering all the area of tailings deposition.
- Pond maximum volume measured during the period of 2023 lower than the maximum pond volume defined in the design criteria (1.5 M m^3) (Golder, 2023d).
- Pond depth reportedly sufficient for water reclaim process from barges.

- Water quality reportedly good for reclaim and dilution.
- Floating pipelines are scheduled to be removed by CMTQB (Plate 5).

5.4 Dam Drainage System (1453)

- The system is performing as expected, no evidence of sink holes, blockage, or turbidity in the seepage water.
- Year 2 sump:
  - Recent erosion damage on east and north slopes due to routing of sand transport water from paddocks to sump. CMTQB to improve water management to avoid water flowing on slopes. Monitoring and repair programs described in WSP (2023) will also need to be applied to this erosion damage (Plate 14).
  - No observable degradation of erosion damage noted in the 2022 AFPR (slopes above sump on west side). WSP (2023) prepared a technical memorandum regarding monitoring and repair programs. CMTQB to implement programs and include in the OMS manual and notify EoR of same (Plate 15).
  - WSP suggests construction of an earthfill berm or barrier on the superior edge to restrict access from the downstream area.
  - WSP suggests that life ring stations (3 or 4) be installed at strategic locations around the sump. Steep slopes make egress very difficult to impossible should someone fall into the sump.

5.5 Seepage Collection Ponds (1461) and Surrounds

- Localized floating of upper liner in Seepage Collection Pond 2 likely due to concentrations of air in leak detection system (Plate 22).
- Repair of upper liner in Seepage Collection Pond 2 required (Plate 23).
- WSP suggests that life rings in Seepage Collection Pond 2 be relocated to the inside of the cable trays. These are currently installed on the perimeter fencing—their use would require navigating around/under cable trays to retrieve and then to re-access the pond crest for use (Plate 24).
- Repeated suggestion: CMTQB to install Jersey barriers to protect pumps/critical infrastructure from potential vehicle damage. Note that some Jersey barriers have been installed following the 2022 AFPR suggestion.Corrosion was observed in the impellers of the pumps and in some portions of pipes in the seepege station.

5.6 Tailings Management Facility Contour Channel (1422)

- No items of concern noted.

5.7 Mine East Channel (0181)

- No items of concern noted.

5.8 Cyclone Station (1441)

- Cyclone station is performing as expected. The quality of the sand produced by the cyclone station is meets the maximum fines content defined in the design criteria (Golder, 2023d).

- Repairs to the first of the two overflow pipelines completed. These are being undertaken in consultation with Weir to allow the required number of cyclones to operate properly.
  - Hydraulic capacity of the cyclone cluster overflow tank and outlet pipe were not sufficient for the flow, and the discharge pipes were constructed with a shallower slope than the design.
  - WSP supports lowering of pipelines; however, does not believe that this will fully resolve the issue (given concerns with overflow tub within cyclone battery).
- Modification completed to tailings box inlet. Modification comprises energy dissipater at downstream end of launder—flow cross-section widened and shallowed. Outlet grate also installed (Plate 29).
  - The previously installed grate in the launder caused in flow backup and overflow of the launder. WSP suggests that the grate be removed.

5.9 Terminal Station (1480)

- The slope has performed well in 2023, with no evidence of change since the 2022 AFRP site visit.
- Drape mesh installed following 2022 AFPR.
  - Two hanging/loose blocks remain as-observed during the 2022 AFPR; bolting continues to be suggested to protect launder from rockfall hazard. WSP has issued a document outlining the drape mesh and bolting requirements (Plate 31).

5.10 Booster Station No. 1 and No. 2 and Permanent Booster Station (1480)

- Cut slopes at Booster Stations 1 and 2 and Permanent Pump Station observed to be performing well.
- Erosion damage on downhill slope of road fill opposite Permanent Pump Station observed—resulted from surface water flows. Repairs required to avoid worsening of damage (Plate 34).

5.11 Roads and Platforms – Cut slopes

- Visual inspection of all soil and rock cut slopes carried out during inspection of the above areas show that the cut slopes are performing well and as expected. Minimal ravelling noted on new cut slopes; likely as a result of precipitation events.
- Mesh and bolting requirements to be satisfied for Terminal Station cut slope.
- Suggested that Geotechnical Department carry out regularly programmed and event-triggered (i.e., large precipitation, large seismic) inspections for key infrastructure. Results of these inspections to be shared with the EoR.
  - Booster Stations 1 and 2.
  - Permanent Booster Pump Station (platform and adjacent road).
  - Cyclone Station.
  - Terminal Station.

- Seepage Collection e-room.

6.0 REVIEW OF GEOTECHNICAL MONITORING DATA

The following geotechnical instrumentation is installed and is collecting baseline data:

- Vibrating wire piezometers.
- Inclinometers.
- Casagrande-style piezometers.
- The on-crest seismograph
- Slope monitoring points on the starter dam downstream shell.

6.1 Piezometric Monitoring

For the 2023 period, only data from the vibrating wire piezometers and Casagrande style piezometers were available for review. Monitoring results as of 31 December 2023 are presented in APPENDIX B.

The data form the piezometric monitoring shows that:

- Several piezometers responding to reclaim pond level increase (delayed response).
  - Higher levels measured in bedrock (observed prior to reclaim pond filling).
- Dam is draining.
- Dam drain is saturating.
- Dam downstream buttress is saturating.
- No items of concern identified. Behaviour is as-expected.
  - For all piezometers, and nothing exceeded threshold levels.

As of December 31, 2023, the following VWPs were unable to provide readings at all: VWP-03, 09, 18, 19, 29, 32, 36, 38, 39, and 40 and the Casagrande type piezometer CG-2. CMTQB is working to repair or replace the instruments to have a complete data set.

6.2 Crest Settlement

The crest settlement measurement profile, as of 23 December 2023, shows that:

- Maximum settlement: ~1.5 m (as of 23Dec2023).
  - 1.3% of the height of the starter dam.
- Settlement due to wetting of rockfill and dam foundation.
  - Piezometric responses to pond raising (upstream of dam, dam centreline, dam drain) started in early Jul2023.

- Smooth settlement profile (APPENDIX C).
- Response (profile shape and magnitude) is within design expectation.
- Rate of settlement being monitored.
  - End of Apr2023: Crest at El. 3,855 m.
  - Early Sep2023: Maximum settlement of ~1.2 m (1.0% of the height of the starter dam).
  - Early Oct2023: Maximum settlement of ~1.3 m (1.1% of the height of the starter dam).
  - Mid Nov2023: Maximum settlement of ~1.5 m (1.3% of the height of the starter dam).
  - Late Dec2023: Maximum settlement of ~1.5 m (1.3% of the height of the starter dam).
- Pipelines being monitored. Shimming to be carried out if/when necessary.

Crest settlement in the starter dam is within design expectations and does not represent a stability concern. Design mitigation measures were included in the design, a 1.5 m wide filter zone build with non cohesive material.

7.0 REVIEW OF SEEPAGE COLLECTION PUMPING SYSTEM

The average pumping system flow from the Seepage Collection Ponds to the Dilution Tank collected by Teck on-site for the 2023 period are shown in Figure 5 along with the design flow values from Golder (2023d) and the increasing trend in the pumping flows.

Figure 5 shows that the average pumping flows are lower than the design flow, but there is an increasing trend exists in pumping flow. The main contributor to the flow from the dam reporting to the Seepage Collection Ponds is the sand transport water. The average sand placement rate has been constant (the flow depends on the sand placement rate and not the placement area), which could mean that the increase in flow could be from seepage water.

It is recommended to monitor the pumping rate and evaluate if the pumping rate continue to increase. If the flow continues to increase and may exceed the design flow, a solution should be planned in advance so as not to interrupt the pumping and the continued supply of seepage water to the cyclone sand process and to maintain with the minimum freeboard criteria in the Seepage Collection Ponds.

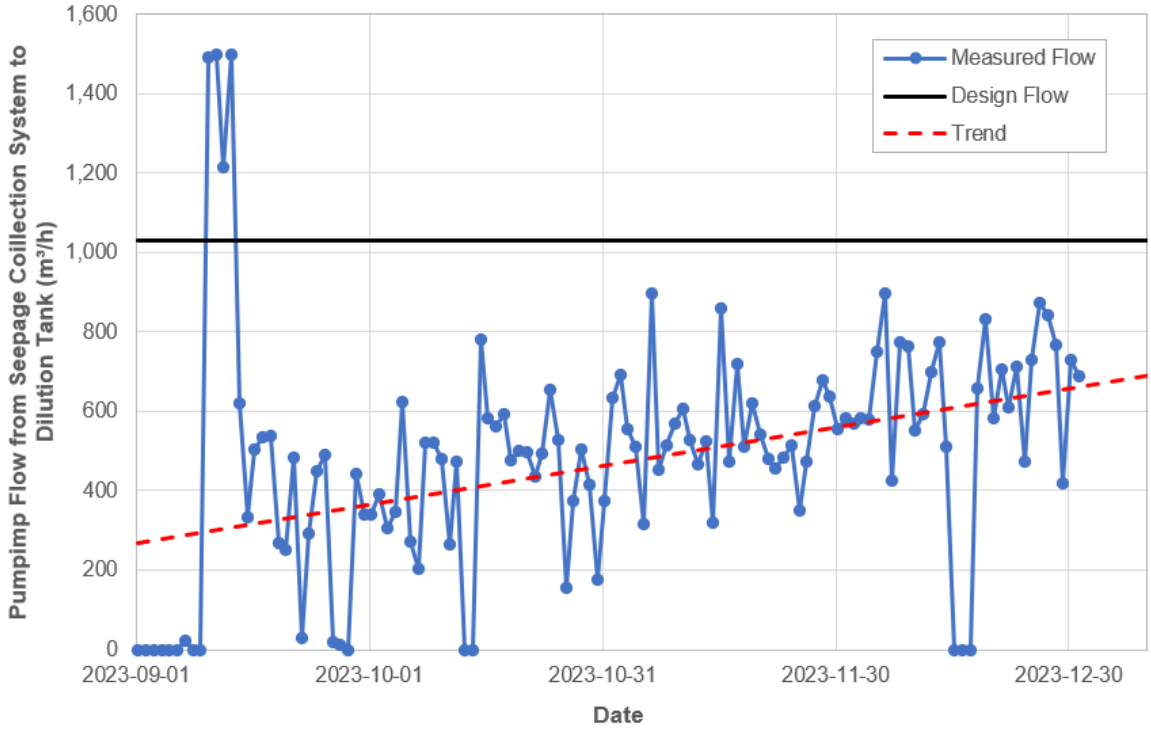


Figure 5: Daily Pumping Flow from the Seepage Collection System to the Dilution Tank in the Cyclone Station for 2023.

8.0 REVIEW OF OPERATION, MAINTENANCE, AND SURVEILLANCE MANUAL AND EMERGENCY PLANS

CMTQB provided the operation, maintenance, and surveillance (OMS) manual for the TMF, Revision 1 dated 20 March 2024, to WSP for review as part of the 2023 AFPR. The emergency preparedness plan and the emergency response plan—the emergency plans— is included in the OMS manual. WSP provided review comments to CMTQB for consideration. In general, WSP considers the OMS manual appropriate for operations.

9.0 SCHEDULE FOR UPCOMING FACILITY PERFORMANCE REVIEWS

Teck uses the terms AFPR and periodic facility performance review (PFPR) in lieu of dam safety inspection (DSI) and dam safety review (DSR). The reason for the use of these terms is to clarify that the scope of the reviews is the TMF in totality rather than solely the dam.

The next AFPR for the TMF will occur in late 2024 and will be carried out by the EoR.

Teck is determining the date of the first PFPR. Per GISTM (2022), these are required every five years for facilities such as the TMF; therefore, it is expected that the first PFPR will occur in 2028 as this will be the expected fifth year of TMF operation.

10.0 2022 AFPR RECOMMENDATIONS ASSESSMENT

Table 4 presents an overview of the recommendations conducted on the 2022 AFPR. CMTQB reviewed all the recommendations and categorized them as either closed or in process. Table 4 presents the EoR assessment of the 2022 AFPR recommendations. It is worth noting that no dam safety concerns were identified during this evaluation of the recommendations that have not been closed. This means that the recommendations have been assessed and are being implemented or actively worked on without any significant risks to dam safety.

11.0 COMMENTS AND RECOMMENDATIONS

This section provides the summary of comments and recommendations discussed in the above sections.

11.1 General Comments

- No items of concerns identified for facility safety, as a result of the inspection and the review of the performance data.
- Facility is performing and is being operated per the design.
  - CMTQB and WSP continuing to progress toward meeting the concurrent requirements for sand quality, sand compaction, and sand placement (rate and location) throughout the sand dam.
  - CMTQB expect to achieve these concurrent requirements by end of 2023.
  - CMTQB to develop, use, and maintain a single dataset for sand dam construction and TMF development.
  - CMTQB to develop plan, track against plan, and reforecast based on actual performance for sand dam construction and TMF development. Mitigation measures for sand dam construction shall be part of the plan. These activities are to include the EoR.
  - Facility mass balance and volumetrics are being assessed by CMTQB with assistance from EoR.
  - Sand placement deficit in sand dam being quantified by CMTQB with assistance from EoR.
  - CMTQB continuing to develop complete and reliable dataset for geotechnical instrumentation monitoring program (including completing repairs). EoR assisting and reviewing results.
- Dewatering of seepage cutoff is in-progress.
  - CMTQB carrying out assessment of water source.
  - CMTQB reviewing CH2 pumping practices and effects.
  - Results of assessments to be presented to EoR.

11.2 Recommendations

The summary of recommendations from the 2023 AFPR is presented in Table 5. The priority and recommended deadline/status are provided for each recommendation. The priorities descriptions are described in Table 6. Subsequent AFPR reports will include an assessment of recommendations from previous AFPRs as proper resolution of each recommendation is required.

12.0 CLOSING

We trust that this report satisfies your current requirements. Please contact the undersigned should you have any questions.

WSP S.A.

Digitally signed by manuel.troncoso@wsp.com
DN: cn=manuel.troncoso@wsp.com
Reason: I am approving this document
Date: 2024.09.25 09:31:36 -03'00'

Manuel Troncoso
Engineer of Record

FG/SW_MT/fg

https://wsponlinenam.sharepoint.com/sites/cl-cmq0010/shared documents/general/10_entregables/10.4_documentos/8013-tsc-099-re-1400-c-00133/rev. 3/8013-tsc-099-re-1400-c-00133_3.docx

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REFERENCES

Canadian Dam Association (CDA). 2014. Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams.

Golder Associates Ltd. 2019. Tailings Management Facility Dam Detail Design, Quebrada Blanca Phase 2. Report No. 8013-TSA-016-RE-1450-G-505 Rev. 0 submitted to Golder Associates S.A., dated 02 October 2019.

Golder Associates S.A. (Golder). 2022. 2022 Annual Facility Performance Review Summary Report - Tailings Management Facility, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-099-RE-1400-C-00126 Rev. 1 submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 04 April 2022.

Golder. 2022b. Dam Trigger Action Response Plan, Tailings Management Facility, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-099-RE-1456-C-00101 Rev. 0 06Apr2022 submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 06 April 2022.

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Golder. 2023b. Deviance Accountability Report - Tailings Management Facility, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-099-RE-1400-C-00129 Rev. 0 submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 26 October 2023.

Golder. 2023c. July 2023 Engineer of Record (EOR) Site Visit Summary, Tailings Management Facility, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-099-RE-1400-C-00131 Rev. B submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 03 November 2023.

Golder. 2023d. Design Basis Report - Tailings Management Facility, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-099-RE-1400-C-00124 Rev. C submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 21 December 2023.

Golder. 2023e. Engineer of Record Comments and Endorsement: 2022 Credible Catastrophic Failure Modes Assessment for Years 0 to 5, Tailings Management Facility. Technical Memorandum No. 8013-TSC-099-RE-1400-C-00122 Rev. 0 submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 12 January 2023.

WSP. 2023. Year 2 Sump Erosion Damage: Monitoring and Repair Plans, Tailings Management Facitiliy, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-099-RE-1453-C-00103 Rev. 0 submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 20 December 2023.

Table 1: Facility Codes, 2023 AFPR Report, Tailings Management Facility, QB2

Facility Code Number	Facility Description
0181	Mine East Ditch
1420	TMF Site Development
1421	Roads - internal TMF
1422	Diversion channel
1423	Roads - external TMF
1424	Cofferdam
1425	Construction water pond
1426	TMF borrow sources
1430	TMF Ancillary Facilities
1431	General
1432	Offices and buildings
1433	Utilities
1435	Mobile equipment
1440	Tailings Management
1441	Cyclone station
1442	Tailing distribution pipelines and corridors (sand and slimes)
1450	Tailings Impoundment
1451	Foundation excavation
1452	Starter dam
1453	Drainage system to seepage pond
1455	Geotechnical instrumentation
1456	Sand dam
1457	Wing wall - east
1459	Closure works
1460	TMF Seepage Control
1461	Seepage pond
1462	Seepage pond water recovery pumping station
1463	Seepage pond water recovery pipeline and corridor
1465	Seepage cut-off system
1466	Seepage cut-off water recovery pumping station
1467	Seepage cut-off water recovery pipeline and corridor
1468	East non-contact water ditch
1474	Recovered water distribution tank
1480	TMF Quebrada 2 Water Recovery
1481	Quebrada 2, water recovery system pond
1482	Quebrada 2, water recovery system pumping station
1483	Quebrada 2, water recovery system pipelines and corridor
1490	TMF Power Supply
1491	TMF Main Substation
1496	TMF HV transmission system 23 kV
1630	Tailings Transport System
1632	Tailings Transport System—Launder
1644	Dilution Water System Terminal Station

Table 2: Guidelines Use in This Report, 2023 AFPR, Tailings Management Facility, QB2

Guidelines
Global Industry Standard on Tailings Management (GISTM, August 2020).
Decreto Supremo No. 248 Reglamento Para la Aprobación de Proyectos de Diseño, Construcción, Operación y Cierre de Los Depósitos de Relaves (Ministerio de Minería, 2006).
Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams (Canadian Dam Association (CDA), 2014).
Tailings Management Good Practice Guide (International Council on Mining & Metals (ICMM), May 2021).
Conformance Protocols for the Global Industry Standard on Tailings Management (ICMM, May 2021).
Guideline for Tailings and Water Retaining Structures (Teck Resources Ltd., January 2019).
Tailings Governance at Teck (Teck Resources Ltd., March 2019).
A Guide to the Management of Tailings Facilities, Version 3.2 (Mining Association of Canada (MAC) March 2021).
Health, Safety and Reclamation Code for Mines in British Columbia (Ministry of Energy, Mines and Low Carbon Innovation, November 2022).
Guidance Document: Health, Safety and Reclamation Code for Mines in British Columbia, Version 1.0 (Ministry of Energy and Mines, July 2016).

Table 3: List of 2020 to 2023 Engineer Site Visits by Golder/WSP

Site Visits		Site Visit Dates (inclusive of travel between site & Iquique)	Carried Out By (role fulfilled)	Reference
No.	Title			
1	September 2020	01Sep and 02Sep2020	Adam Darby (DEoR)	8013-TSC-099-RE-1400-C-00101
2	October 2020	20Oct to 23Oct2020	Adam Darby (DEoR)	8013-TSC-099- RE-1400-C-00104
3	December 2020	21Dec to 23Dec2020	Adam Darby (DEoR)	8013-TSC-099-RE-1400-C-00105
4	January-February 2021	16Jan to 18Jan and 21Jan to 01Feb2021	Paul Bedell (EoR)	8013-TSC-099- RE-1400-C-00107
5	March-April 2021	23Mar to 02Apr2021	Paul Bedell (EoR)	8013-TSC-099-RE-1400-C-00111
6 & 7	April and May 2021	20Apr to 22Apr and 24May to 25May2021	Adam Darby (DEoR)	8013-TSC-099- RE-1400-C-00113
8	September 2021	01Sep to 03Sep2021	Adam Darby (DEoR)	8013-TSC-099-RE-1400-C-00114
9	October-November 2021	26Oct to 05Nov2021	Paul Bedell (EoR)	8013-TSC-099-RE-1400-C-00115
10	January 2022	11Jan to 23Jan2022	Paul Bedell (EoR) Pablo Galdeano (DEoR)	8013-TSC-099-RE-1400-C-00117
11	February-March 2022	28Feb to 04Mar2022	Pablo Galdeano (DEoR)	8013-TSC-099-RE-1400-C-00118
12	May 2022	04May to 11May2022	Paul Bedell (EoR) Pablo Galdeano (DEoR) Mark Rizzuto	8013-TSC-099-RE-1400-C-00120
13	July 2022	05Jul to 08Jul2022	Pablo Galdeano (DEoR)	8013-TSC-099-RE-1400-C-00121
14	September 2022	14Sep to 23Sep2022	Paul Bedell (EoR)	8013-TSC-099-RE-1400-C-00123
15	2022 AFPR	05Dec to 08Dec2022	Paul Bedell (EoR) Manuel Troncoso (DEoR)	8013-TSC-099-RE-1400-C-00126
16	March 2023	15Mar to 21Mar2023	Paul Bedell (EoR) Manuel Troncoso (DEoR)	8013-TSC-099-RE-1400-C-00128
17	May 2023	29May to 02Jun2023	Manuel Troncoso (DEoR)	--

Site Visits		Site Visit Dates (inclusive of travel between site & Iquique)	Carried Out By (role fulfilled)	Reference
No.	Title			
18	July 2023	24Jul to 31Jul2023	Paul Bedell (EoR) Manuel Troncoso (DEoR)	8013-TSC-099-RE-1400-C-00131
19	October 2023	10Oct to 13Oct2023	Manuel Troncoso (DEoR)	--
20	2023 AFPR	28Nov to 01Dec2023	Paul Bedell (EoR) Manuel Troncoso (DEoR)	This document

Table 4: List of 2022 AFPR Recommendations

Recommendation No.	Recommended Action	EoR assessment about the 2022 AFRP recommendations Deadline / Status
2022-AFPR-01	Complete the detailed design of the Phase I sand dam. CMTQB and Golder continue to develop the scope of work; however, this design is required before the production of sand.	Satisfied.
2022-AFPR-02	Develop monitoring and repair plans for sloughed area on east side of Year 2 sump. Repairs to be carried out based on results of monitoring.	1. WSP (2023) issued monitoring and repair plan: 2. CMTQB to include monitoring and repair plan in OMS manual (and confirm same to EoR).
2022-AFPR-03	Develop fill slope and nearby infrastructure monitoring program for cyclone station. Survey prisms to be installed and monitoring carried out. EoR to develop plan.	1. CMTQB to reinstate regular monitoring (prisms installed and previously monitored). 2. CMTQB to provide monitoring results to EoR.
2022-AFPR-04	Procure drape mesh required for cyclone station slopes. Installation of drape mesh to be carried out should performance of slopes warrant (to-date, no need for installation).	1. CMTQB to procure drape mesh in 2024. Date to be provided to EoR. 2. CMTQB to confirm delivery of mesh to EoR upon delivery to site
2022-AFPR-05	Develop the date for the first PFPR. GISTM (2020) requires a PFPR every 5 years; 2028 is suggested as this corresponds to the fifth year of operation.	PFPR will be carried out in 2028. Recommendation Satisfied.
2022-AFPR-06	EoR to carry-out the 2022 AFPR.	Satisfied.

