

April 9, 2021

Project No. 20139279 (1000)

Darren Hennessey,
Sr Environmental Officer
Teck Resources Ltd.
Duck Pond Operations
30-32 Route 70, Box 9
Millertown, Newfoundland
A0H 1V0

2020 ANNUAL DUCK POND OPERATIONS TAILINGS MANAGEMENT FACILITY INSPECTION REPORT

Dear Darren:

The attached report provides the results of the 2020 annual facility inspection for the Tailings Management Facility (TMF) at the Duck Pond Operations. The facility inspection was completed by Andrew Peach, P. Geo., on September 30, 2020. The results of the facility inspection were discussed with mine personnel immediately following the inspection. This is a final report and includes edits based on your feedback on the draft version received March 25, 2021.

We trust that this report satisfies your current requirements. If you have any questions regarding this report, or require additional information, please do not hesitate to contact us.

Golder Associates Ltd.



Peter Merry, P.Eng.
Principal

WPM/

CC: Andrew Thrift, Michael Morris

Attachments: 2020 Annual Facility Inspection Report

[https://golderassociates.sharepoint.com/sites/123020/project files/5 technical work/1000 dsi/report/final/letter/20139279 2020 annual facility report cover letter rev 0.docx](https://golderassociates.sharepoint.com/sites/123020/project%20files/5%20technical%20work/1000%20dsi/report/final/letter/20139279%202020%20annual%20facility%20report%20cover%20letter%20rev%200.docx)



REPORT

2020 Annual Facility Inspection Report
Duck Pond Operations Tailings Management Facility

Submitted to:

Teck Resources Limited

Duck Pond Operations
30-32 Route 70, Box 9
Millertown, Newfoundland
A0H 1V0

Submitted by:

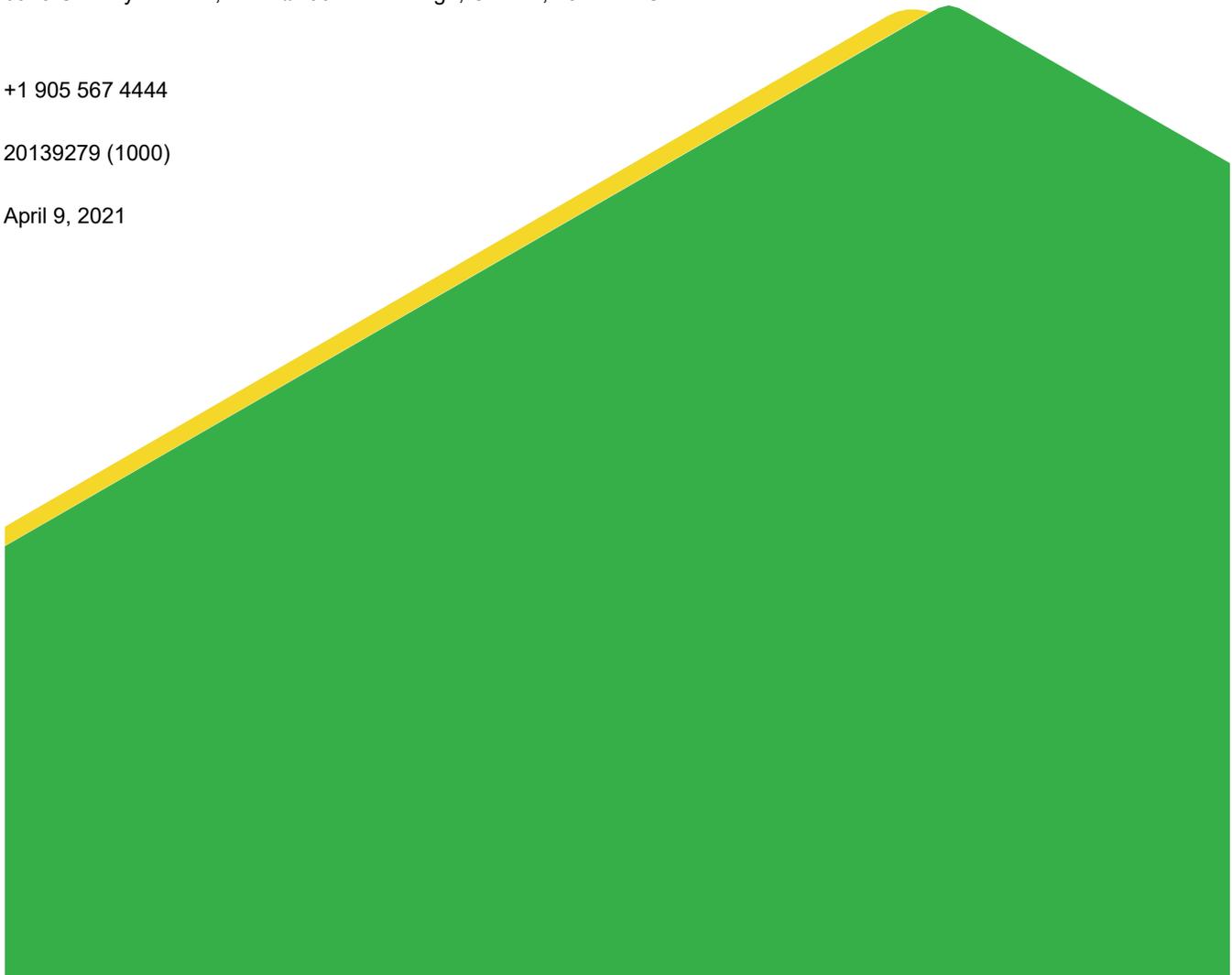
Golder Associates Ltd.