Table 5: List of 2023 AFPR Recommendations

Recommendation No.	Recommended Action	Priority (refer to Table 6)	Recommended Deadline / Status
2023-AFPR-01	Continue efforts on operational improvements and regular reporting to meet sand quality, sand compaction, and sand placement (rate and location). Meeting sand placement location and quality targets is essential to maintain safe fluid containment	2	Q2 2024. Work is in-progress. CMTQB continues the improvements to the construction practices.
2023-AFPR-02	Develop, use, and maintain a single dataset for sand dam construction and TMF development, and develop a plan, track against plan, and reforecast based on actual performance for sand dam construction and TMF development.	2	Q2 2024. Work is in-progress. CMTQB continues the improvements to the construction practices.
2023-AFPR-03	Repair geotechnical instrumentation, VWPs, inclinometers, and SAA	2	Q4 2024. Work is in-progress.
2023-AFPR-04	Implement a workflow to provide the EoR with a complete and accurate set of instrumentation data in a timely manner.	2	Q2 2024.
2023-AFPR-05	Assessment of water levels and water quality downstream of seepage cutoff.	3	Q2 2024. Work is in-progress.
2023-AFPR-06	Repair to starter dam liner below rejected sand outlet of on-crest manifold (“el chimbombo”). Repair will reduce seepage losses from reclaim pond and will protect concrete curb (critical element that protects filter zone in starter dam).	3	Q2 2024. Work is in-progress.
2023-AFPR-07	Repair to starter dam liner below east abutment drainage outlet. Repair will reduce seepage losses from reclaim pond and will protect the liner from wind damage (due to wind entering through opening).	3	Q2 2024.
2023-AFPR-08	Extension to rejected sand outlet of on-crest manifold (“el chimbombo”). Outlet to be extended onto west abutment (upstream of plinth) using similar setup to upstream downcomers (i.e., multiple outlet ports). Extension will reduce likelihood of repeated damage to starter dam liner	3	Q2 2024.
2023-AFPR-09	Construct a berm to restrict access from the downstream area to the Year 2 sump and install life ring stations (3 or 4) at strategic locations around the Year 2 sump. Steep slopes make egress very challenging to impossible should someone fall into the sump.	3	End of Q2-2024.
2023-AFPR-10	Repair to upper liner of Seepage Collection Pond 2. Water is present in leak detection system; however, secondary liner is considered to be intact. Repair	3	Q2 2024.

Recommendation No.	Recommended Action	Priority (refer to Table 6)	Recommended Deadline / Status
	will reinstate lining system—seepage pumpback and downstream environmental protection considerations.		
2023-AFPR-11	Repair to erosion damage and improvement of surface water management on west slope of access road alongside the Permanent Pump Station.	3	Q4 2024.
2023-AFPR-12	Implementation of regular programmed and event-triggered (i.e., large precipitation, large seismic) inspections of key infrastructure by the Geotechnical Department	3	End of Q2-2024
2023-AFPR-13	EoR to carry-out the 2023 AFPR.	4	End of 2024

Table 6: Priority Descriptions for Recommendations

Priority	Description
1	A high probability of actual dam safety issues considered immediately dangerous to life, health or the environment, or a significant risk of regulatory enforcement.
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.
3	Single occurrence of deficiencies or non-conformances that alone would not be expected to result in dam safety issues.
4	Best Management Practice--further improvements are necessary to meet industry best practices or reduce potential risks.

APPENDIX A

Selected Photographs from the 2023 AFPR Site Visit

Plate 1: Tailings Management Facility (1400)

View from east abutment

Plate 2: Tailings Management Facility (1400)

Looking south from north end of tailings management facility

Plate 3: Tailings Management Facility (1400)

Looking south towards upstream face

Plate 4: Reclaim Pond (1400)

Plate 5: Reclaim Pond (1400)

Barge Position 1 (Position 2 in background)

Plate 6: Starter Dam (1452)

Looking east from west abutment

Plate 7: Starter Dam (1452)

Looking west from east abutment

Plate 8: Starter Dam (1452)

Looking downstream from starter dam crest to the paddock area

Plate 9: Starter Dam (1452)

Upstream face. Damage to liner. Sand reject outlet from “el chimbombo”

Plate 10: Starter Dam (1452)

Upstream face. Damage to liner. East abutment discharge

Plate 11: Sand Dam (1465)

Looking west from east abutment to paddocks area in sand dam

Plate 12: Starter Dam (1452)

Tailings Impoundment from east abutment, tailings distribution system, and east abutment pipelines

Plate 13: Starter Dam (1452)

Starter dam crest from east abutment and tailings distribution pipeline

Plate 14: Drainage System (1453)

Year 2 sump. Erosion damage on east and north slopes

Plate 15: Drainage System (1453)

Year 2 sump. Erosion damage noted during 2022 AFPR

Plate 16: Sand Dam (1465)

Paddock 1 area

Plate 17: Sand Dam (1465)

Looking downstream from paddocks (sand dam)

Plate 18: Sand Dam (1465)

Looking upstream from paddocks (sand dam) to starter dam downstream slope

Plate 19: Sand Dam (1465)

Paddock sand distribution system

Plate 20: Tailings Distribution System (1442)

East abutment pipelines viewed from starter dam crest

Plate 21: Tailings Distribution System (1442)

West abutment viewed from starter dam crest

Plate 22: Seepage Collection System (1461)

Seepage Collection Pond 1 - Localized floatings of upper liner

Plate 23: Seepage Collection System (1461)

Seepage Collection Pond 1 – Damaged liner

Plate 24: Seepage Collection System (1461)

Seepage Collection Pond – Life rings between installed on the perimeter fencing

Plate 25: Seepage Collection System (1461)

Seepage Collection Pond – Seepage Pumpback System

Plate 26: Seepage Cutoff System (1465)

Plate 27: Cyclone Station (1441)

Plate 28: Cyclone Station (1441)

Pipelines to Overflow Box

Plate 29: Cyclone Station (1441)

Tailings Box

Plate 30: Cyclone Station (1441)

Emergency discharge pipeline

Plate 31: Dilution Water Terminal Station (1644)

Drape mesh installed following 2022 AFPR

Plate 32: Booster Station No. 1 (1480)

Plate 33: Booster Station No. 2 (1480)

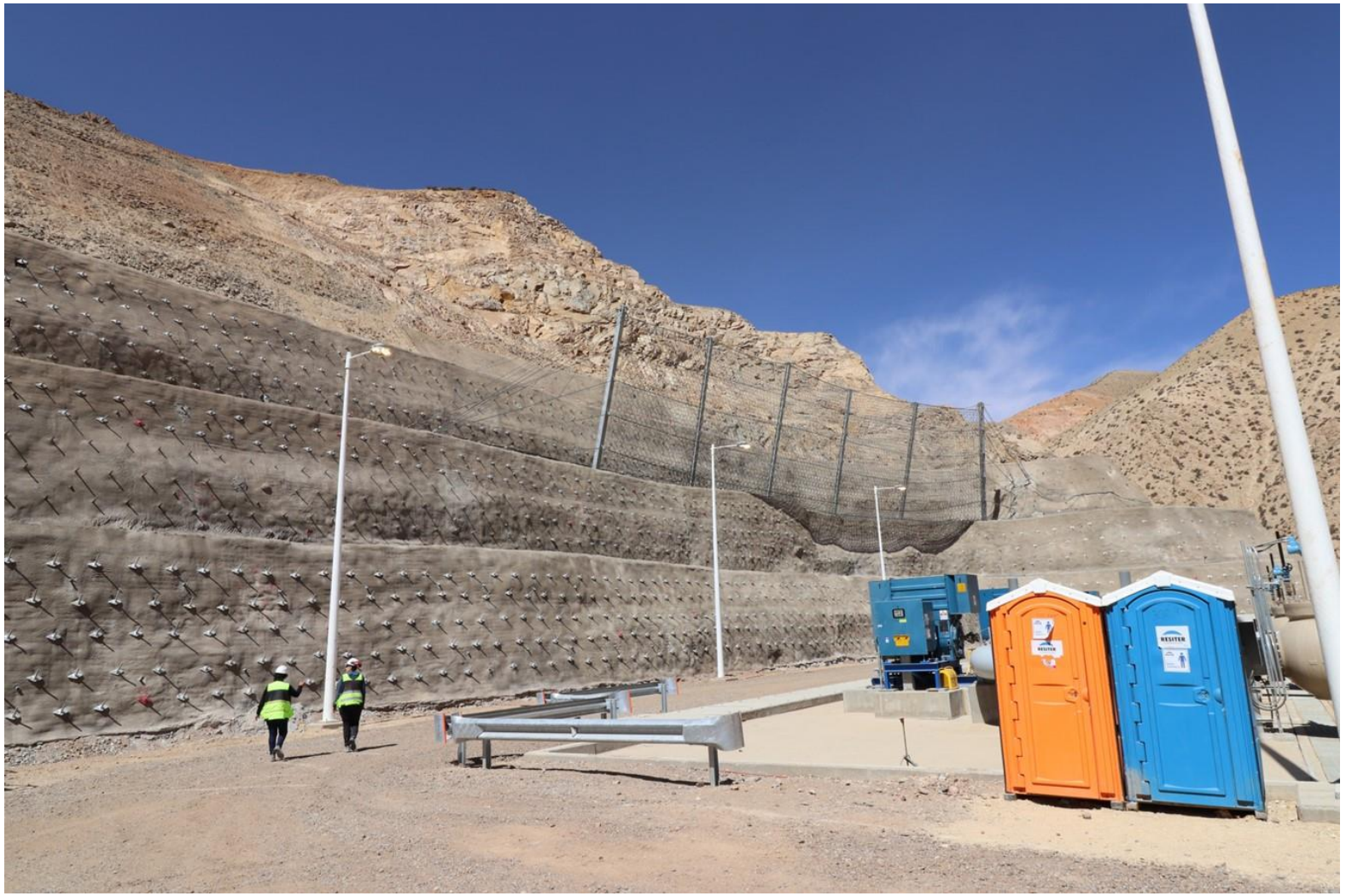


Plate 34: Permanent Pump Station (1480)

Drape mesh installed following 2022 AFPR

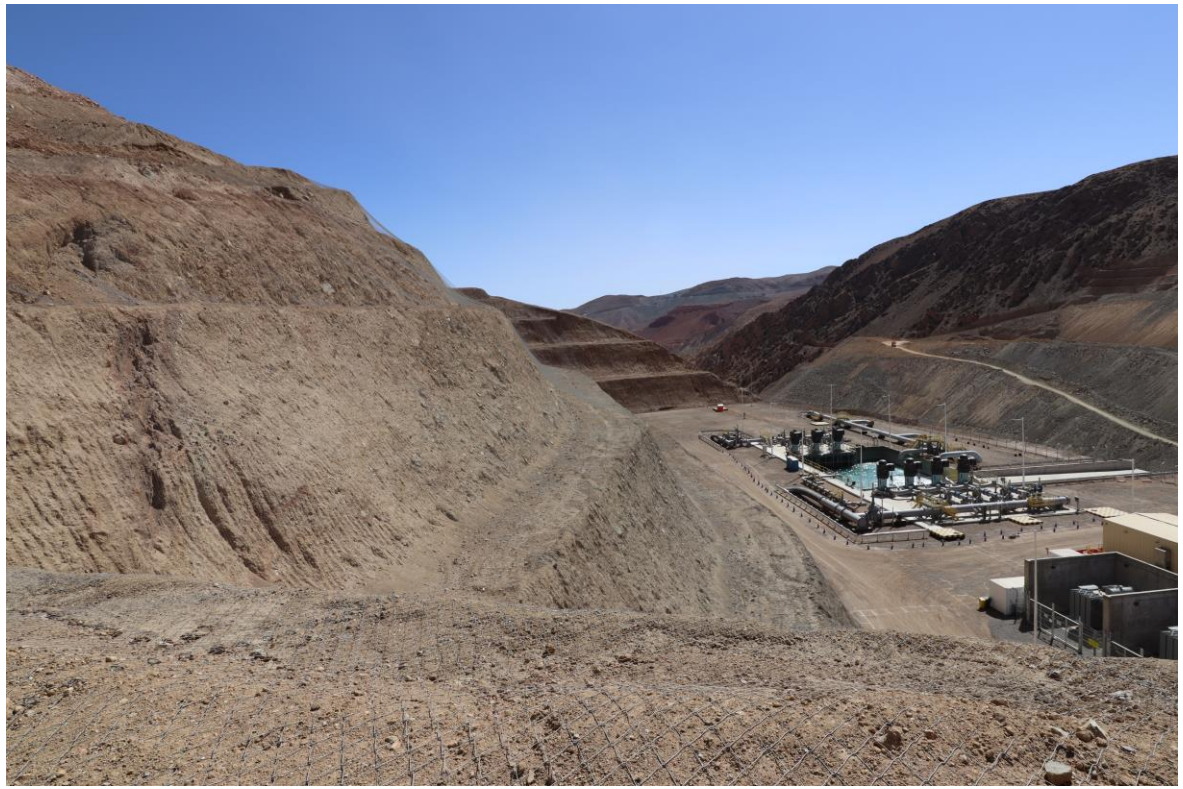


Plate 35: TMF Contour Chanel (1422)

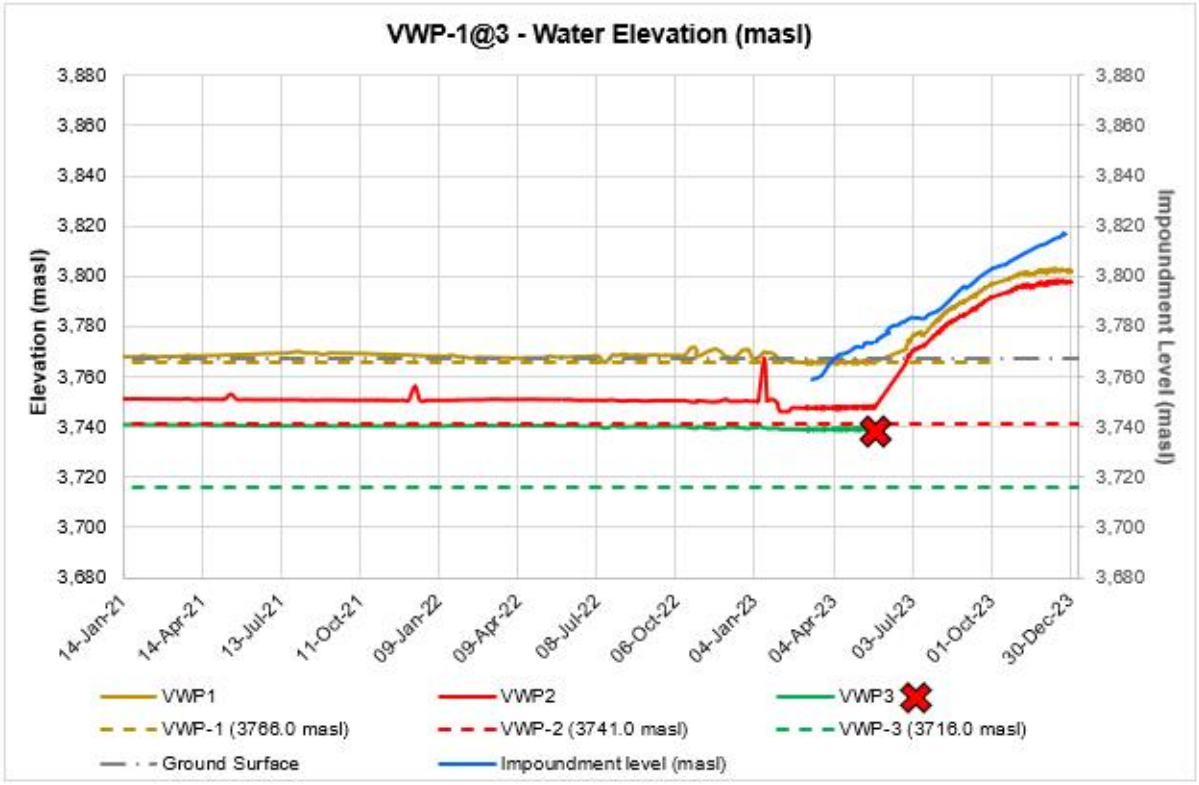
Plate 36: East Mine Channel (0181)

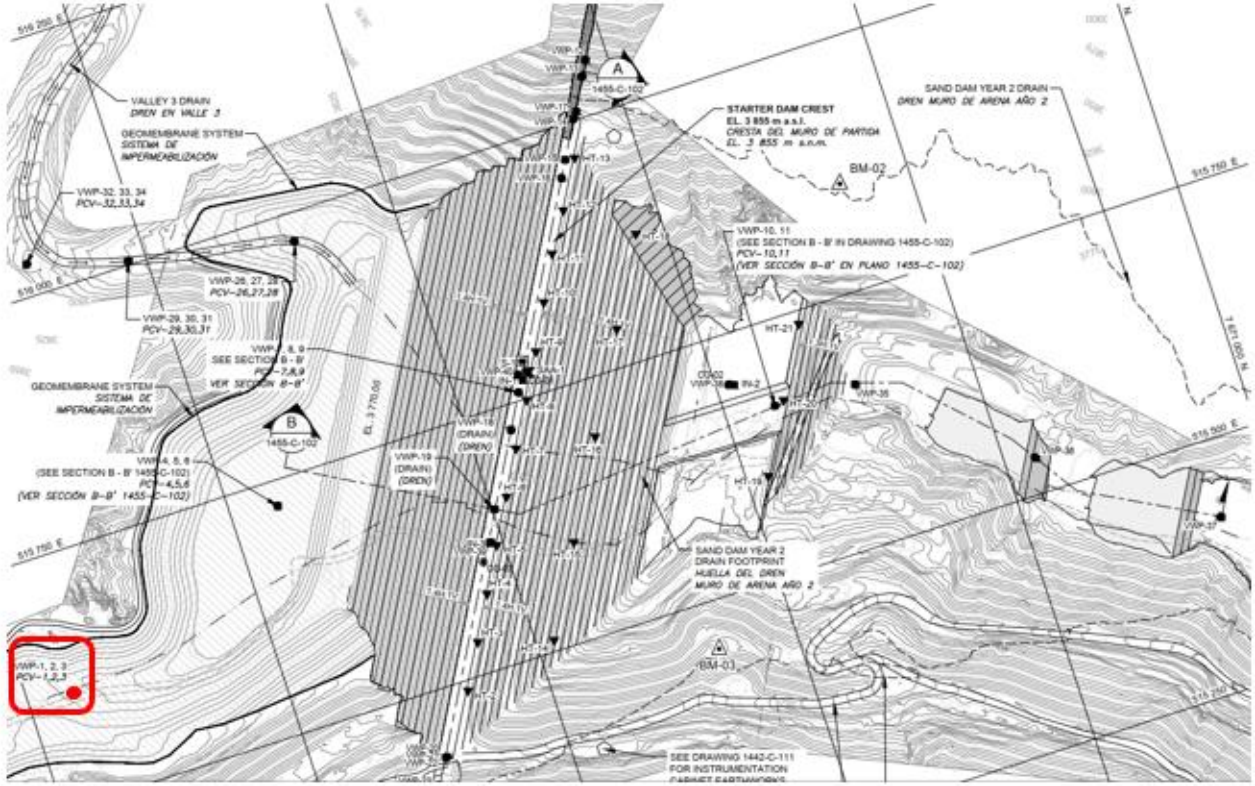
APPENDIX B

Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

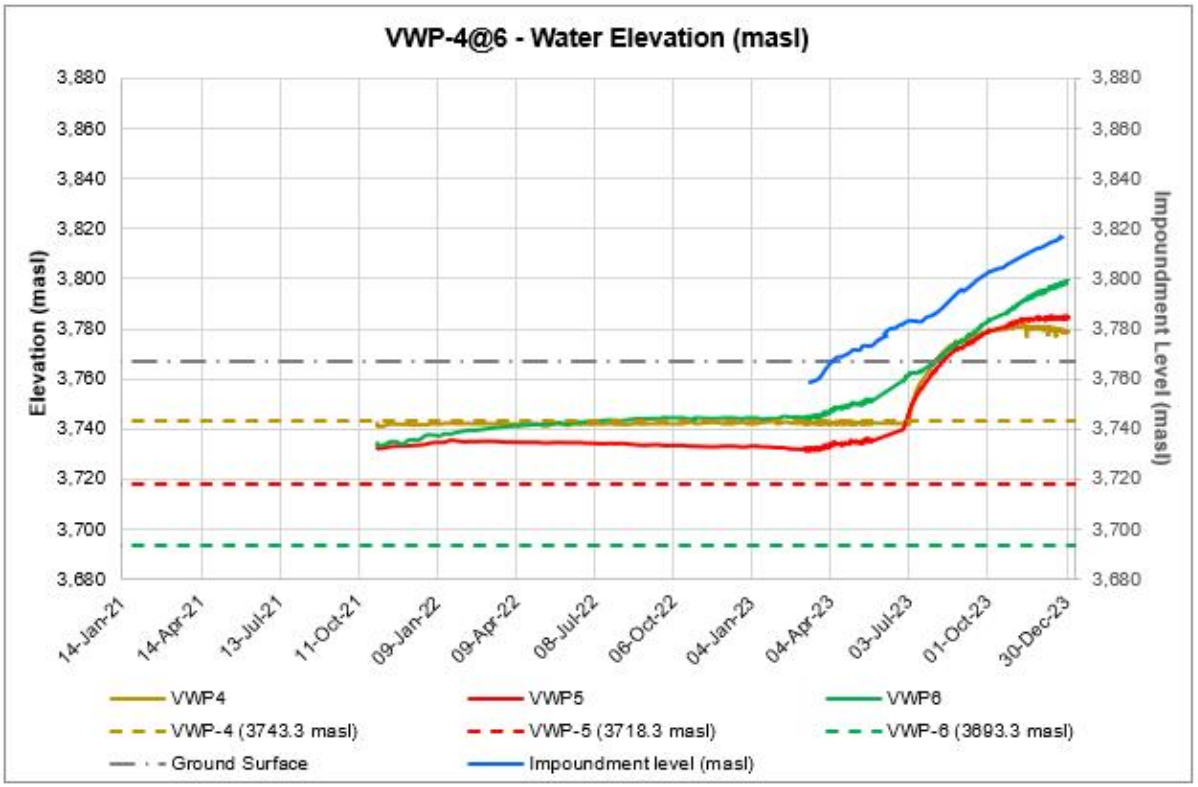
VWP-1@3

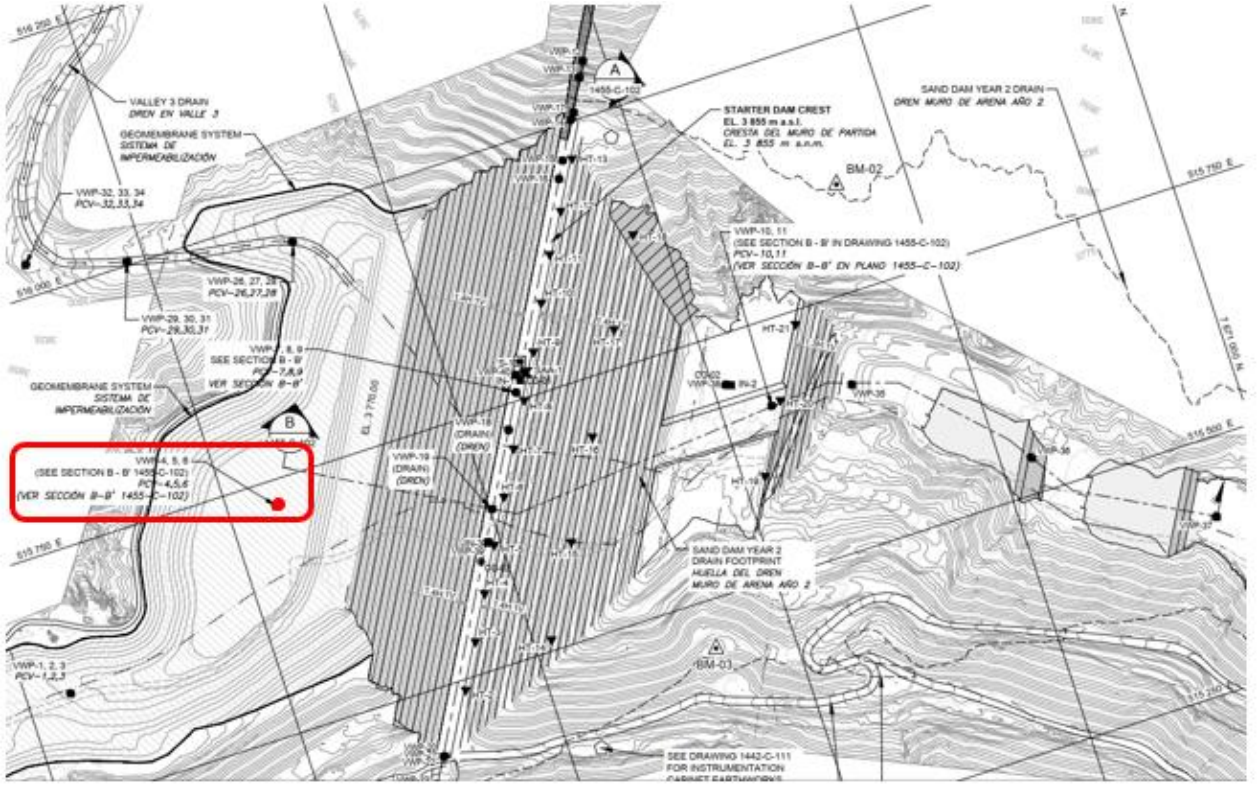




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

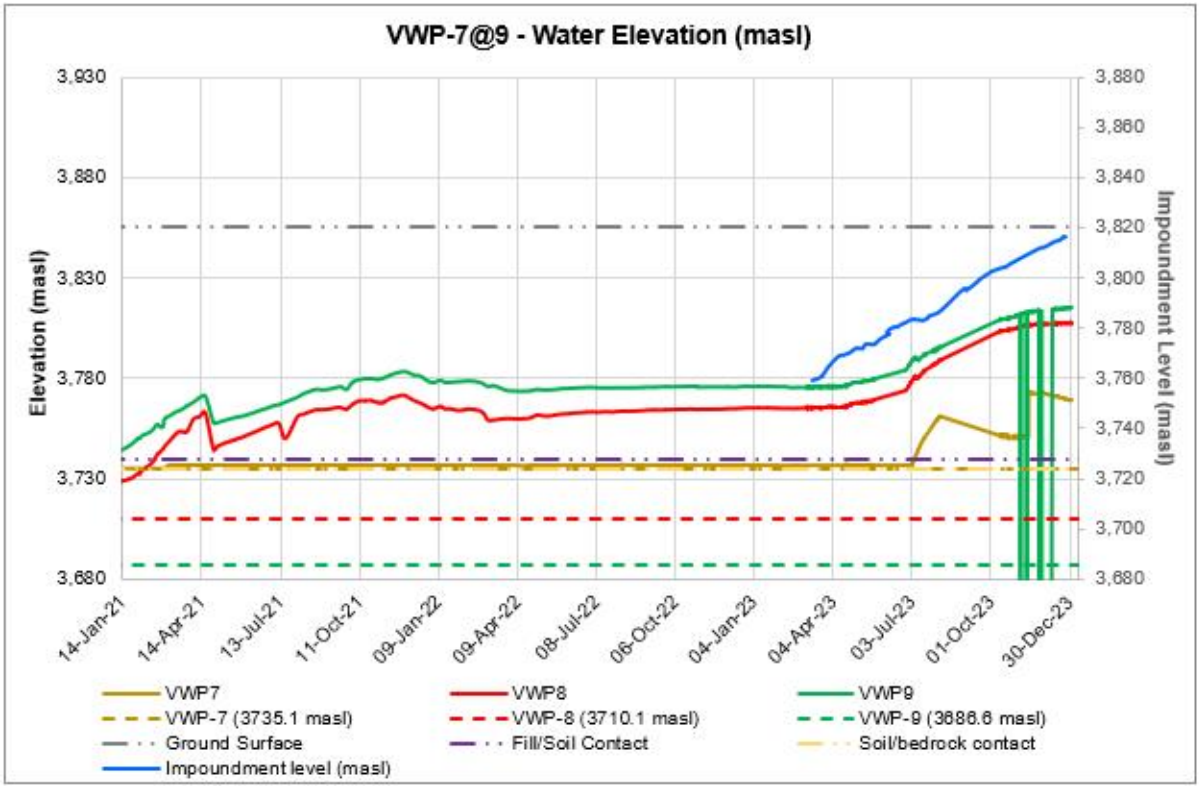
VWP-4@6

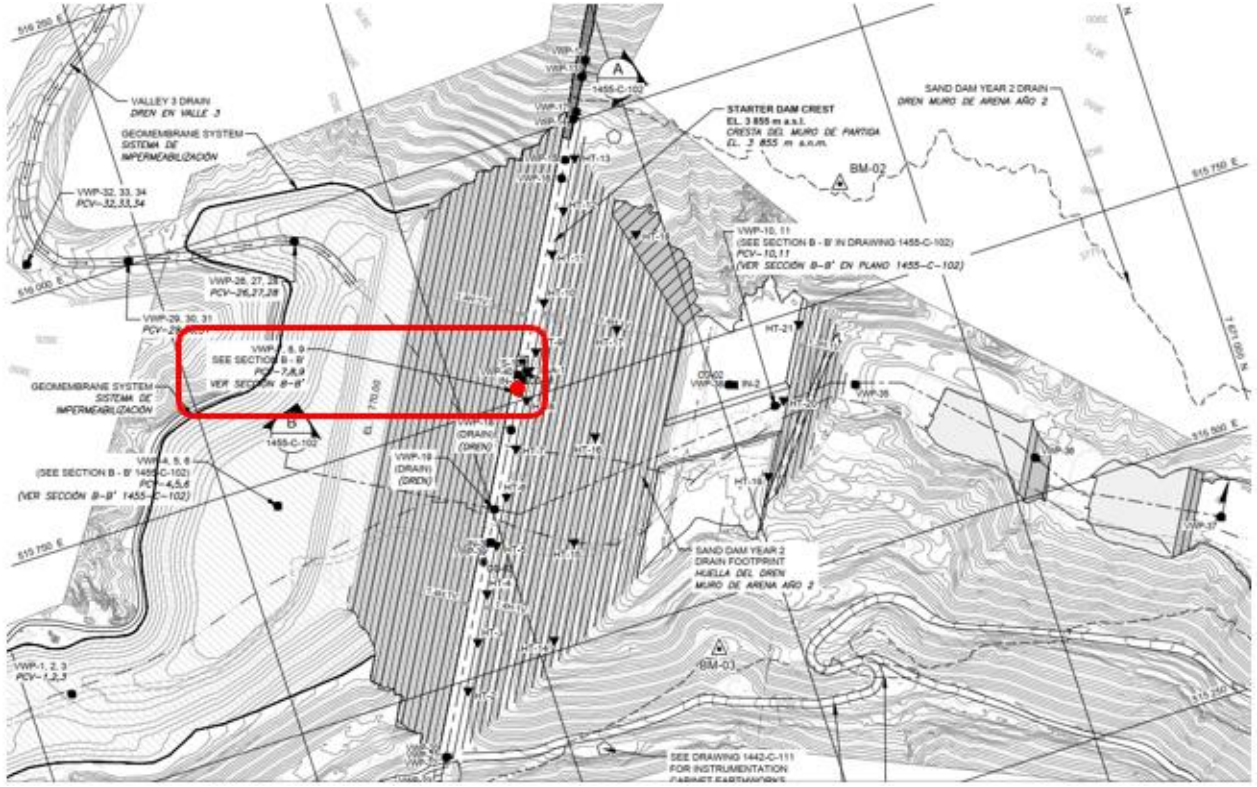




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

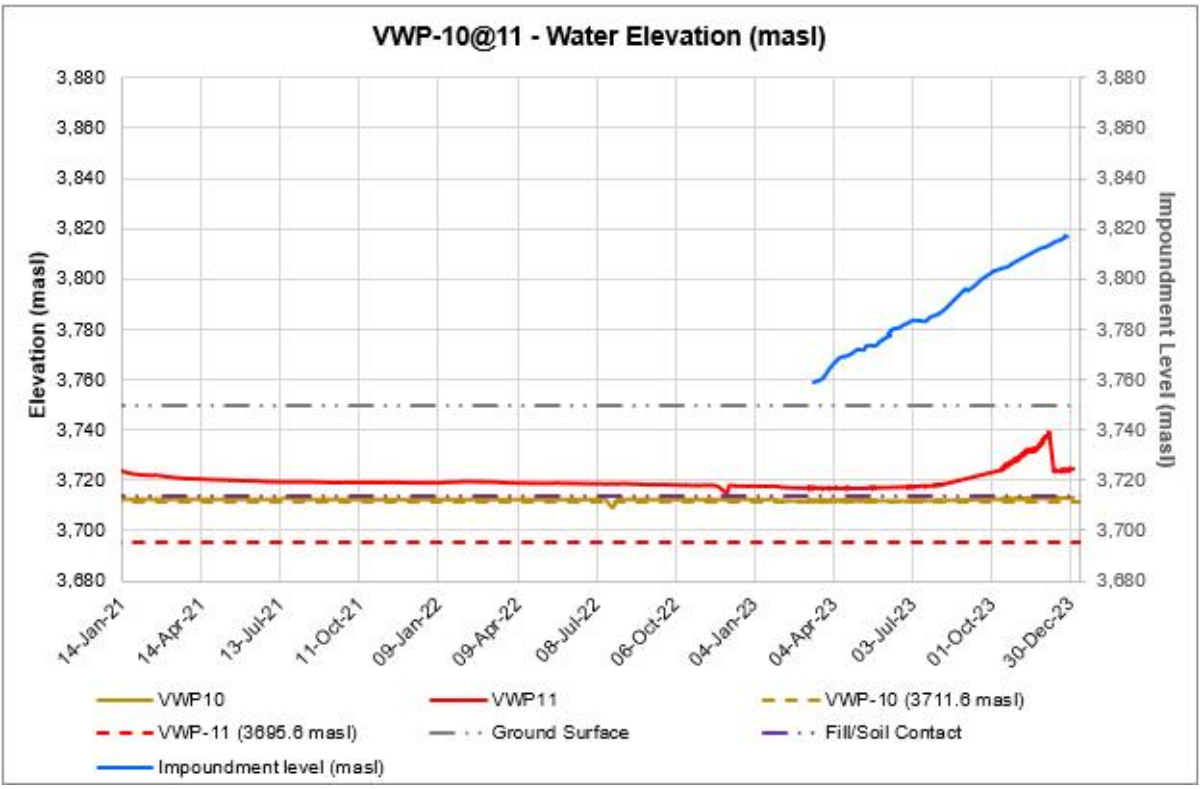
VWP-7@9

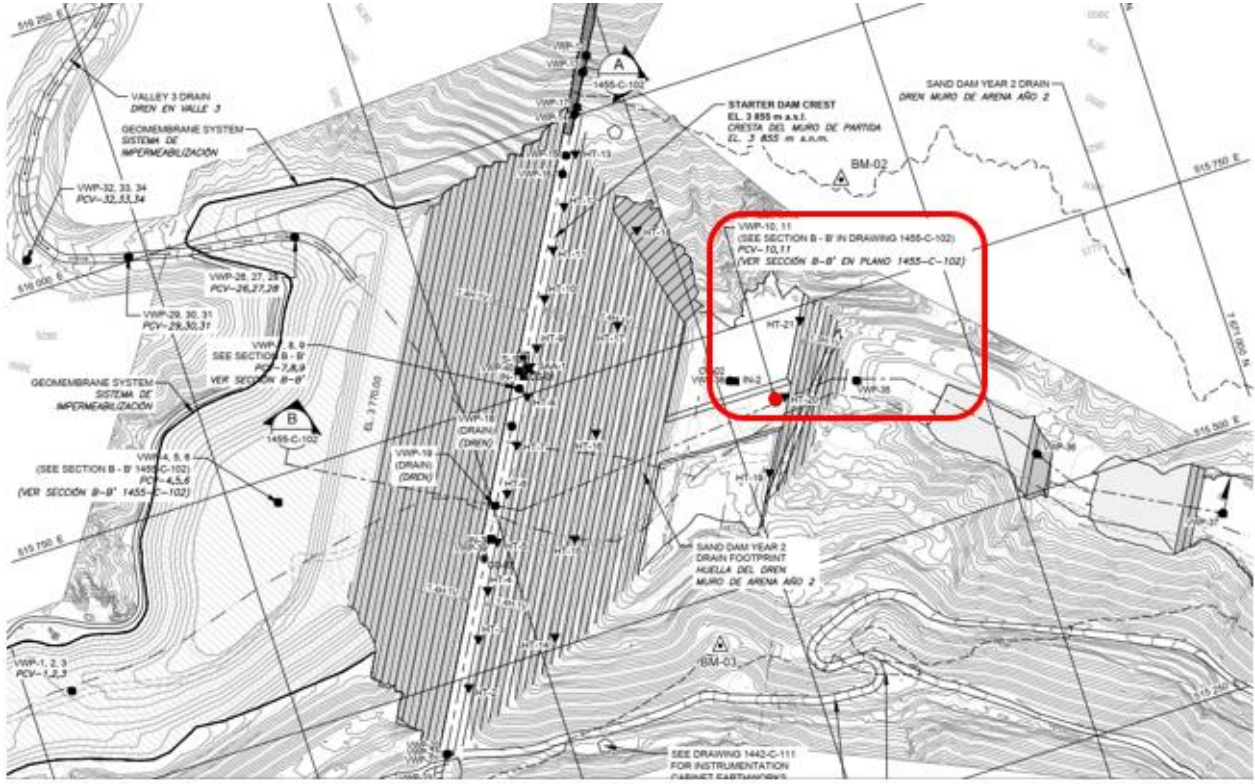




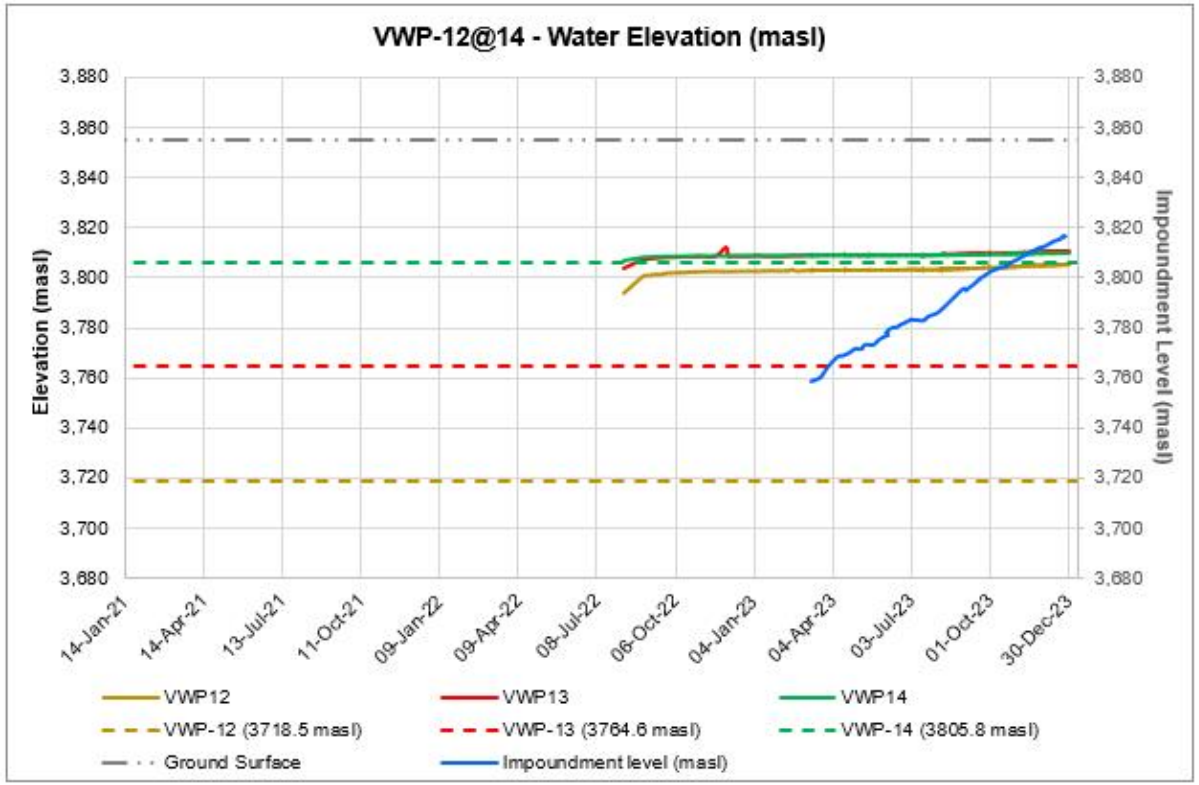
APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