6925 Century Avenue, Suite #100 Mississauga, Ontario, L5N 7K2 Canada

+1 905 567 4444

20139279 (1000)

April 9, 2021



Distribution List

Electronic Copy - Teck Resources Limited

Electronic Copy - Golder Associates Ltd.

Executive Summary

This report presents the results of the 2020 annual facility inspection for the Teck Resources Limited (Teck), Duck Pond Operations (DPO), Tailings Management Facility (TMF) structures. This report was prepared based on a site visit carried out by Golder Associates Ltd. (Golder) on September 30, 2020 and a review of the available monitoring and maintenance records. The facility inspection report and photographs from the site visit are presented within this report.

Description of Facility and Dams

The TMF is located adjacent to the plant site and consists of two components, the Tailings Management Area (TMA) and the Polishing Pond. The TMA is contained by natural ground and two containment dams (Dams A and B). The Polishing Pond is located about 500 m west of the TMA where containment is provided by Dam C at the western end of the pond.

All three perimeter containment dams around the TMF are zoned earthfill embankments incorporating a thick central core of relatively low permeability glacial till, keyed into the glacial till foundation soils, as a seepage barrier. A filter zone is provided adjacent to the downstream face of the core to prevent internal erosion (piping) of the core material under seepage pressures. The core and filter zones are supported by upstream and downstream shells of compacted, free draining granular materials. Internal drainage systems are designed to promote drainage of the downstream shell. Emergency spillways at Dam B in the TMA and Dam C at the Polishing Pond are designed to protect the dams from overtopping during extreme flood events.

The TMF is currently in a transition period which is the first stage of reclamation and closure. At the time of the inspection, the water level in the TMA was below the minimum operating water level to facilitate placement of contaminated soils within the TMA as part of reclamation activities. Construction of the internal berms within the TMA was completed in late 2017. The internal berms across the TMA are rockfill embankments designed to reduce the fetch length and required water cover depth to prevent the long-term re-suspension of the tailings.

Summary of the Annual Facility Inspection

The TMF dams appeared to be in a good condition at the time of the site visit and the facility was performing well. Minor deficiencies noted during the inspection are not considered to be indicative of poor performance. The structures should continue to function as intended, provided they are routinely inspected and maintained.

A summary of the findings and recommended actions are provided in Table E-1.

Table E1: Summary of the 2020 Annual Facility Inspection Report Recommended Actions

Structure	ID Number	Deficiency or Non-Conformance	Recommended Action	Status	Priority ⁽¹⁾
General	2018 - 01	The TMA and Polishing Pond have occasionally been operated above the design maximum operating water level in years prior to 2016. This increases the potential for an unscheduled release of water through the spillway during extreme flood events.	Every effort should be made to operate the ponds within the design operating levels provided in the OMS Manual (Golder, 2020b).	Closed - The TMA and Polishing Pond have been operated within their design intent over the past 5 years and this specific recommendation is considered closed.	3
General	2018 - 02	Shrubs larger than 1 m in height were cleared from most structures on site in 2018 (except those locations specifically mentioned below). Another round of clearing is likely required in 2020 to allow continued visual observations of the structures.	Additional clearing was carried out in 2019. Plan another round of clearing for all structures around the TMF in 2021.	Ongoing – vegetation was cleared in 2019 and another round will likely be required in 2021.	4
Settlement Plates	2018 - 04	Settlement plates were installed on the crest of the internal berms in 2017. The survey data should be reviewed.	Teck should survey the settlement plates on Dams A and B and the internal berms annually and provide the data to Golder for review during the annual facility report.	Closed – Surveying the settlement plates is now part of Teck's routine operating procedures.	3
Internal Berms	2018 - 10	The north abutments of Internal Berms 1, 2, and 3 were stopped short of natural ground at 278.5 m during construction in 2017. The berms do not retain a head of water which reduces the priority rating as elevated water levels won't result in potential dam failure.	The north abutment of all three internal berms shall be extended approximately 50 m in order to achieve the design intent – whereby the berms provide full containment to elevation 278.5 m.	Closed – Berms 1 and 2 extended in late 2018 and Berm 3 was extended in 2020	3
Polishing Pond	2018 - 12	Sediment accumulation in the Polishing Pond may reduce its storage capacity.	A bathymetric survey and sampling program should be carried out in the Polishing Pond to determine the degree of sediment accumulation and remaining available capacity in the pond.	Ongoing – Sediment sampling program completed in 2020 with no indication of sludge accumulation. An additional sampling program is scheduled for the winter of 2021 to confirm initial results.	3
Dam C	2018 - 13	Minor rusting was observed around the inlet of the Decant Structure on Dam C.	The structure should be monitored for changing conditions that might affect its integrity.	Ongoing	3
Diversion Ditches	2018 - 15	A pipeline crossing was constructed in the winter of 2012/2013 across Diversion Ditch A2 at Sta. 0+350. The pipeline crossing includes a 0.3 m diameter HDPE culvert through the diversion ditch. The culvert is likely too small to convey the design storm flow and appears to be partially blocked with sediment and vegetation. However, the diversion ditch would not be overtopped under the design storm event as there is sufficient freeboard above the crossing to the top of bank on the diversion ditch.	The pipeline crossing should be monitored closely and repaired if damaged.	Ongoing	4
TMF	2019 - 01	Additional flows will be entering the TMA from Boundary site and the underground workings.	Once the flows from the underground workings and Boundary site are better understood, the TMF water balance should be reviewed and updated for impacts on water levels and discharge rates.	Outstanding – Teck plans to initiate a study in 2021.	3
Dam B	2020-01	A low area at the north abutment of Dam B was identified between the crest and spillway that may be lower than the crest elevation.	A topographic survey of the area should be completed to confirm the crest elevations and freeboard is maintained.	Open	3
General	2020-02	A large amount of ponded water was observed along the downstream toe of Dams A, B, and C during the inspection.	Drainage could be improved to prevent ponding water.	Open	4