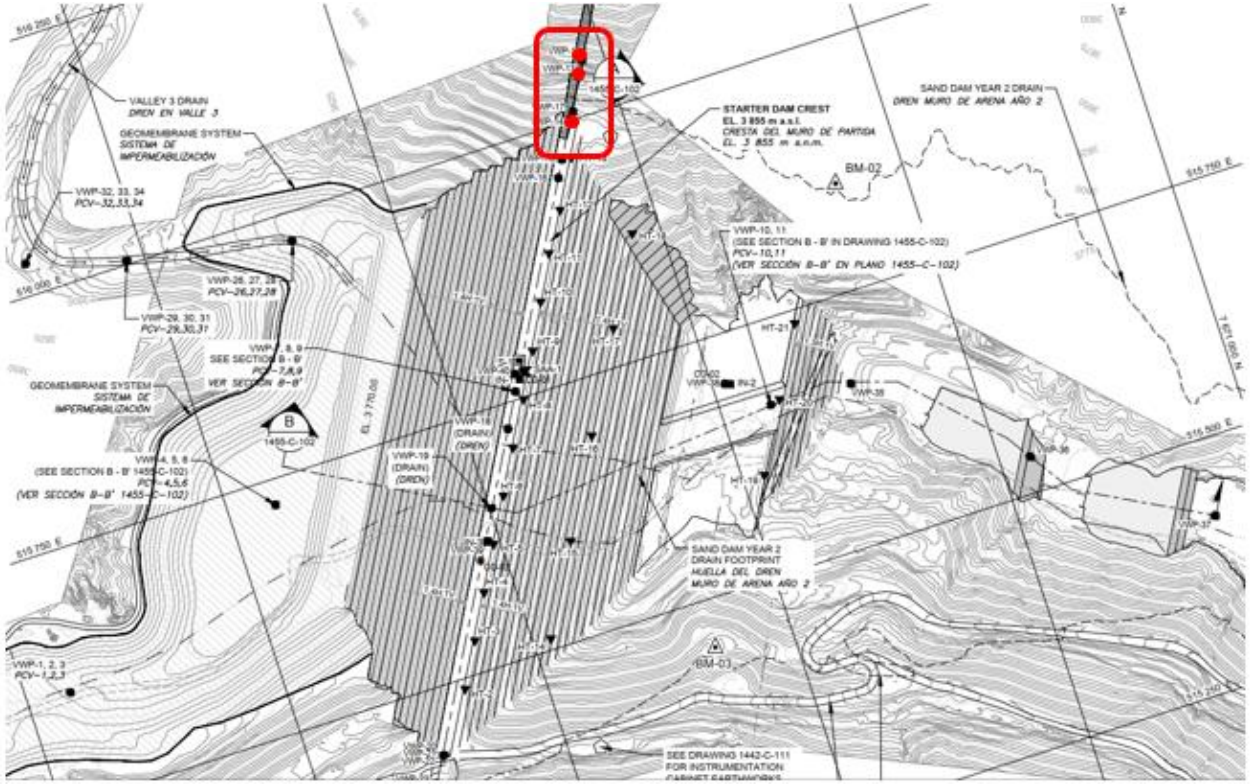
VWP-10@11


VWP-10@11 - Water Elevation (masl)
Elevation (masl)
Impoundment Level (masl)
3,880
3,860
3,840
3,820
3,800
3,780
3,760
3,740
3,720
3,700
3,680
14-Jan-21
14-Apr-21
13-Jul-21
11-Oct-21
09-Jan-22
09-Apr-22
08-Jul-22
06-Oct-22
04-Jan-23
04-Apr-23
03-Jul-23
01-Oct-23
30-Dec-23
VWP10
VWP11
VWP-10 (3711.6 masl)
VWP-11 (3695.6 masl)
Ground Surface
Fill/Soil Contact
Impoundment level (masl)


VALLEY 3 DRAIN
DREN EN VALLE 3
GEOMEMBRANE SYSTEM
SISTEMA DE IMPERMEABILIZACIÓN
STARTER DAM CREST
EL. 3 855 m a.s.l.
CRESTA DEL MURO DE PARTIDA
EL. 3 855 m a.s.l.
SAND DAM YEAR 2 DRAIN
DREN MURO DE ARENA AÑO 2
BM-02
BM-03
SAND DAM YEAR 2
DRAIN FOOTPRINT
HUELLA DEL DREN
MURO DE ARENA AÑO 2
SEE DRAWING 1442-C-111
FOR INSTRUMENTATION

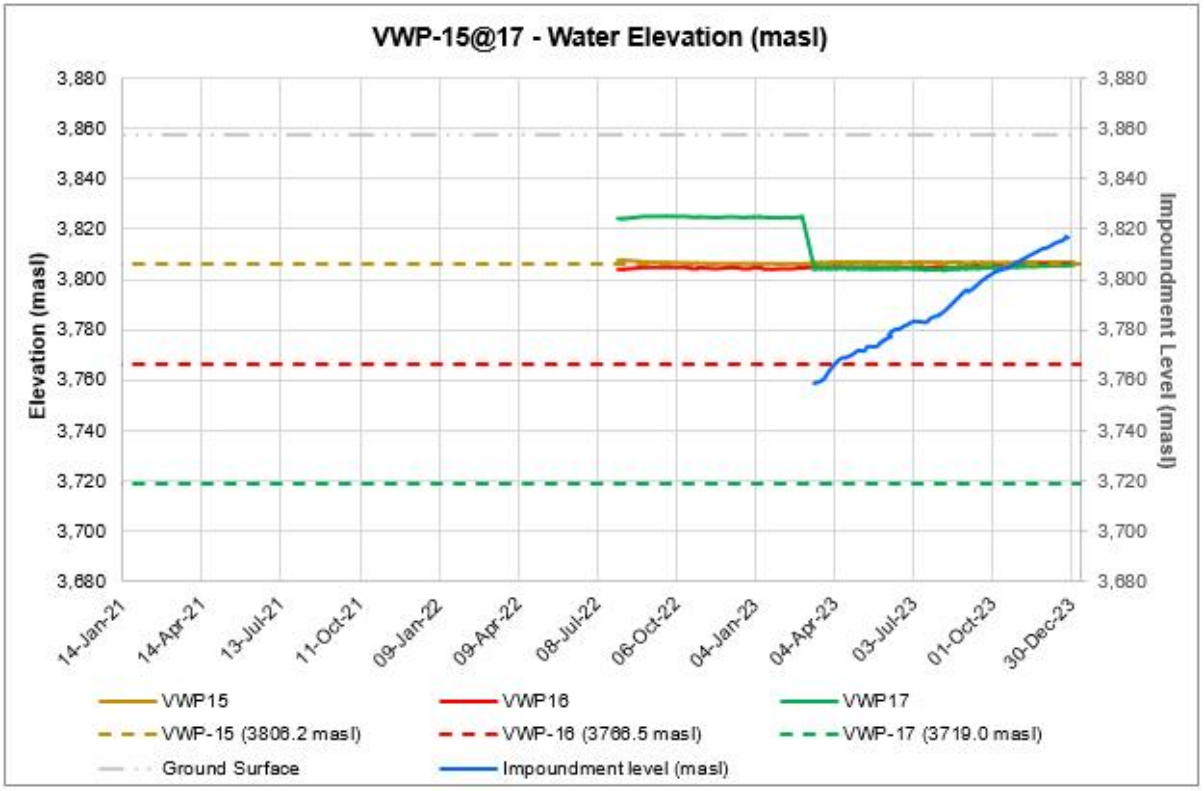
VWP-12@14

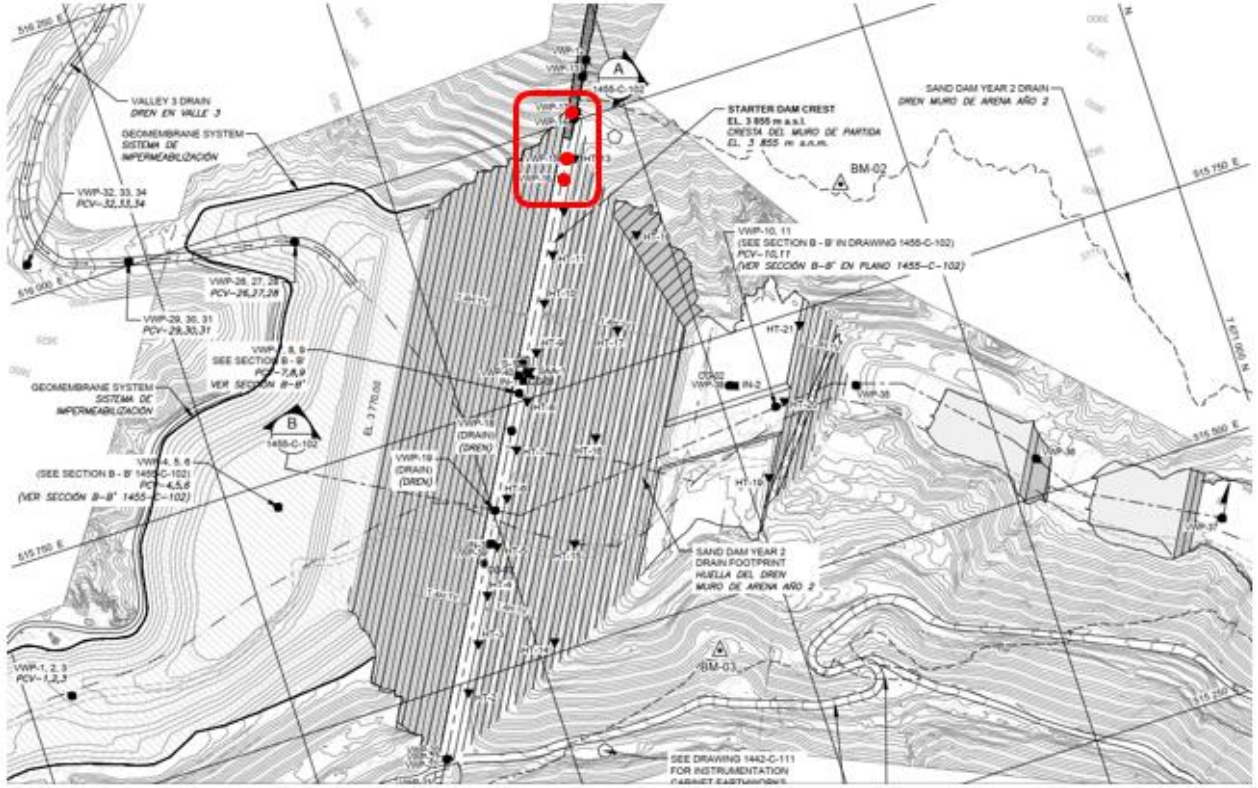




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

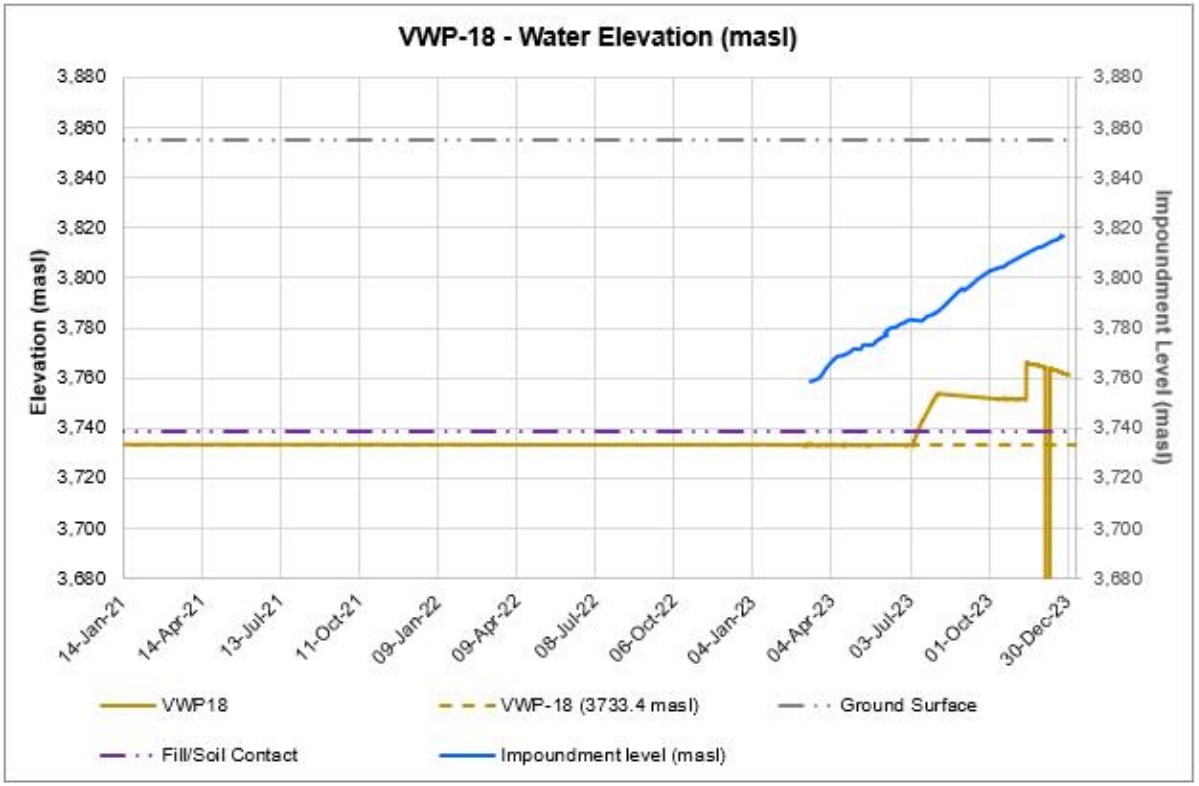
VWP-15@17

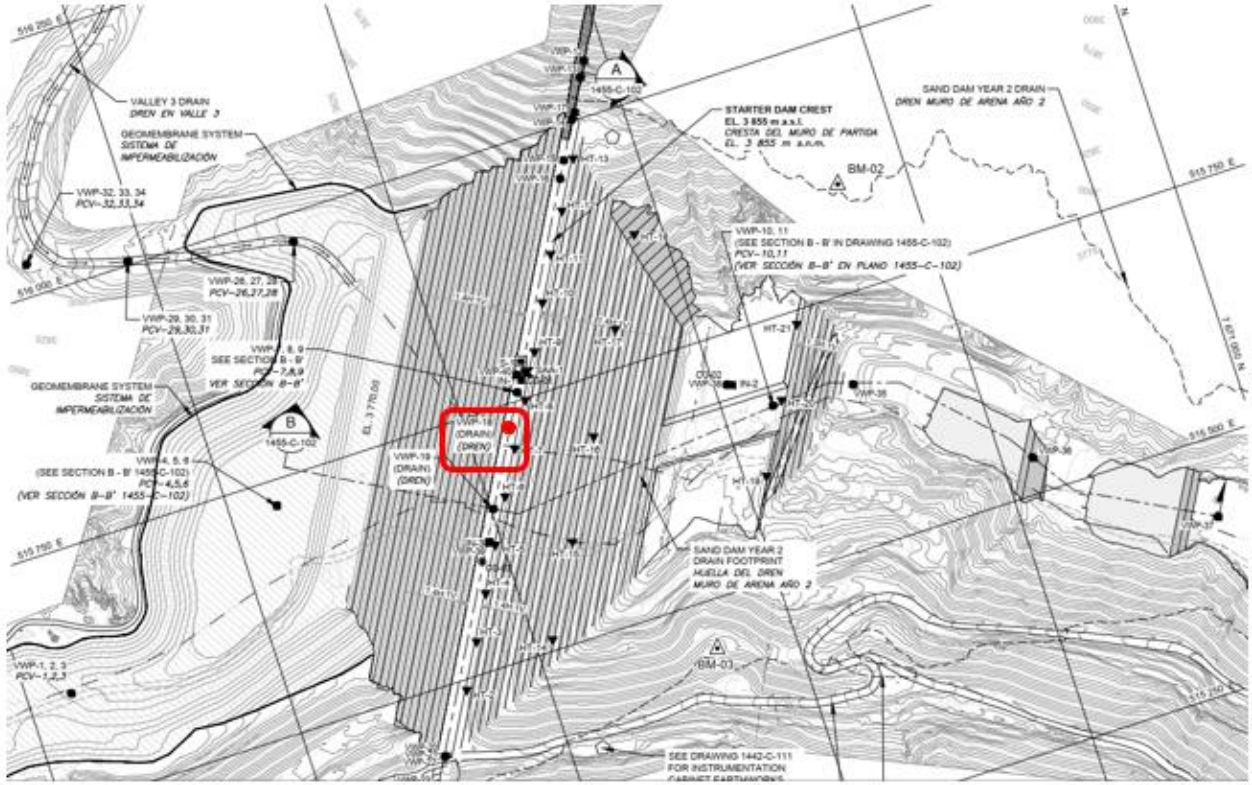




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

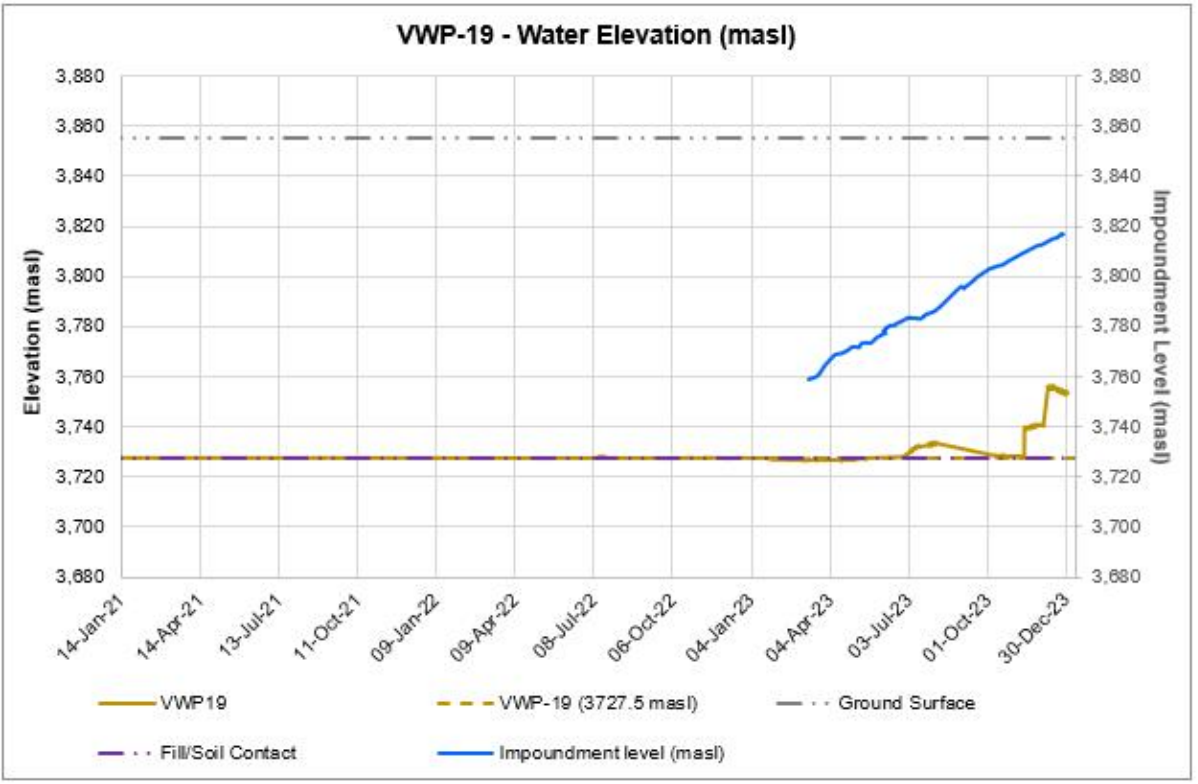
VWP-18

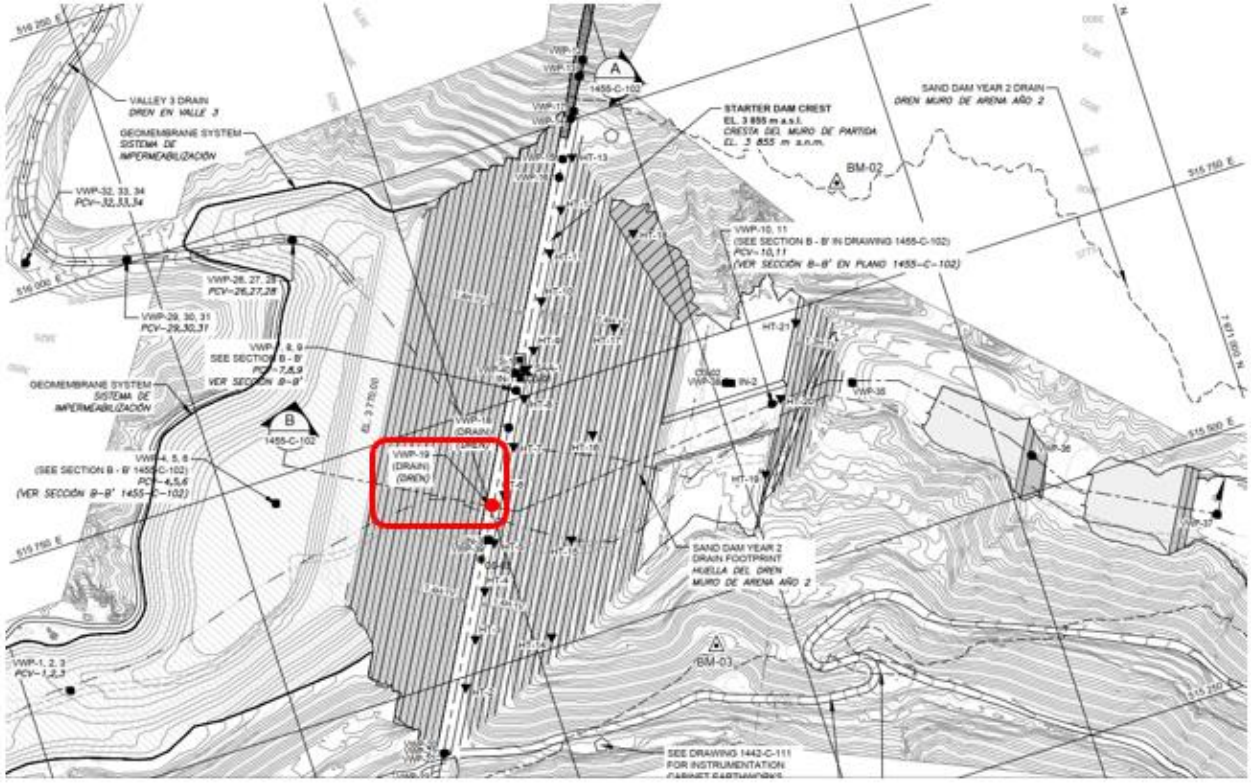




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

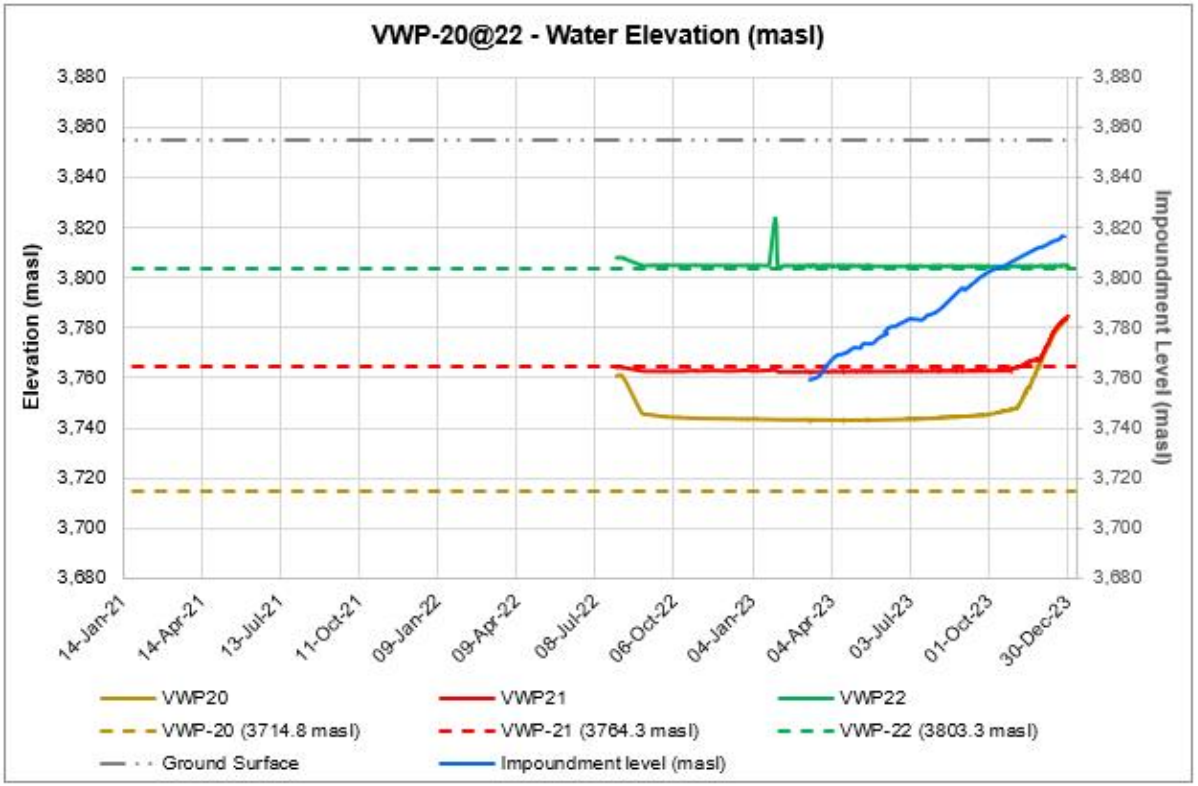
VWP-19

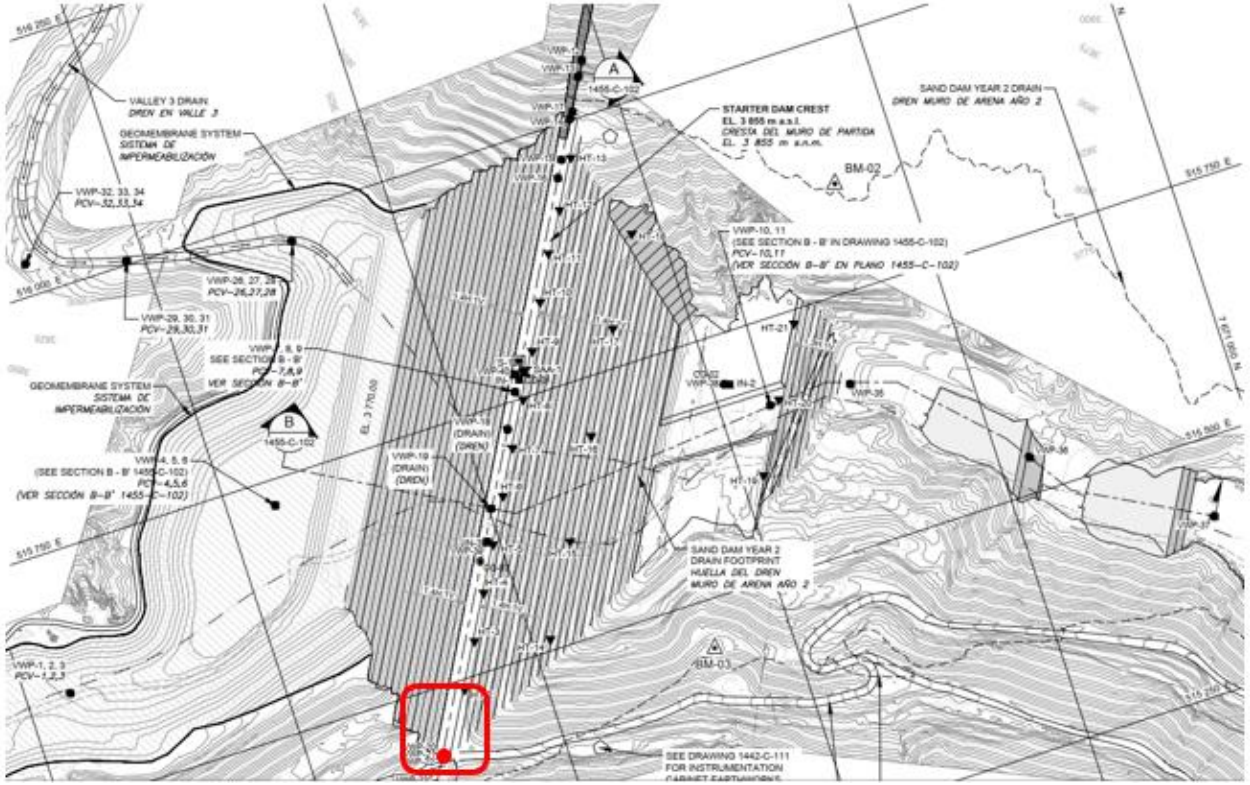




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

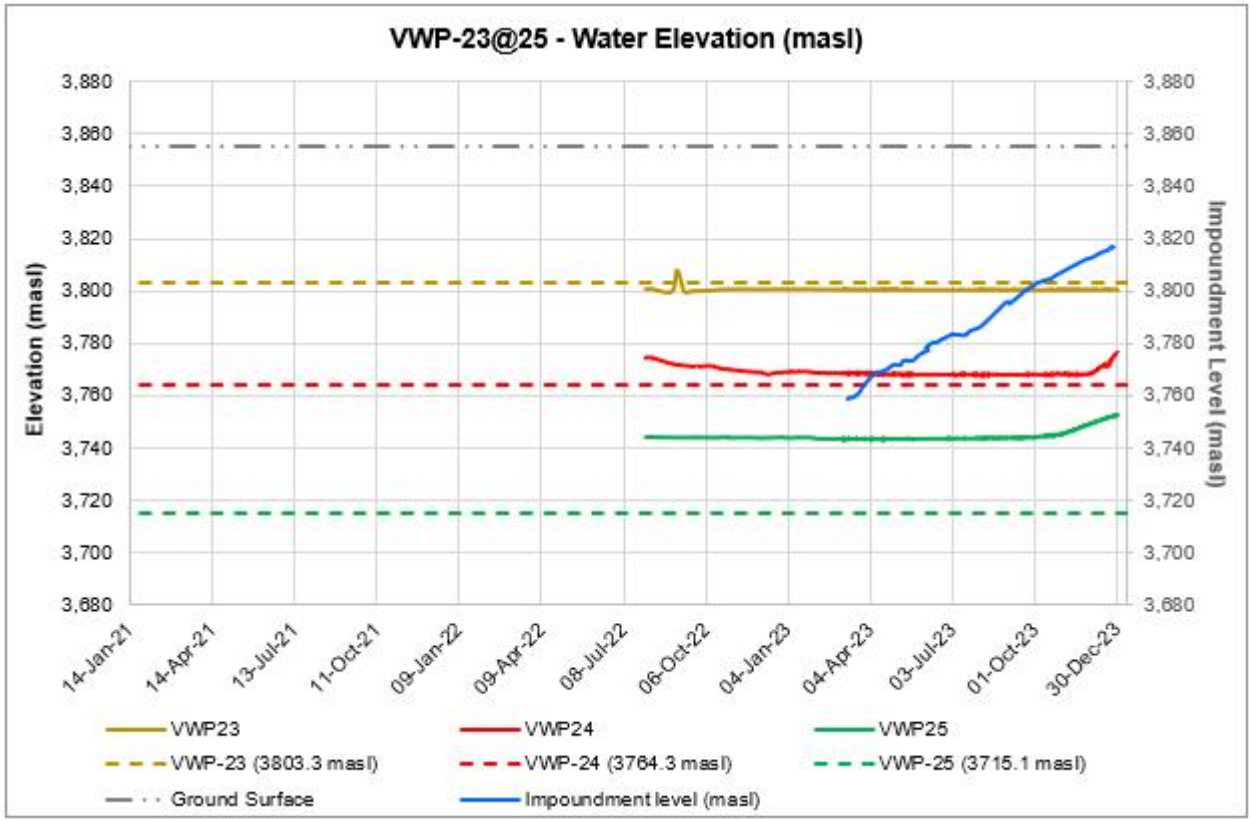
VWP-20@22

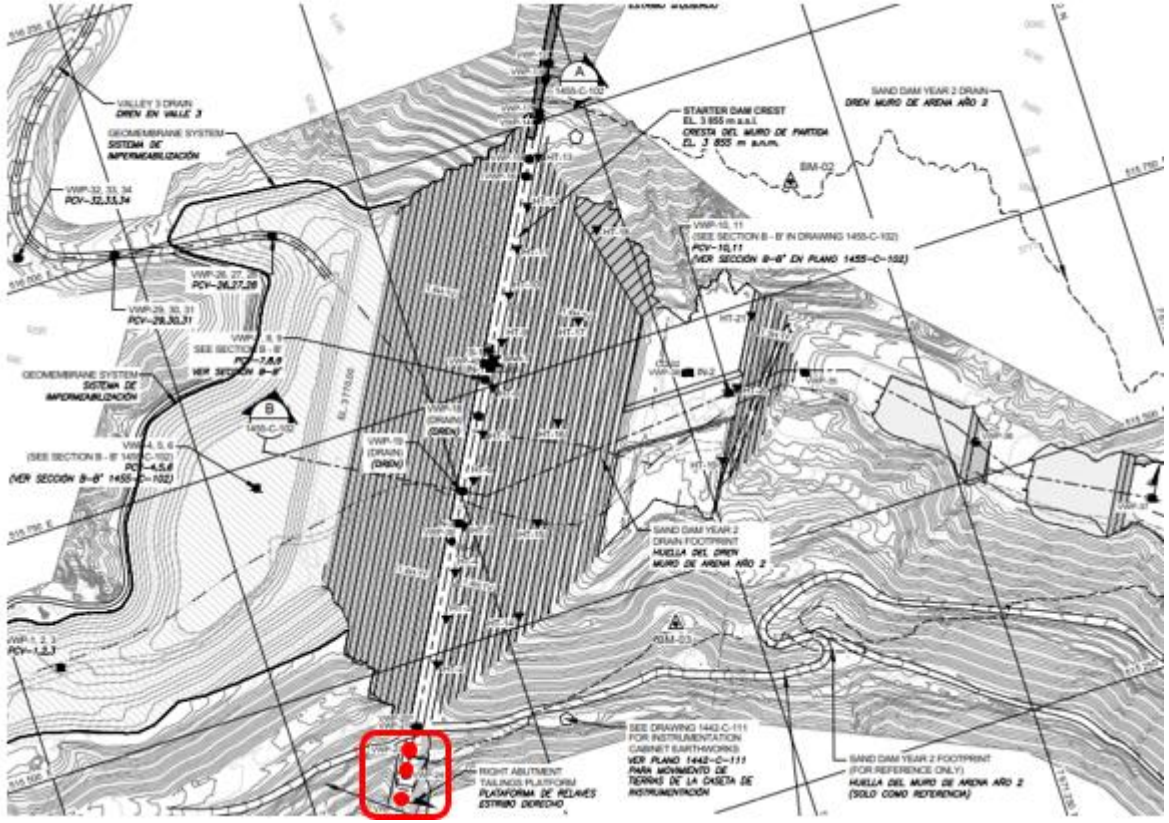




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

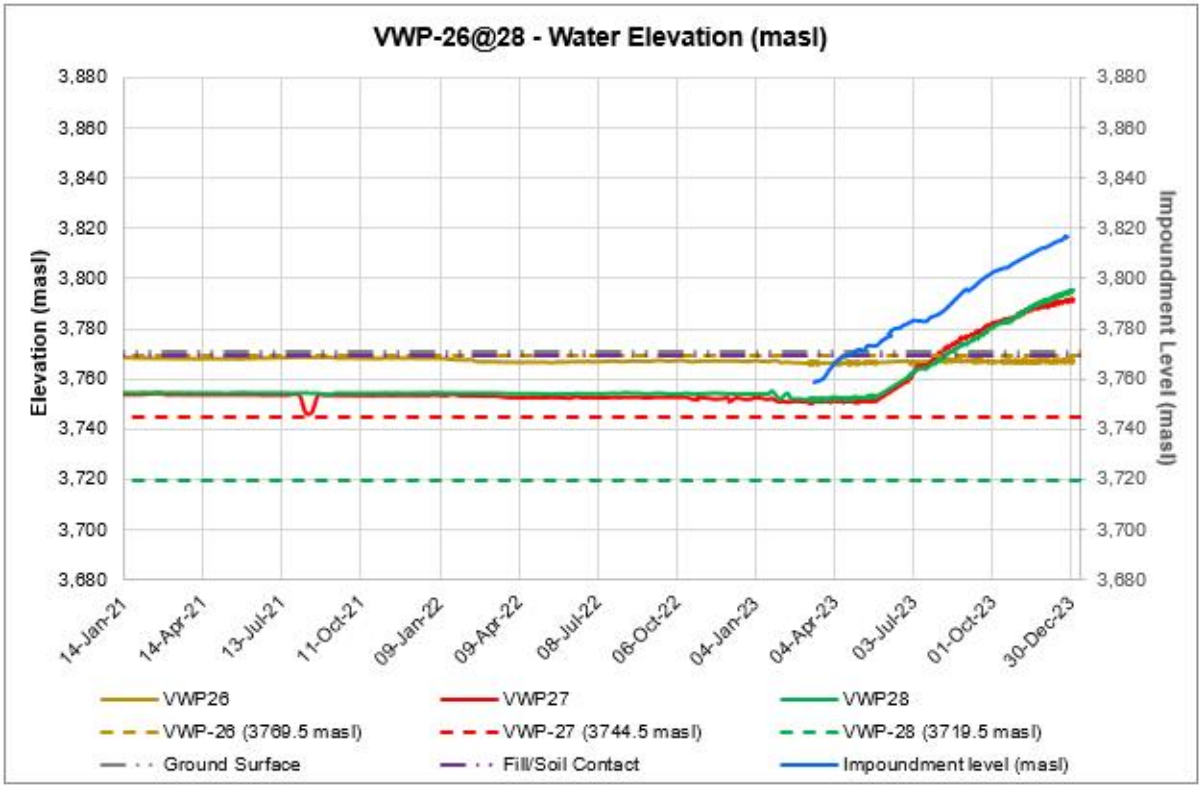
VWP-23@25

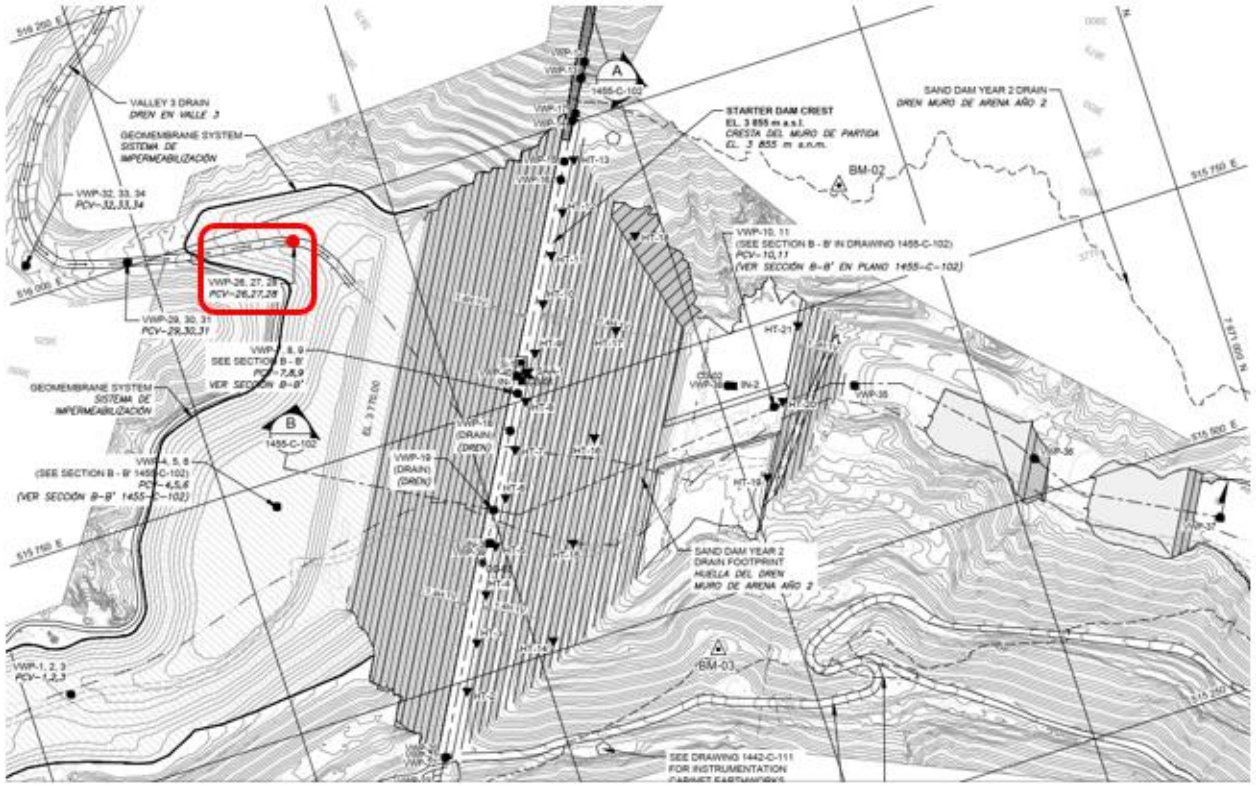