Table E1: Summary of the 2020 Annual Facility Inspection Report Recommended Actions

Structure	ID Number	Deficiency or Non-Conformance	Recommended Action	Status	Priority ⁽¹⁾
Piezometers	2020-03	Piezometers are present on the crest of Dams A, B, and C. Four of the piezometers have experienced water levels up to the dam crest elevation. The surface casings on all piezometer nests were raised in 2019 to prevent the ingress of surface runoff. Since the raise, three of the piezometers have begun to return to historical levels while one is still experiencing higher levels. The piezometer data should be reviewed.	Teck should continue to monitor the piezometers on Dams A, B, and C monthly during non-freezing conditions and provide the data to Golder for review during the annual facility inspection.	Open	3
Spillways	2020-04	Spillways observed to be generally clear with some vegetation present during the inspection.	On-going maintenance should include routine clearing in the spillway channels to maintain their flow capacity and permit visual inspection. Another round of vegetation clearing is required in 2021.	Open	4
Diversion Ditches	2020-05	The Diversion Ditch C1 CSP culvert beneath the mine access road is partially filled with debris, significantly reducing its capacity.	The culvert should be cleared of the debris.	Open	3

Legend:

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

1) Source: British Columbia Health, Safety and Reclamation Code Guidance document, Section 4.2 (MEM 2016).

Table of Contents

1.0 INTRODUCTION 1

2.0 FACILITY DESCRIPTION..... 2

3.0 INSPECTION PROCEDURES 5

4.0 GENERAL COMMENTS AND OBSERVATIONS 6

5.0 FINDINGS AND RECOMMENDED ACTIONS 11

6.0 CLOSING 14

REFERENCES 15

TABLES

Table 1: Summary of Infrastructure Inspected 5

Table 2: Summary of the 2020 Annual Facility Inspection Report Recommended Actions 12

FIGURES

Figure 1: Site Location Plan 18

Figure 2: General Arrangement Plan 19

Figure 3: Dams A and B Instrumented Cross-Sections 20

Figure 4: Dam C Instrumented Cross-Section and Internal Berm Typical Cross-Section 21

APPENDICES

APPENDIX A

Completed Inspection Report Forms

1.0 INTRODUCTION

The Teck Resources Limited (Teck) Duck Pond Operations (DPO) is located approximately 30 km south of the community of Millertown, in west central Newfoundland (see Figure 1). Golder Associates Ltd. (Golder) completed detailed engineering for the Tailings Management Facility (TMF) in early 2006 (Golder, 2006) and construction of the facility was completed in late 2006. SGE Acres Limited (SGEA), now a part of the Hatch group of companies, provided construction management and Quality Assurance inspection and testing services during the TMF construction. Golder made periodic site visits during construction and provided engineering support on an as required basis to SGEA. The results of Quality Assurance inspection and testing by SGEA are provided in the as-built report for the TMF (SGEA, 2007). The mine operated between 2007 and 2015 and the TMF is currently in a transition period which is the first stage of reclamation and closure.

Golder was retained by Teck to complete the 2020 annual facility inspection report for the TMF at DPO. The first annual inspection of the TMF was completed in 2007 by Golder and the most recent comprehensive Dam Safety Review (DSR) was completed by GEMTEC Limited in 2016 (GEMTEC, 2017). The primary objectives of the annual facility inspection report are to assess the condition of the dams and flow conveyance structures at the TMF, and to review the adequacy of maintenance procedures. In addition to a visual inspection of the facility, the results from monitoring of instrumentation are reviewed for comparison with previous readings.

As outlined in the Operation, Maintenance and Surveillance (OMS) Manual (Golder, 2020b), daily, weekly, and quarterly inspections are to be completed by site personnel to assess changing conditions and identify maintenance requirements throughout the year. A detailed inspection of the facility should be completed annually by the design engineer and after any unusual events such as an extreme rainfall or seismic event.

This annual facility report describes the observations made during an inspection of the dams and drainage facilities at the TMF conducted on September 30, 2020. The inspection was carried out by Andrew Peach of the Golder St. John's office. Mr. Peach is a registered professional engineering geologist and has familiarity with the project through previous involvement with the site. The results of the facility inspection were discussed with site personnel following the inspection.

2.0 FACILITY DESCRIPTION

The TMF is located adjacent to the plant site and consists of two components, the Tailings Management Area (TMA) and the Polishing Pond (see Figure 2). The TMA is located in the historic Trout Pond valley, where high ground provides natural containment along the northern and southern perimeters. Two tailings containment dams (Dams A and B) were constructed across the valley to complete the impoundment. The Polishing Pond is located about 500 m west of the TMA where containment is provided by Dam C at the western end of the pond. A decant structure is incorporated in Dam C to manage water levels within the pond. Fresh water diversion ditches around the TMF are designed to reduce surface water inflows into these facilities.

The TMF was originally designed to accommodate approximately 2.5 million tonnes (2.5 Mt) of tailings at a nominal production rate of 1,800 tonnes per day (1,800 tpd) over the planned 6.2-year life-of-mine. Processing of ore from the mine started in January 2007 with full operation commencing in June 2007. Mining and milling finished in mid-2015 with a total of approximately 2.7 Mt of tailings deposited in the TMA over the mine life. The additional 0.2 Mt of tailings stored in the TMA above the original design capacity was achievable based on improved deposition efficiencies.

The Potentially Acid Generating (PAG) tailings were transported to the TMA as a slurry and then deposited subaqueously. A minimum 0.4 m deep water cover was provided over the tailings to inhibit oxidation and acid generation during the operating period. Teck has lowered the water level in the TMA frequently since 2017 to facilitate the placement of contaminated soils between the internal berms. This practice will continue until after the mill is decommissioned in 2021 and the plant site remediated, currently planned for 2022. The internal berms across the TMA are rockfill embankments designed to reduce the fetch length and required water cover depth to prevent the long-term re-suspension of the tailings (Golder, 2015b). Construction of the internal berms was completed in late 2017. A typical section of the internal berms is illustrated on Figure 4. Future reclamation activities will include a dredging program to lower all tailings below the design maximum tailings elevation of 274.2 metres above sea level (masl).

Closure of DPO, including the TMF, is described in the site reclamation and closure plan (AMEC, 2014). The TMF is currently in a transition period which is the first stage of reclamation and closure. Water continues to be treated in the TMA and discharged to the Polishing Pond for solids settling, prior to final discharge to the environment. As the site has a positive water balance, some treatment and discharge of water is required until it can be demonstrated that the water quality in the TMA meets regulatory criteria for direct discharge to the environment. For the transition period, the maximum operating water level in the TMA is 276.9 masl to provide 0.8 m of depth to the Dam B spillway, which is sufficient to store the environmental design flood. To facilitate the internal berm construction and placement of contaminated soils, the operating water level has been drawn down to 273.0 m every summer since 2017. Once placement of the contaminated soils is complete, the water level will be increased to at least its minimum operating level of 276.3 masl in order to maintain 0.6 m of water cover over the PAG waste rock placed in the TMA as part of the berm construction and PAG waste rock cover over the contaminated soils. PAG waste rock used for construction of the internal berms was not placed above the minimum operating water level as this would result in the rock being flushed with changes in water levels. The ultimate required closure water cover depth over the tailings and waste rock is not achieved during the current transition period. There is therefore a risk of the generation of suspended solids during the spring thaw and significant wind events. Similar to the operating phase, this risk is managed by delaying the pumping of water from the TMA to the Polishing Pond until acceptable water quality criteria is achieved.

Results of the water balance modelling for the transition period predicts a fluctuation in the TMA water level of 0.6 m for a 100-year wet return period and a minimum operating water level of 276.3 m was proposed. The water balance was run based on the same water management procedures implemented during operations in which water inflows are stored in the TMA for a period of seven months, from the beginning of December through the end of June each year. Water is planned to be discharged to the Polishing Pond by pumping at a constant rate over a five-month period from July through November. While the underground workings have already flooded, the ultimate discharge rate from the underground workings has not been clearly defined and may affect the water management levels and discharge rates from the TMA in the coming years. No discharge from the underground workings was observed while the underground water level stabilized between 2015 and 2019. In 2020, Teck installed a pumping system in the portal to manage water levels in the underground workings with excess water pumped to the TMA. Excess water accumulated at the Boundary site is also pumped to the TMA near the south abutment of Dam A and contributes to the net inflow to the TMA. In recent years, Teck has reported approximately 2.2M-m³ of water was discharged from the Polishing Pond to the environment on an annual basis, with discharge occurring up to 10 months a year. While this is more than the discharge rate predicted with the water balance for the transition period, the increased discharge is attributed to lowering the water level in the TMA to facilitate placement of the contaminated soils and some of the unknowns attributed to the underground mine flooding and inflows from the Boundary site. It is recommended that the TMF water balance be reviewed and updated once the Boundary and underground dewatering flows are better understood to determine the impacts on the TMA water levels and discharge rates. It is currently understood this study will be initiated in 2021.