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

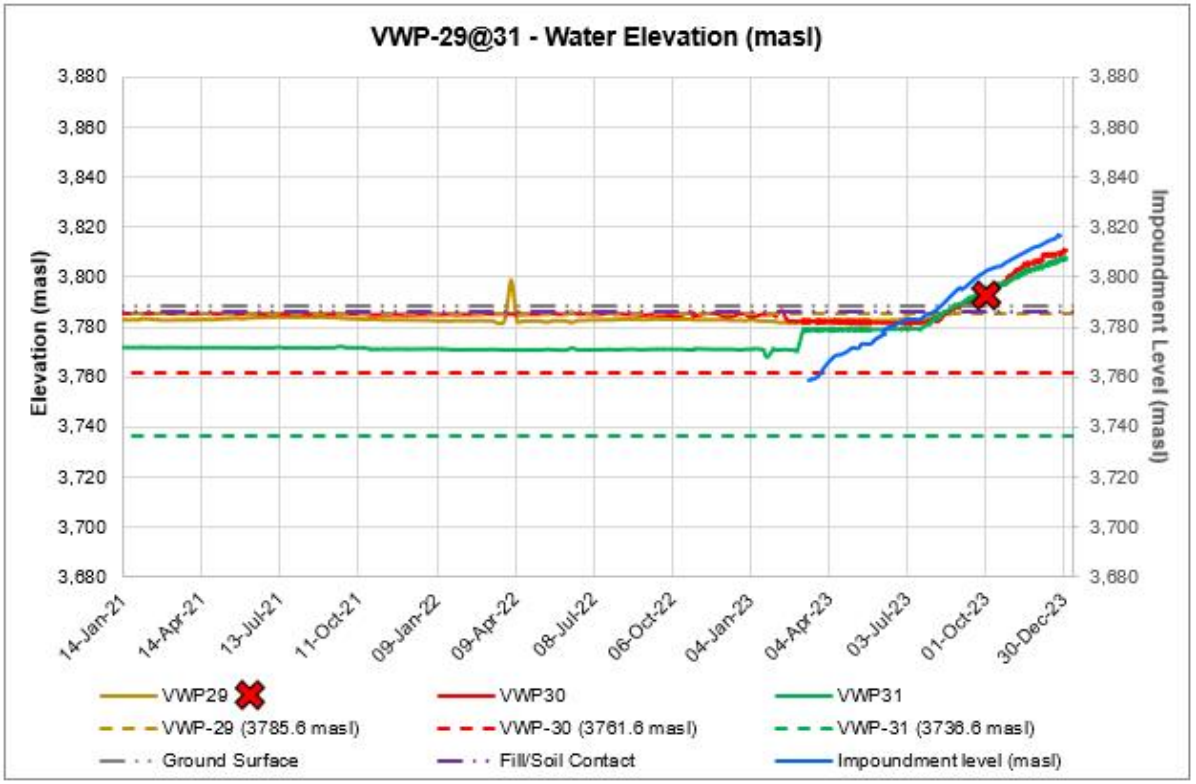
VWP-26@28

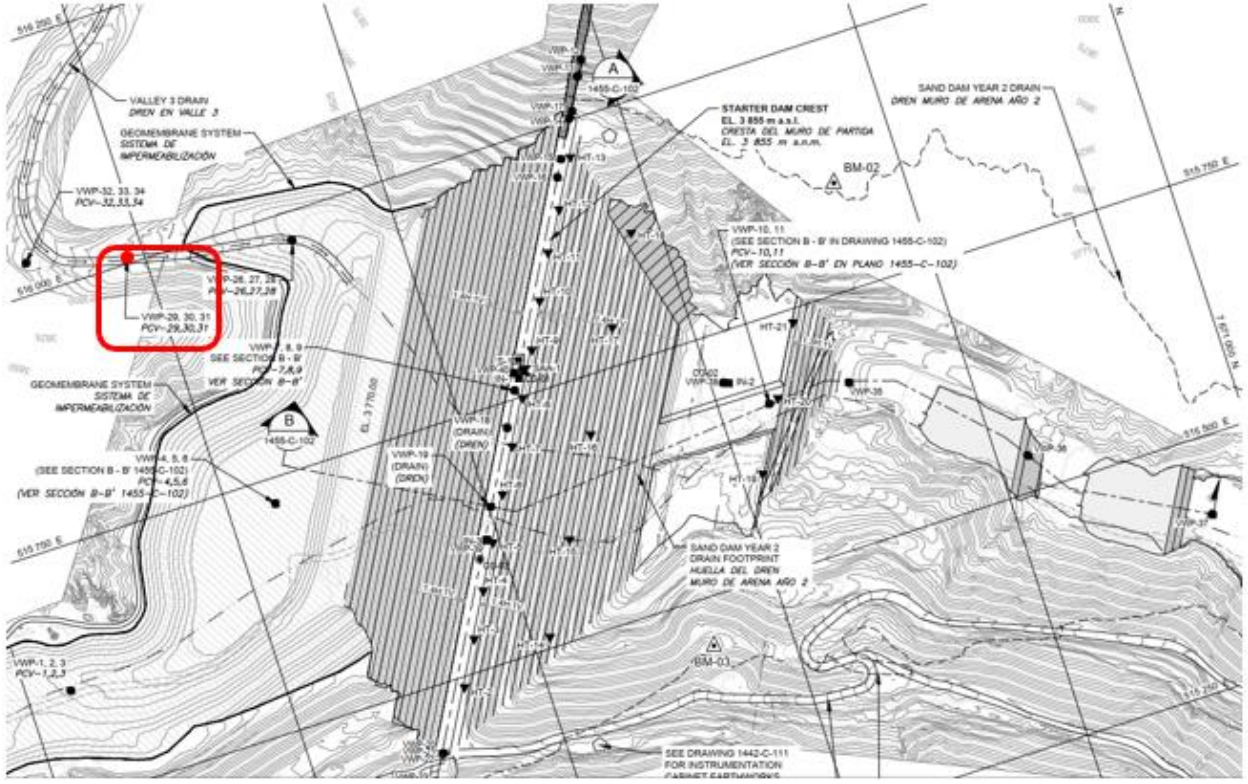




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

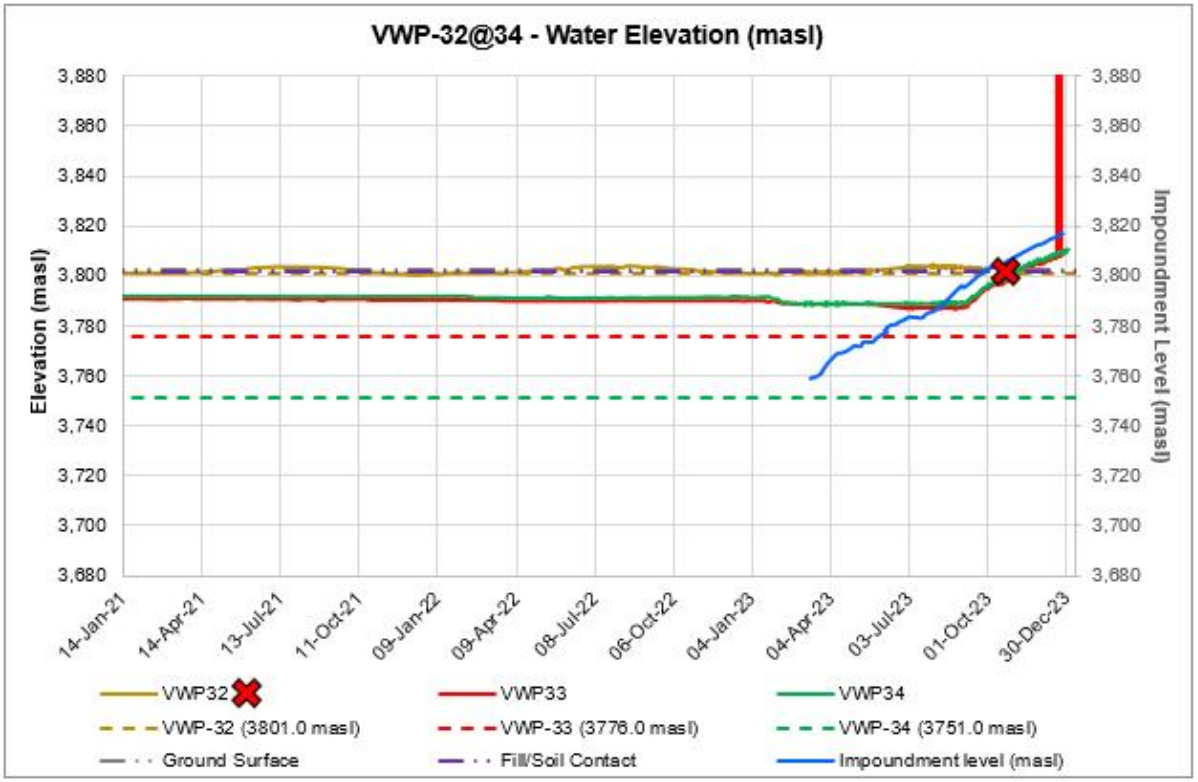
VWP-29@31

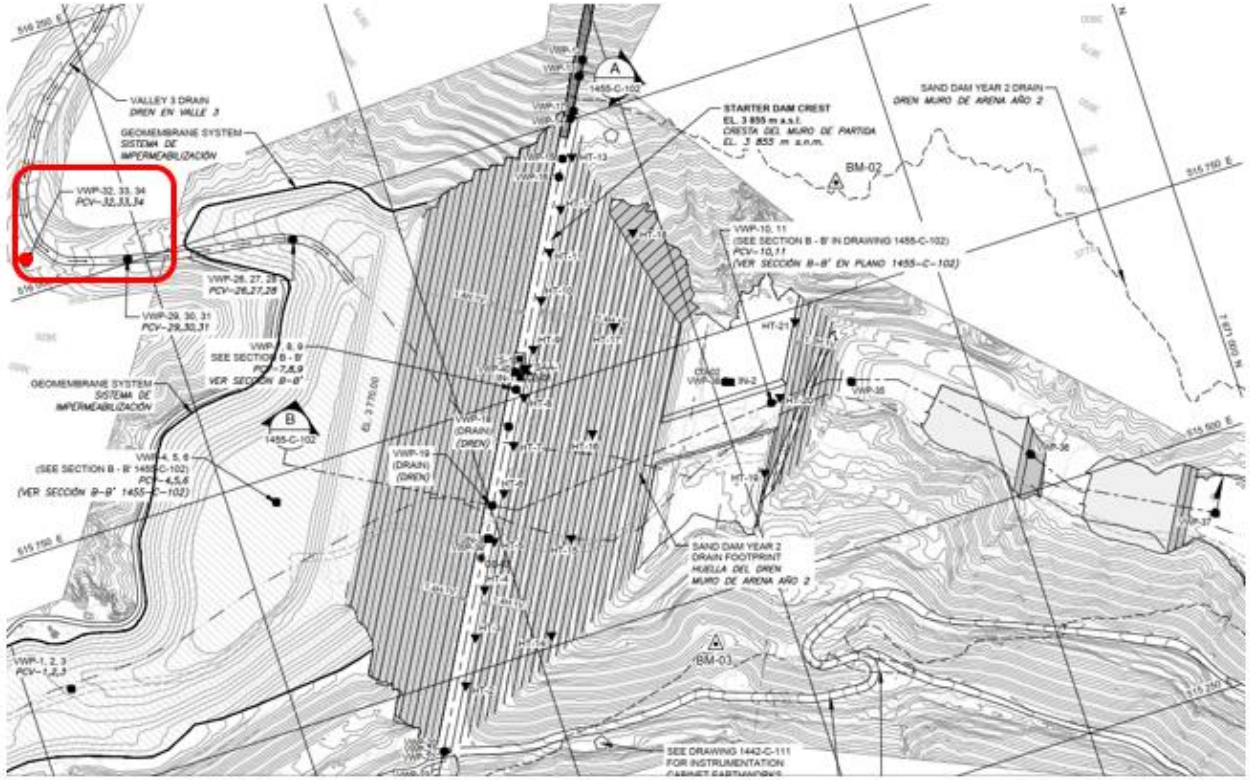




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

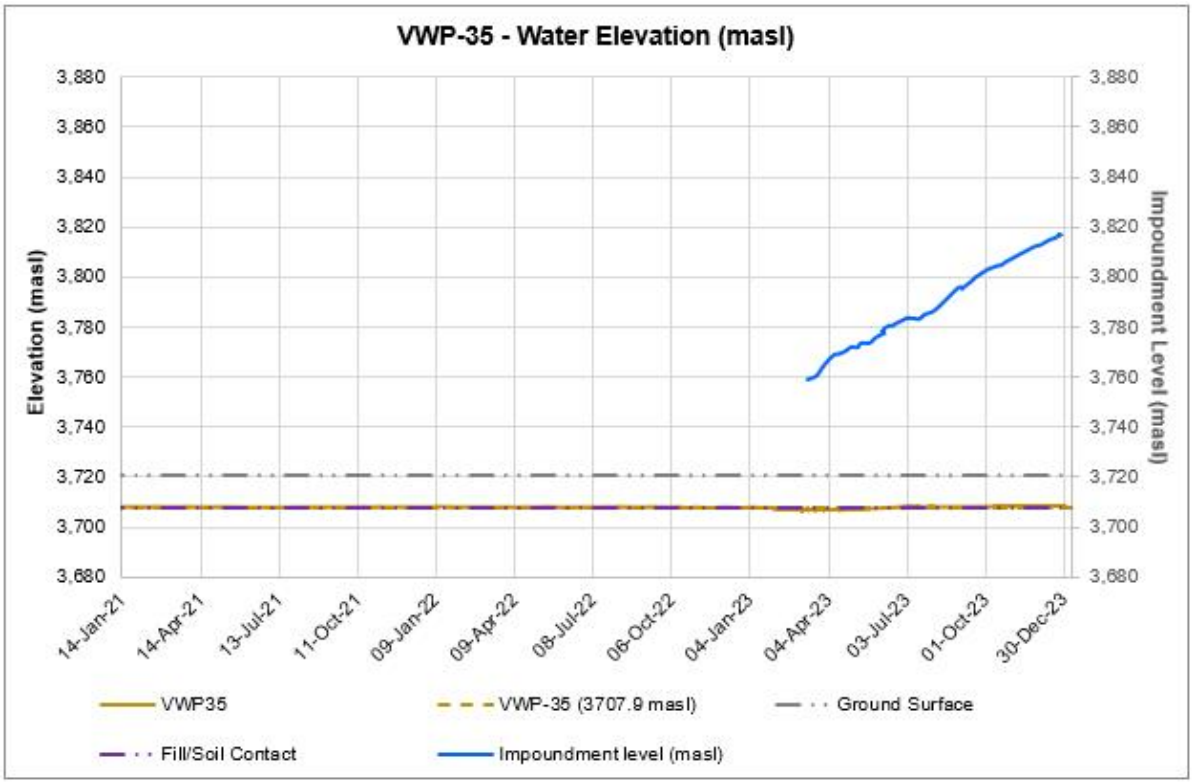
VWP-32@34

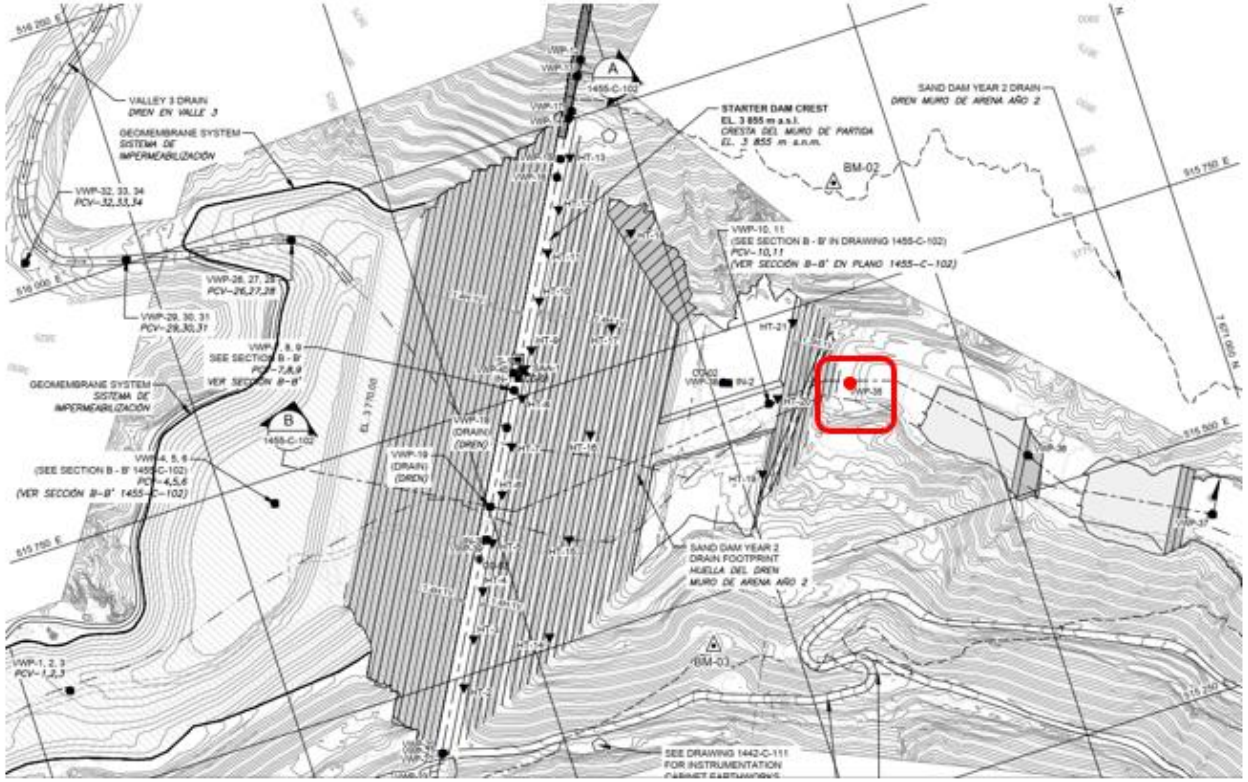




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

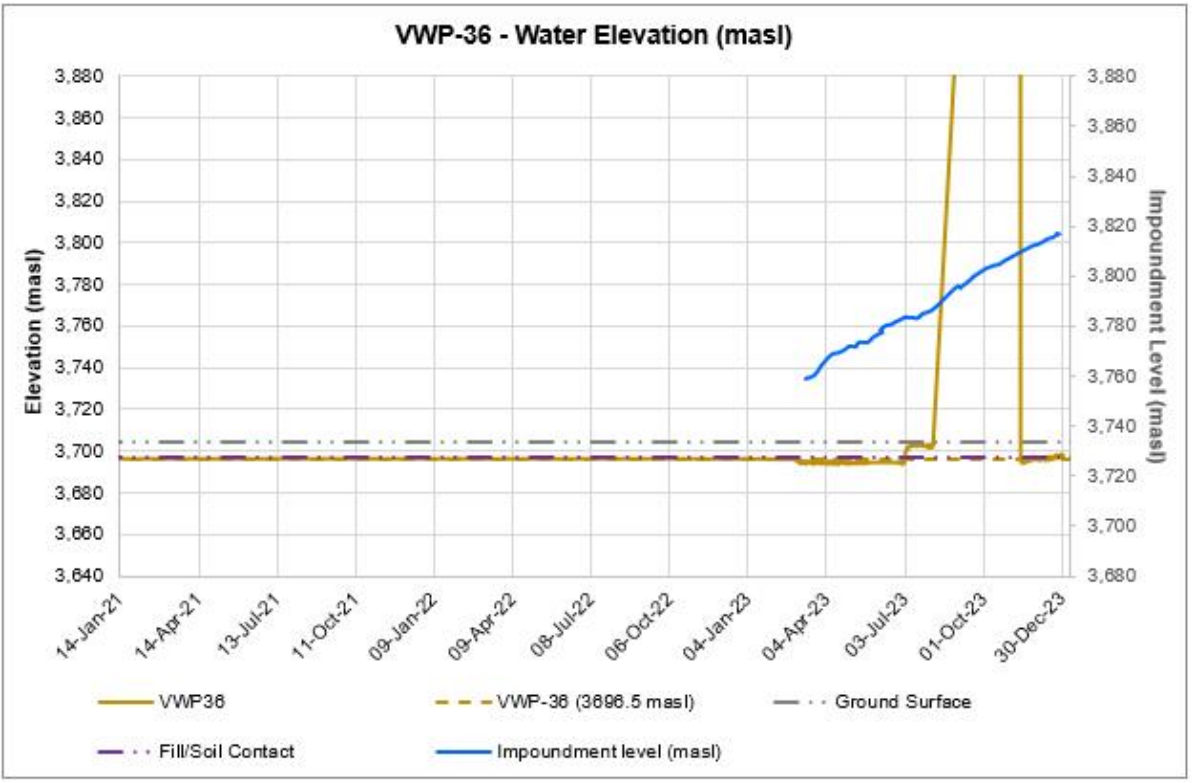
VWP-35

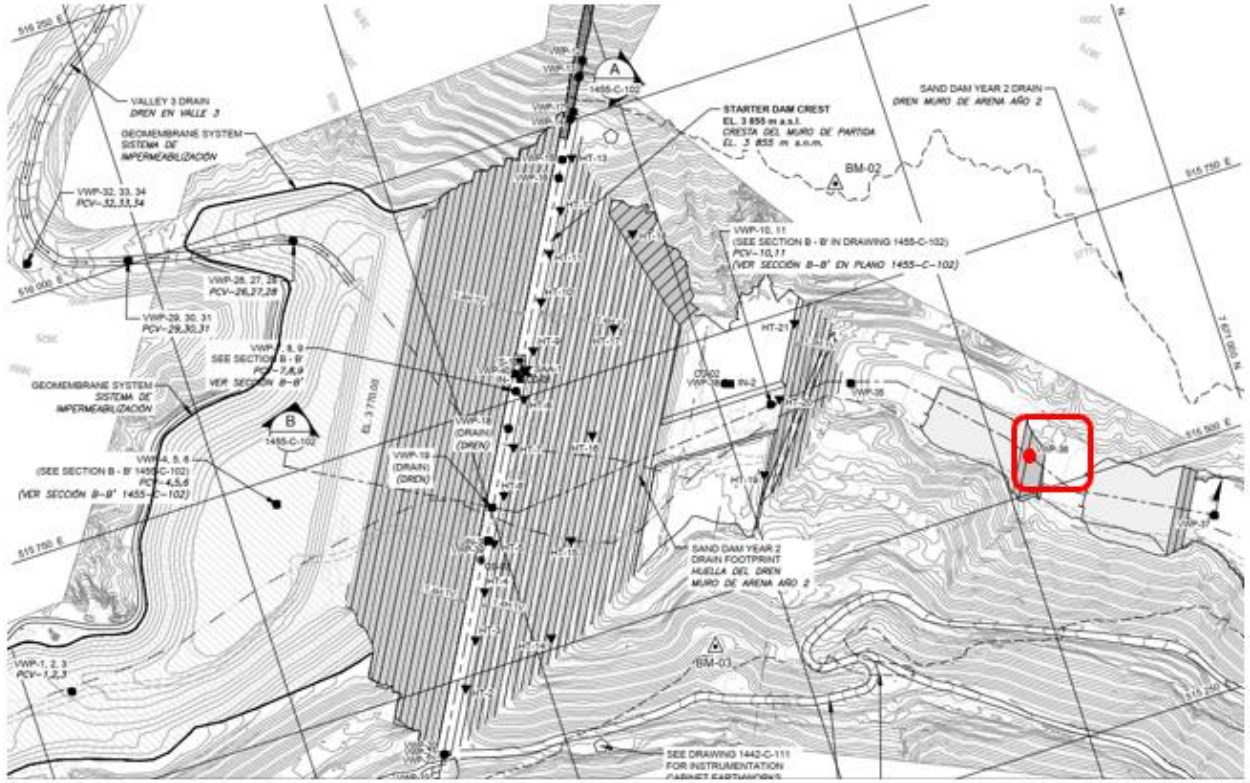




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

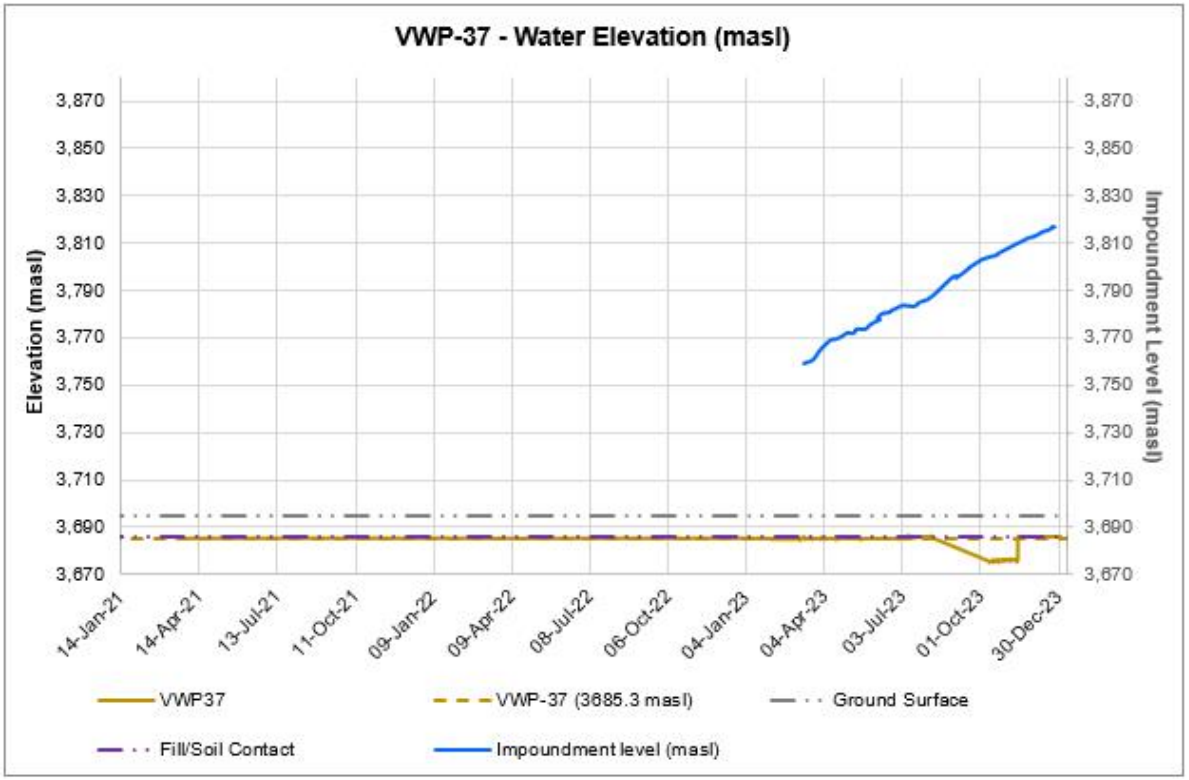
VWP-36

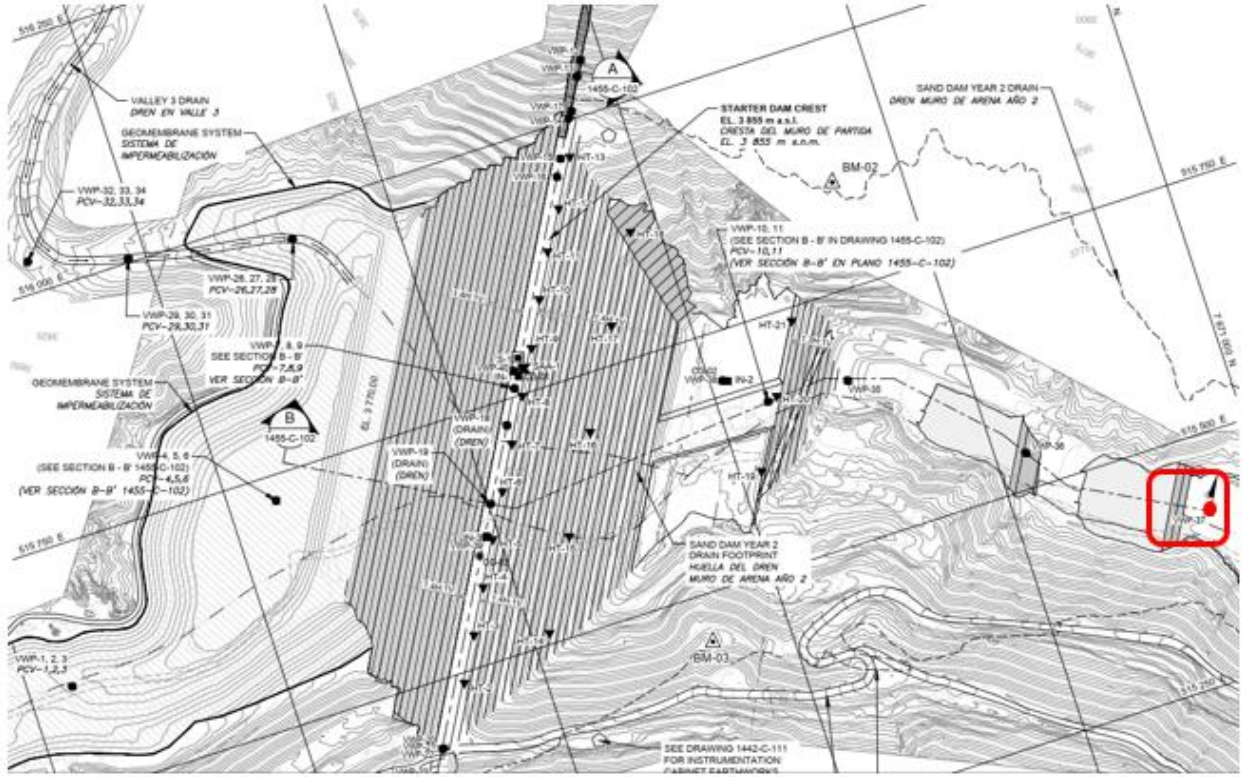




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