The Polishing Pond will continue to serve as a settling basin for treated effluent from the TMA during the transition phase, prior to its release into the environment.

Since commissioning the facility in 2007, the water management operating procedures have been modified to allow for batch discharge when required to meet effluent water quality objectives. This has resulted in extending the discharge period, discharging at increased rates, and exceeding the design maximum operating water level in the TMA on occasions. A similar procedure will remain in effect during the transition phase; however, it is less likely to be implemented as a result of less inflow into the TMA than previously occurred from the milling operation. Details are discussed further in the OMS Manual (2020b).

All three containment dams around the TMF are zoned earthfill embankments incorporating a thick central core of relatively low permeability glacial till, keyed into the glacial till foundation soils, as a seepage barrier. A filter zone is provided adjacent to the downstream face of the core to prevent internal erosion (piping) of the core material under seepage pressures. The core and filter zones are supported by upstream and downstream shells of compacted, free draining granular materials. Internal drainage systems are designed to promote drainage of the downstream shell. Emergency spillways at Dam B in the TMA and Dam C at the Polishing Pond are designed to protect the dams from overtopping during extreme flood events.

The downstream shells of the dams are protected from surface runoff and wind erosion by a layer of cobble size stone (rip rap). Armour stone erosion protection comprised of boulder size particles protects the upstream shells from erosion by wave action, as well as surface runoff and fluctuations in pond water levels. Typical cross-sections of the dams are illustrated on Figures 3 and 4.

All three perimeter dams were classified as Low consequence structures during the 2016 DSR conducted by GEMTEC (2017) based on CDA (2013). A review of the classification as part of the 2020 annual facility inspection report indicates the classification is still appropriate as no significant changes to the dams or downstream environment have occurred. The next DSR is scheduled for 2021.

The freshwater diversion ditches and emergency spillway channels have been formed in the glacial till soils. Rip rap and armour stone erosion protection is provided in locations where high flow velocities are anticipated. At other locations, the ditch and channel inverts are protected against erosion by a vegetative cover. Culverts have been installed beneath access roads that cross the ditch and channel alignments.

A Settling Pond was located near the south shore of the TMA and provided retention time for solids settling of water pumped from the underground mine and runoff from the waste rock stockpile during the operating period. The Settling Pond was fully decommissioned and remediated in 2019. Decommissioning of the Settling Pond included removal of all contaminated soils from within the pond and placement within the TMA. The containment dams were then levelled and graded into natural topography.

A total of 11 standpipe type piezometers were installed in the containment dams in August 2007 to monitor water levels within the dams (Golder, 2008a). The piezometers are illustrated on Figures 3 and 4 and are still monitored to evaluate dam performance. Plots of the historical piezometer readings are provided with the inspection forms for each dam in Appendix A. In addition, four monitoring wells, installed by SGEA during construction in 2006, are being monitored for groundwater quality by Teck.

3.0 INSPECTION PROCEDURES

The annual inspection involved a detailed visual inspection of the facility. Any deficiencies apparent in the condition of the structures were noted and recommendations for remedial action, if required, were identified (Table 1). The following facilities were inspected on September 30, 2020.

Table 1: Summary of Infrastructure Inspected

Structure	Description
Dam A	Provides containment along the eastern end of the TMA.
Dam B	Provides containment along the western end of the TMA.
Dam C	Provides containment along the western end of the Polishing Pond and contains the decant structure for final discharge to the environment.
Internal Berms	Reduces fetch length across the TMA during the closure.
Dam B Emergency Spillway and Channel	Emergency spillway for the TMA. The Channel also diverts surface water runoff away from the northern side of the Polishing Pond.
Dam C Emergency Spillway	Emergency spillway for the Polishing Pond.
Diversion Ditches A1, A2, B1, C1	Divert surface water runoff away from the TMA and Polishing Pond.
Discharge Ditch	Conveys treated effluent from the TMA to the Polishing Pond.
Pipelines	Pipelines required to convey water and treated effluent around the TMF.
Access Roads	Provide access to all structures around the TMF for monitoring and surveillance purposes.

Details of the inspection are contained in Appendix A. The condition of each structure was recorded on individual inspection sheets (Forms A and B). Measured piezometric water levels recorded on October 14, 2020 by site personnel are provided in plots in Appendix A and illustrated on Figures 3 and 4. Representative photographs are included with each form for clarity. A complete photographic record of the site inspection along with detailed field inspection notes are maintained in the project files in Golder's Mississauga, Ontario office.

4.0 GENERAL COMMENTS AND OBSERVATIONS

The overall condition of the TMF appears to be substantially unchanged since the last site visit in 2019. Some of the recommendations provided in the 2019 annual inspection have been completed by Teck over the past year. Outstanding items are discussed in the subsections below.

Generally, all structures at the TMF appeared to be in good operating condition. The containment dams show no evidence of instability. No unusual seepage was observed at any of the dam structures, suggesting proper functioning of the dams.

Vegetation is growing on and around the dams and within the hydraulic flow structures. On-going maintenance should include routine clearing of the dams, ditches and spillway channels in order to maintain flow capacities, prevent internal damage to the dams, and permit visual inspection. Another round of vegetation clearing will likely be required in 2021.

In mid-2015, mining and milling operations ceased, and Teck has lowered the water level in the TMA to facilitate construction of the internal berms and placement of contaminated soils most summers since 2016. At the time of the site inspection, the water level in the TMA (275.3 m) was approximately 1.0 m below the design minimum operating water level for the transition period (276.3 m). Teck will keep the water level low until placement of contaminated soils is complete, likely in 2022. The amount of time that the tailings are exposed for placement of the contaminated soils will be minimized to inhibit oxidation and acid generation and affect water quality in the TMA.

Observations made during the inspection are summarized in the following sections, and fully documented in Appendix A. Forms A and B in Appendix A document minor deficiencies that were noted at the time of the inspection. These deficiencies should be addressed as part of the on-going maintenance program.

Dam A

The dam appeared to be in good overall condition. The crest was noted as being topped with mostly sand and gravel with some cobbles. It was observed to be slightly undulating with no apparent crossfall or camber.

There was very little vegetation observed along the slopes and the high-water mark on the upstream shell was visible with a large amount of normal freeboard. Some areas along the downstream toe were observed to be covered with thick vegetation (i.e., grasses and shrubs) which limited the inspection of the toe. The upstream slope should be monitored for wave erosion/benching of the rip rap.

A large amount of ponded water was observed along the toe and visible seepage was noted. There was no water upwelling or flowing directly out of the toe, and the seepage was noted as slightly more than a trickle.

The seepage emanating from the downstream shell and accumulating in the Seepage Collection Sump at Sta 0+550, along with surface runoff from the area, flows through the high-density polyethylene (HDPE) culvert beneath the access road to the environment. The water observed at the toe and discharging through the HDPE culvert was clear (i.e., free of sediment) and showed very little signs of discoloration due to oxidation. Although some portion of this water may be seepage from the TMA, it is understood from site personnel that the water quality at the culvert meets discharge criteria. In 2019, Teck started recording the flowrate at the culvert following recommendations in previous years. The flowrate on September 11th, 2020 was 1.3 L/min. Golder developed a tracking sheet (attached to Form A in Appendix A) that should be used by Teck in the future to identify any trends in seepage flowrates.

Three piezometers (P07-01A in one nest and P07-02A and P07-02B in another nest) and a settlement plate (S18-08) were present on the crest of the dam at its maximum height. The instrumentation appeared in good condition; the concrete around the piezometers was in good condition with only minor cracking around the edges.

The piezometers are generally responding well to fluctuating water levels in the TMA, indicating the dam is performing as intended. Piezometer P07-02B was reported as full to the dam crest elevation, well above the TMA pond level, in 2018 which prompted the casings on both piezometer nests to be raised in 2019 to prevent the ingress of surface runoff. The new casings are approximately 15 cm above the ground and help prevent surface runoff from entering the piezometers. Since the casings were raised the piezometers have returned to historical normal levels.

The settlement plate, installed in late 2018, was surveyed by Red Indian Surveys Ltd. in June 2019 and October 2020. The survey data indicates that since its installation, the plate has settled 12 mm. This indicates that minimal movement has occurred and is considered to be within the error tolerance of the survey. The settlement plate should continue to be surveyed annually, and the data provided to Golder for review as part of the annual facility inspection.

Dam B

The dam appeared to be in good overall condition. The crest was noted as being topped with mostly sand and gravel with some cobbles and was observed to have no apparent crossfall or camber. An area of low-lying elevation was observed at the north abutment, between the dam and spillway. The area should be surveyed to confirm the crest elevation and required freeboard is maintained through this area.

There was very little vegetation observed along the slopes and the high-water mark was visible on the upstream shell with a large amount of normal freeboard. Some areas along the downstream toe were observed to be covered with thick vegetation (i.e., grasses and shrubs) which limited the inspection of the toe.

A large amount of ponded water was observed along the toe; however, there was no visible seepage. The water coming out from the downstream shell accumulates in a small pond before discharging between two overburden spoil piles into a channel that flows towards the Polishing Pond. The water is clear (i.e., free of sediment); however, there are signs of iron staining in the small pond. The flow rate was consistent with observations in previous years and the seepage reports to the Polishing Pond.

Four piezometers (P07-03A and P07-03B in one nest and P07-04A and P07-04B in another nest) and a settlement plate (S18-02) were present on the crest of the dam at its maximum height. The instrumentation appeared in good condition; the concrete around the piezometers was in good condition with only minor cracking around the edges.