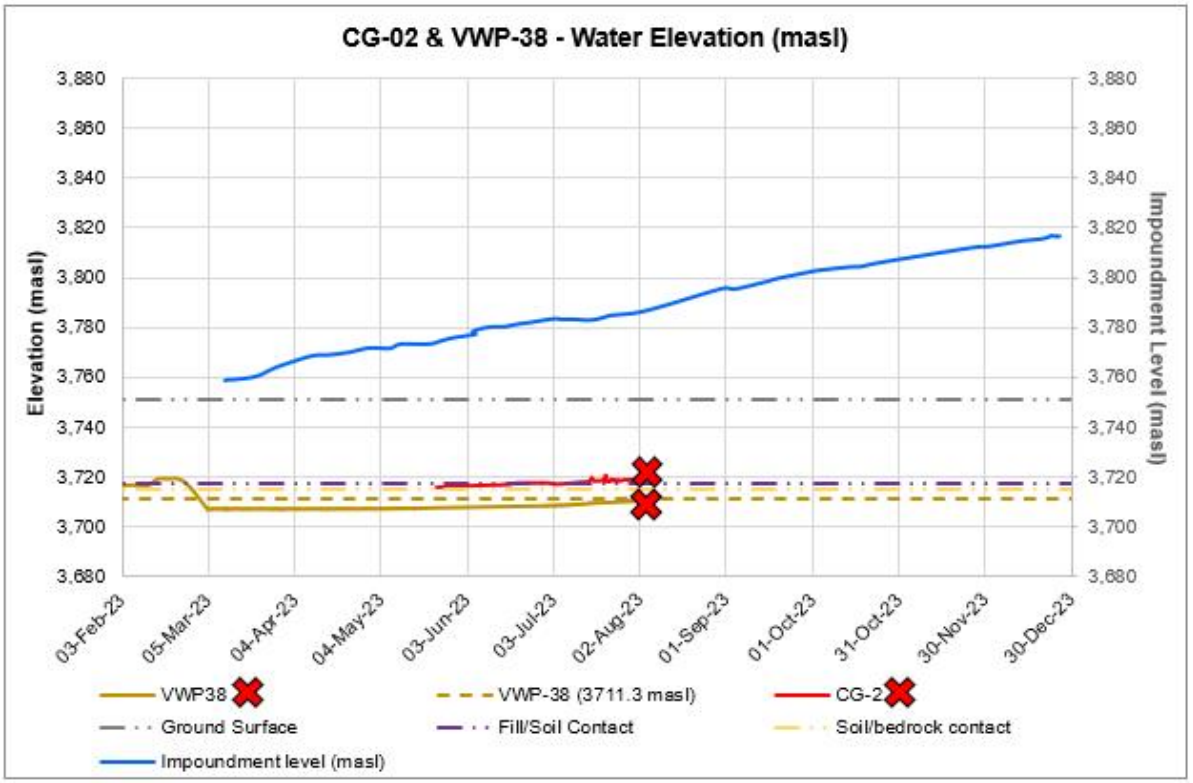
VWP-37

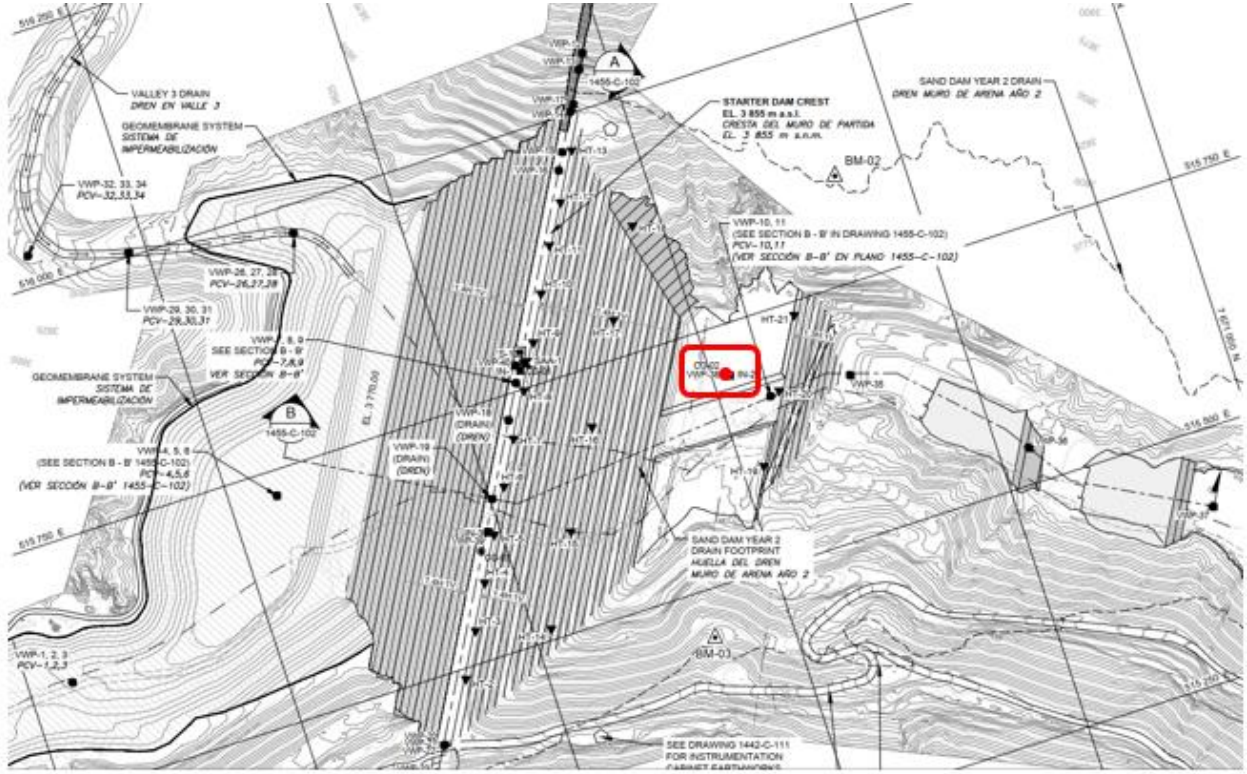




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

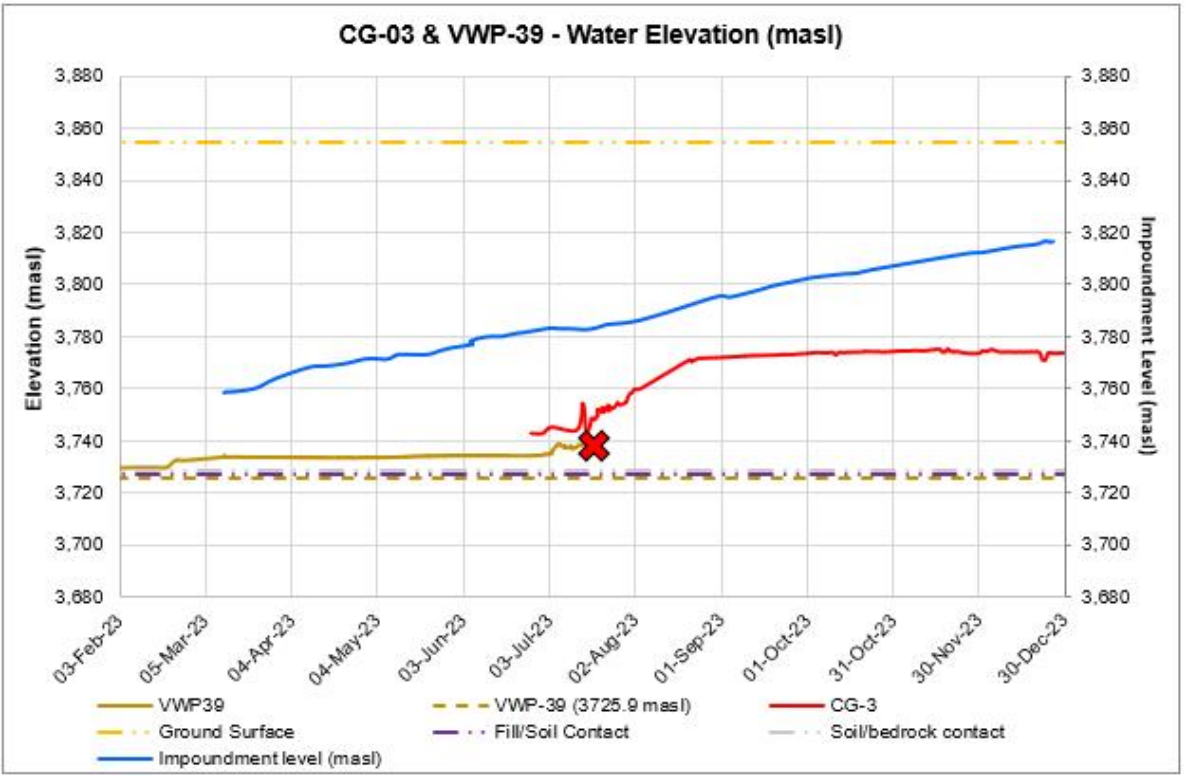
CG-02 & VWP-38

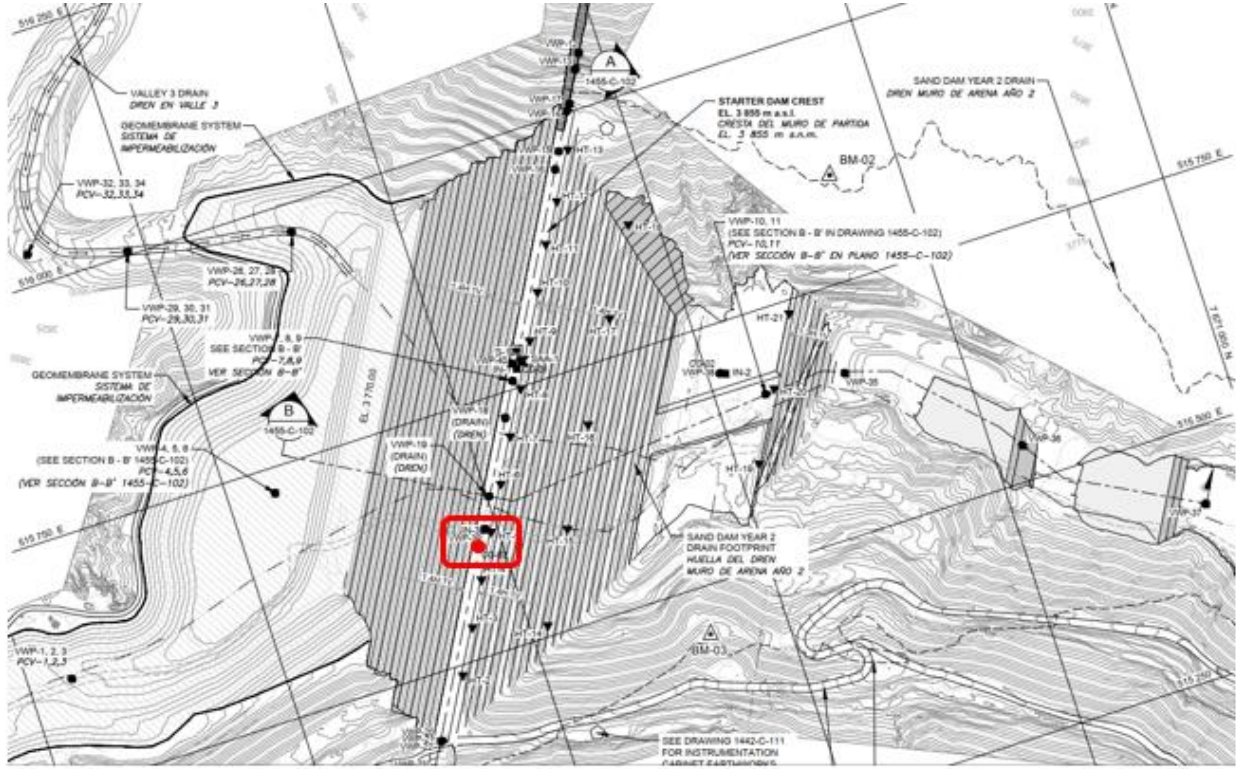




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

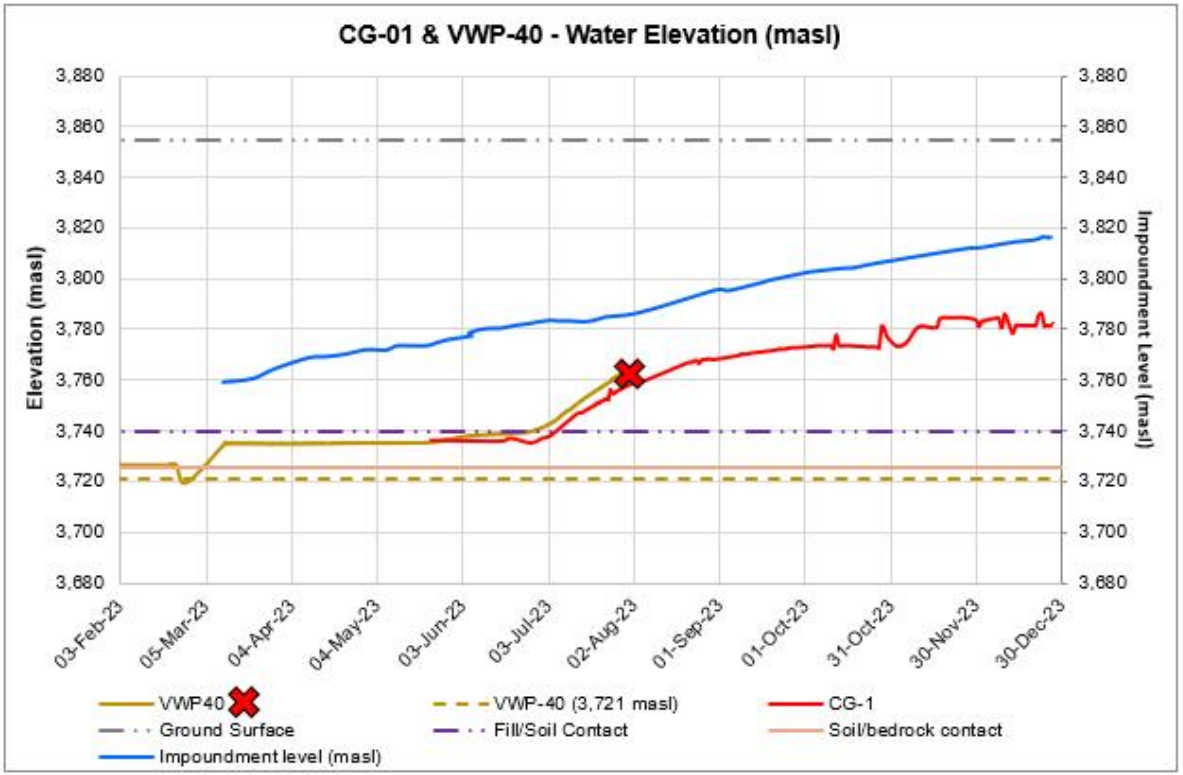
CG-03 & VWP-39

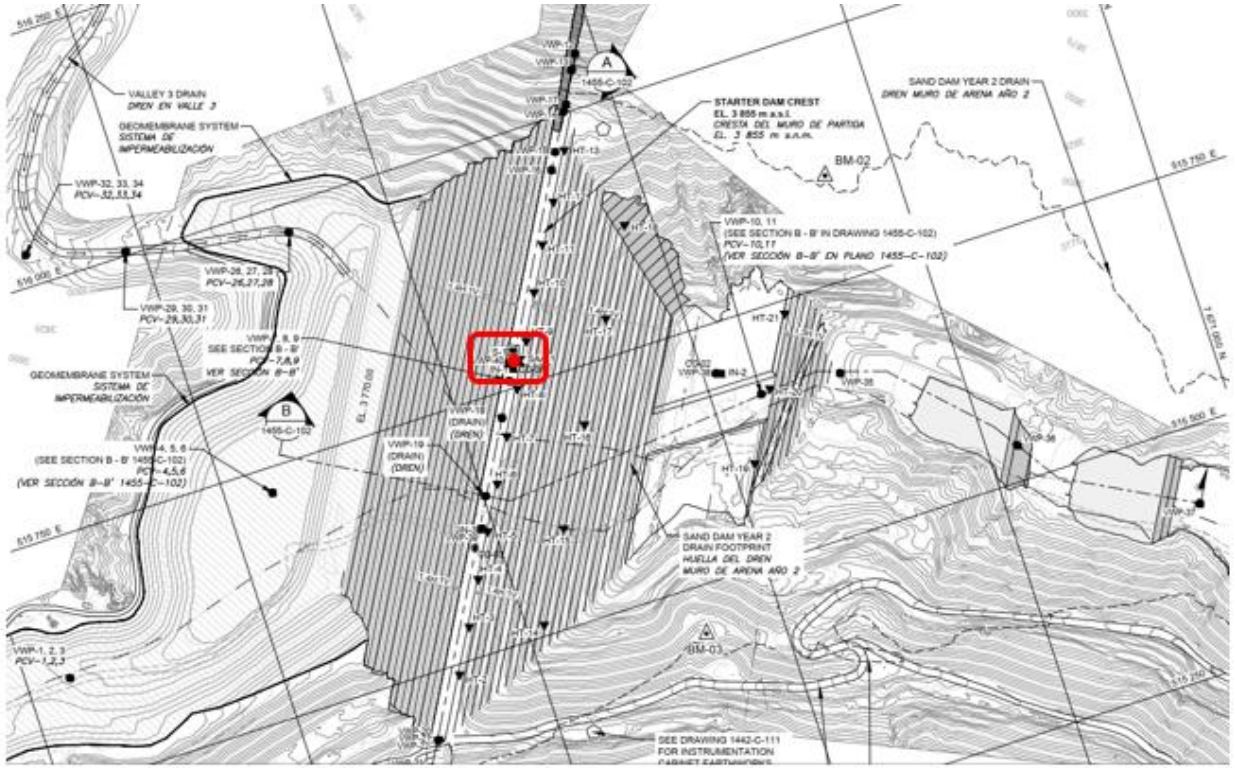




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

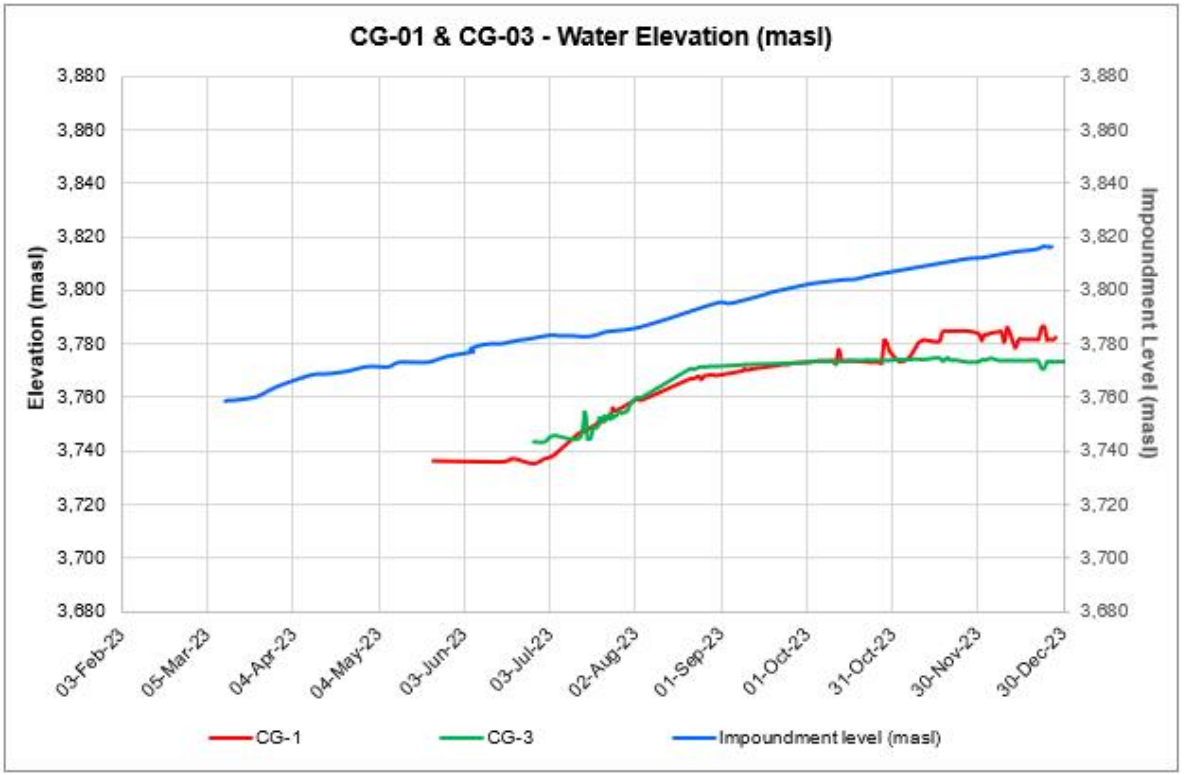
CG-01 & VWP-40

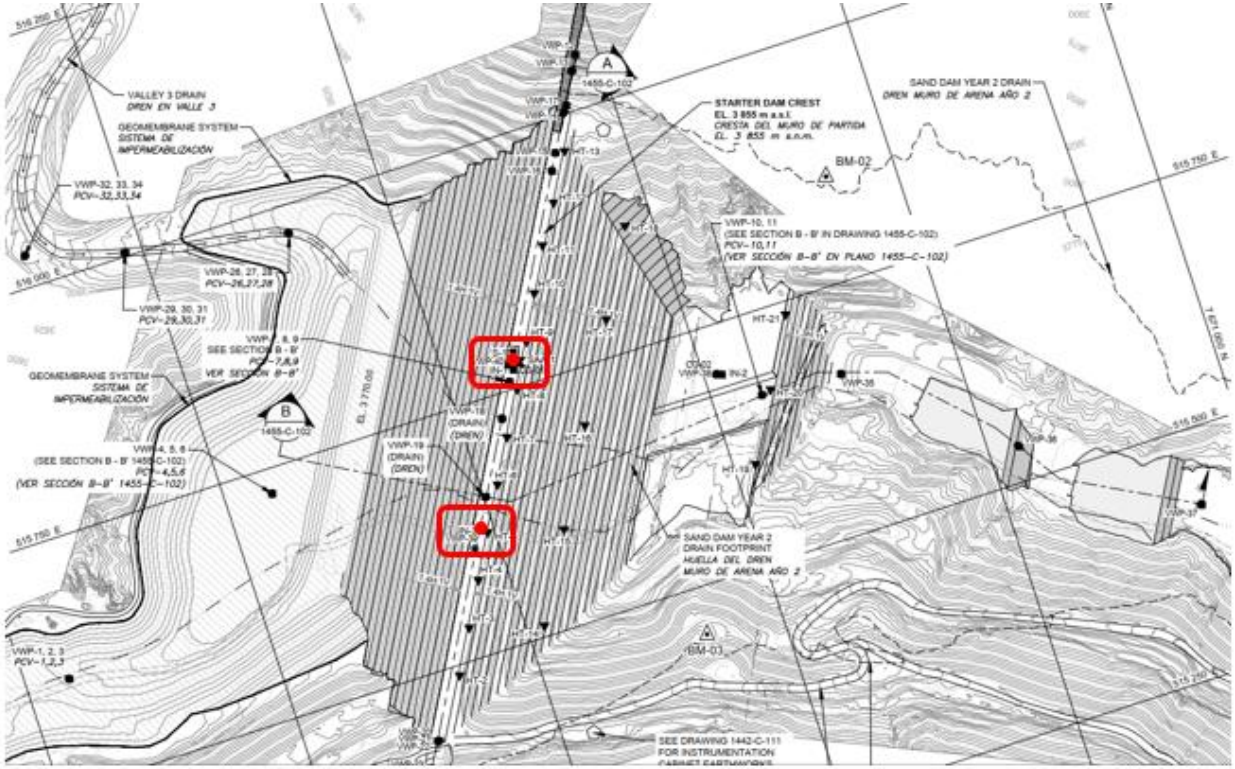




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

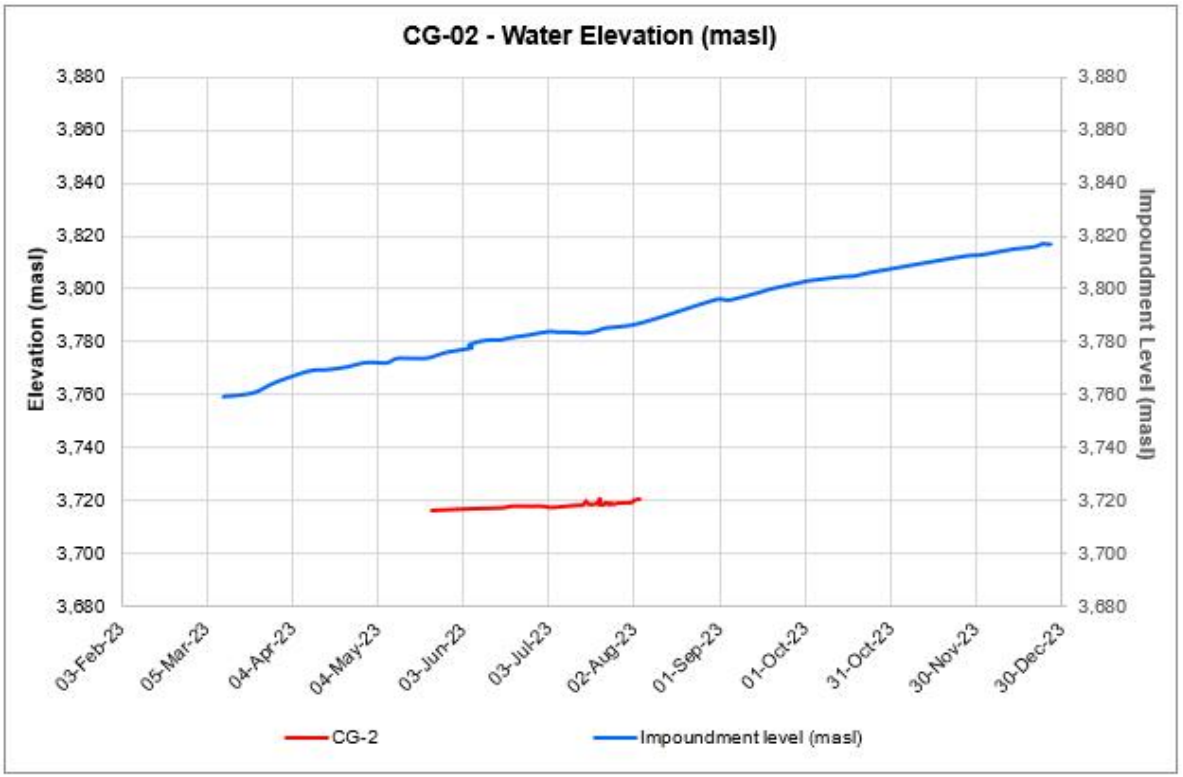
CG-01 & CG-03

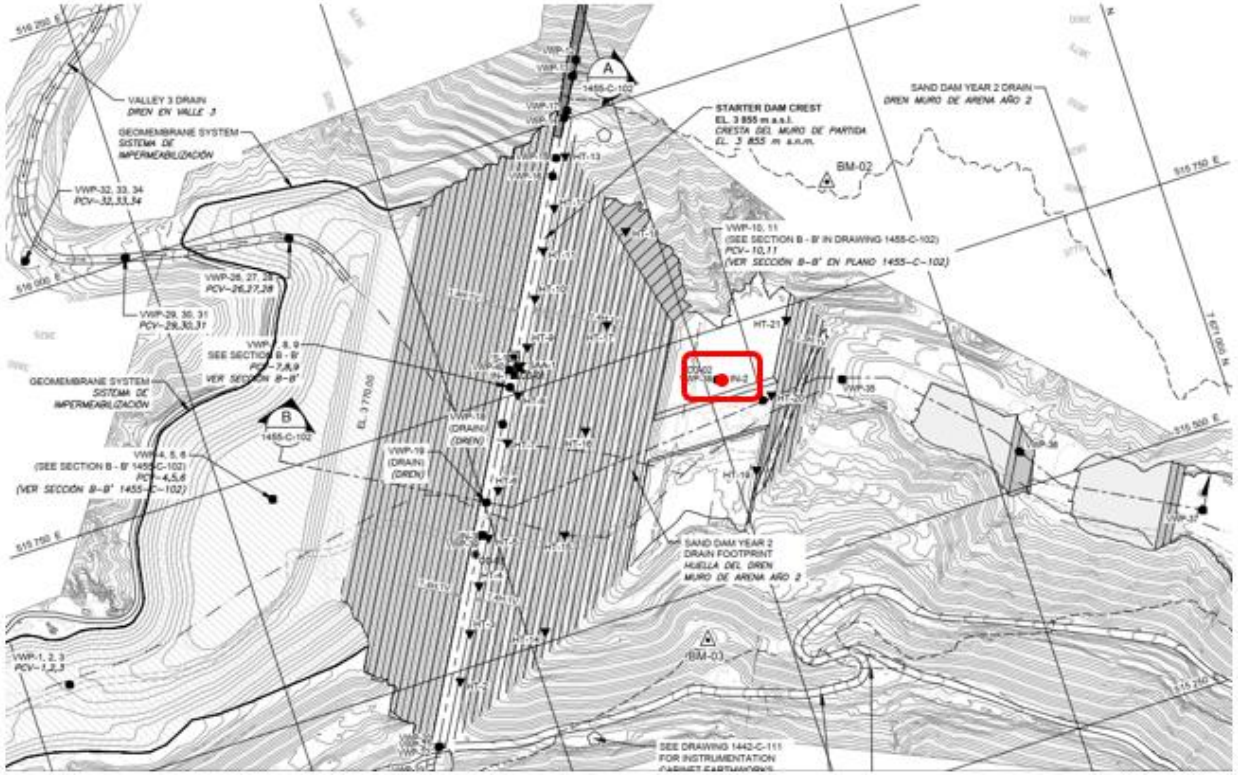




APPENDIX B. Vibrating Wire Piezometer Monitoring Results (based on data received from CMTQB)

CG-02