The piezometers on Dam B are generally responding well to fluctuating water levels in the TMA indicating the dam is performing as intended. Piezometer P07-03A has experienced water levels above the TMA pond level. This has been an ongoing issue since 2017 but the levels are trending downwards and were within normal levels during the second half of 2020. Similar to those piezometers on Dam A, the surface casings on both piezometer nests (P07-03 and P07-04) were raised in 2019 to prevent the ingress of surface runoff. The new casings are approximately 15 cm above ground and should help prevent surface runoff from entering the piezometers.

The settlement plate, installed in late 2018, was surveyed by Red Indian Surveys Ltd. in June 2019 and October 2020. The survey data indicates that since its installation, the plate has moved 14 mm. This indicates that minimal movement has occurred and is considered to be within the error tolerance of the survey. The settlement plate

should continue to be surveyed annually, and the data provided to Golder for review as part of the annual facility inspection.

The Water Reclaim Well at the pump house appeared to be in good condition. No blockages were observed at the intake screen. Mechanical and electrical inspection of the Water Reclaim Well was not part of the annual facility inspection scope.

Dam C

Dam C appeared to be in good overall condition. The crest was noted as being topped with mostly sand and gravel with some cobbles and was observed to have no apparent crossfall or camber.

There was very little vegetation observed along the slopes and the high-water mark was visible on the upstream shell with a large amount of normal freeboard. No signs of benching or movement were observed along the upstream slope. Some areas along the downstream toe were observed to be covered with thick vegetation (i.e., grasses and shrubs) which limited the inspection of the toe.

A large amount of ponded water was observed along the toe; however, there was no visible seepage.

Discharge to the environment via the Decant Structure was occurring during the site visit but discharge from the TMA was not occurring. The Decant Structure and Hydraulic Discharge Structure both appeared to be operating as intended. There was no evidence of instability, wear, or blockage. Minor rusting was observed around the inlet of the Decant Structure, similar to previous years. The structure should be monitored for changing conditions that might affect its integrity.

Four piezometers (P07-05A and P07-05B in one nest and P07-06A and P07-06B in another nest) were present on the crest of the dam near the upstream shoulder and appeared in good condition; the concrete around the piezometers was in good condition with only minor cracking around the edges.

Piezometers P07-06B and P07-06A have experienced water levels above the Polishing Pond level in recent years. In 2019, the surface casings were extended to prevent surface runoff from entering the casing. Since the casings were extended in 2019, the water levels in piezometer P07-6A have returned to historical normal levels but piezometer P07-06B is still showing fluctuating water levels above the Polishing Pond level. The piezometers should continue to be monitored for changing conditions.

The Polishing Pond was designed only for solids settling prior to discharge to the environment. Accumulation of precipitates in the pond resulting from effluent treatment during the operating period in the pipeline that discharges into the Discharge Ditch could reduce the pond's storage capacity. Following recommendations in previous years, Teck carried out a sampling program in the Polishing Pond in 2020 to evaluate if sludge has accumulated on the base of the pond, which could reduce its retention time and require relocation of sediment at final closure. Teck reported that no noticeable amount of sludge/sediment has accumulated to date, but they plan to carry out a larger program in the winter of 2021. The winter 2021 program will include a large grid pattern over the full pond area. Teck should plan to reevaluate the potential for sludge accumulation in the Polishing Pond prior to final closure and decommissioning of the polishing pond.

Internal Berms

Internal berms were constructed across the TMA in 2017 and the water treatment plant discharge pipelines were also installed along Berms 1 and 3.

Contaminated soils placed between the finger dykes in 2018 were covered with sand and gravel from the Boundary esker borrow source in 2019. The sand and gravel cover meets the design intent whereby wind/wave action during large return period events will prevent the resuspension of the contaminated soils.

The north abutments of Berms 1, 2, and 3 were stopped short of natural ground surface at 278.5 masl during construction in 2017. Berms 1 and 2 were extended in 2018 following recommendations in the 2018 DSI and Berm 3 was extended in 2020 to achieve the design intent – whereby the berm provides containment to elevation 278.5 masl.

As part of berm construction in 2017, settlement plates were installed on the crest of all 3 berms (S17-01 on Berm 1, S17-02 on Berm 2, and S17-03 on Berm 3). The settlement plates were surveyed by Red Indian Surveys Ltd. in June 2019 and October 2020. The survey data indicates that since their installation, S17-01 has moved 15 mm, S17-02 has moved 34 mm, and S17-03 has moved 21 mm. This indicates that a small amount of settlement has occurred at the berms to date. The settlement plates should continue to be surveyed annually, and the data provided to Golder for review as part of the annual facility inspection report.

A wave of tailings was observed along the side of most berms from construction. The tailings wave was visible above the pond level at the time of the site visit and may need to be dredged and deposited below elevation 274.2 m once placement of the contaminated soils is completed. A bathymetric survey will be required upon completion of the construction activities to determine the extent of dredging.

Dam B Emergency Spillway and Channel

The Dam B Emergency Spillway appeared to be in good operating condition with no evidence of instability, wear, erosion, or blockage. The corrugated steel pipe (CSP) culverts beneath the access road were observed to be generally clear.

A vegetative cover has fully established itself in lower reaches of the spillway channel. The ditch was cleared of vegetation and debris with an excavator in 2019 and 2020. On-going maintenance should include routine clearing in the spillway channel to maintain the design flow capacity and facilitate visual inspections. Another round of vegetation clearing is likely required in 2021.