CG-02 - Water Elevation (masl)
Elevation (masl)
Impoundment Level (masl)
3,880
3,860
3,840
3,820
3,800
3,780
3,760
3,740
3,720
3,700
3,680
03-Feb-23
05-Mar-23
04-Apr-23
04-May-23
03-Jun-23
03-Jul-23
02-Aug-23
01-Sep-23
01-Oct-23
31-Oct-23
30-Nov-23
30-Dec-23
CG-2
Impoundment level (masl)

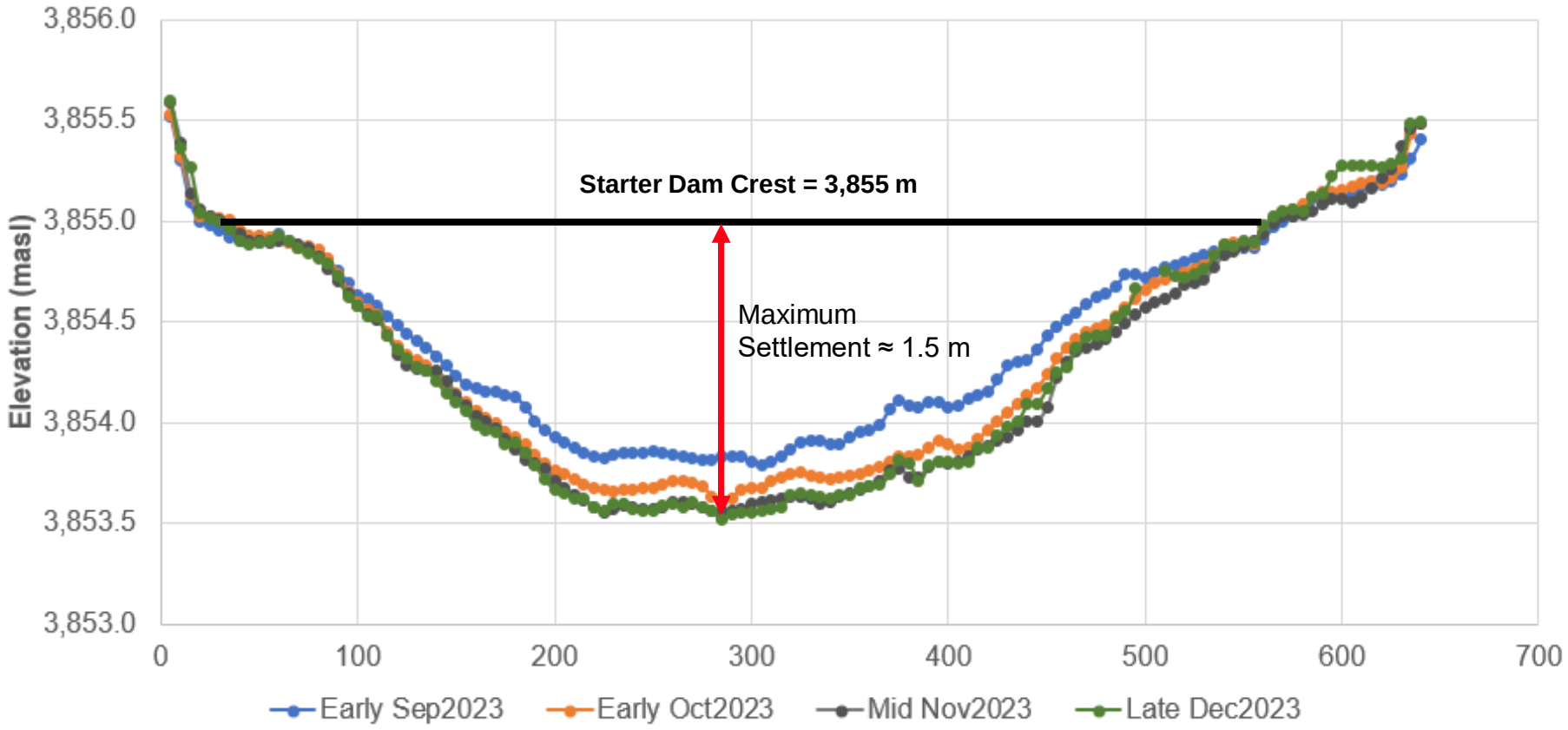

VALLEY 3 DRAIN
DREN EN VALLE 3
GEOMEMBRANE SYSTEM
SISTEMA DE IMPERMEABILIZACIÓN
STARTER DAM CREST
EL. 3 855 m a.s.l.
CRESTA DEL MURO DE PARTIDA
EL. 3 855 m s.n.m.
SAND DAM YEAR 2 DRAIN
DREN MURO DE ARENA AÑO 2
BM-02
BM-03
SAND DAM YEAR 2 DRAIN FOOTPRINT
HUELLA DEL DREN MURO DE ARENA AÑO 2
SEE DRAWING 1442-C-111 FOR INSTRUMENTATION

APPENDIX C

Crest Settlement Profile as of 23 December 2023

APPENDIX C. Crest Settlement Profile

DAM CREST PROFILE



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