Dam C Emergency Spillway and Channel

The Dam C Emergency Spillway appeared to be in good operating condition with no evidence of instability, wear, erosion, or blockage. Minor vegetation growth was observed along the spillway and channel, including the concrete sill which was covered with vegetation. Shrubs larger than 1.0 m in height were cleared in 2019. On-going maintenance should include routine clearing in the spillway channel to maintain the design flow capacity and facilitate visual inspections. Another round of vegetation clearing is likely required in 2021.

Diversion Ditches

The diversion ditches appeared to be functioning well. Minor erosion was observed at some isolated locations along the ditch channel slopes. The channel slopes should continue to be monitored for erosion and repaired as necessary. A vegetative cover has fully established itself on most of the ditch slopes which should help to reduce further erosion. Shrubs larger than 1.0 m in height were cleared in 2019 with an excavator and the ditches were cleared of debris. On-going maintenance should include routine clearing in the diversion ditches to maintain the design flow capacities and facilitate visual inspections. Another round of clearing is likely required in 2021.

The CSP culvert beneath the mine access road in Diversion Ditch C1 was partially filled with debris and should be cleared to maintain its flow capacity.

A pipeline crossing was constructed in the winter of 2012/2013 across Diversion Ditch A2 at Sta. 0+350. The pipeline is buried and conveys water from the Boundary site to the TMA. The pipeline crossing includes a 0.3 m diameter HDPE culvert through the diversion ditch. The culvert is likely too small to convey the design storm flow and appears to be partially blocked with sediment and vegetation. Teck should expect erosion to the crossing should a large storm event occur and be prepared to perform maintenance on the crossing. Given the large ditch section at this location, although the crossing may potentially be damaged, the diversion ditch would still have sufficient capacity to convey the storm flow.

Discharge Ditch

The discharge ditch appeared to be in good overall condition. DPO was not discharging from the TMA into the Discharge Ditch at the time of the inspection.

Pipelines

Only the water reclaim pipeline (for water treatment) and discharge pipeline to the Polishing Pond remain functional from the pipelines utilized during operations.

In 2017, two new pipelines were installed from the water treatment plant to Internal Berms 1 and 3 to facilitate lime addition into the TMA during the transition phase. The pipelines appear to be a combination of 10", 12", and 14" HDPE pipelines with a tee valve at the discharge locations on the berms to allow flow into all 4 cells. Teck reports that the pipelines are functioning as required.

5.0 FINDINGS AND RECOMMENDED ACTIONS

The maintenance items identified during the current inspection which require attention and/or ongoing monitoring (but are not considered severe enough to mandate urgent action) are outlined in Table 2.

Table 2: Summary of the 2020 Annual Facility Inspection Report Recommended Actions

Structure	ID Number	Deficiency or Non-Conformance	Recommended Action	Status	Priority ⁽¹⁾
General	2018 - 01	The TMA and Polishing Pond have occasionally been operated above the design maximum operating water level in years prior to 2016. This increases the potential for an unscheduled release of water through the spillway during extreme flood events.	Every effort should be made to operate the ponds within the design operating levels provided in the OMS Manual (Golder, 2020b).	Closed - The TMA and Polishing Pond have been operated within their design intent over the past 5 years and this specific recommendation is considered closed	3
General	2018 - 02	Shrubs larger than 1 m in height were cleared from most structures on site in 2018 (except those locations specifically mentioned below). Another round of clearing is likely required in 2020 to allow continued visual observations of the structures.	Additional clearing was carried out in 2019. Plan another round of clearing for all structures around the TMF in 2021.	Ongoing – vegetation was cleared in 2019 and another round will likely be required in 2021.	4
Settlement Plates	2018 - 04	Settlement plates were installed on the crest of the internal berms in 2017. The survey data should be reviewed.	Teck should survey the settlement plates on Dams A and B and the internal berms annually and provide the data to Golder for review during the annual facility report.	Closed – Surveying the settlement plates is now part of Teck's routine operating procedures.	3
Internal Berms	2018 - 10	The north abutments of Internal Berms 1, 2, and 3 were stopped short of natural ground at 278.5 m during construction in 2017. The berms don't retain a head of water which reduces the priority rating as elevated water levels won't result in potential dam failure.	The north abutment of all three internal berms shall be extended approximately 50 m in order to achieve the design intent – whereby the berms provide full containment to elevation 278.5 m.	Closed – Berms 1 and 2 extended in late 2018 and Berm 3 was extended in 2020	3
Polishing Pond	2018 - 12	Sediment accumulation in the Polishing Pond may reduce its storage capacity.	A bathymetric survey and sampling program should be carried out in the Polishing Pond to determine the degree of sediment accumulation and remaining available capacity in the pond.	Ongoing – Sediment sampling program completed in 2020 with no indication of sludge accumulation. An addition sampling program is scheduled for the winter of 2021 to confirm initial results.	3
Dam C	2018 - 13	Minor rusting was observed around the inlet of the Decant Structure on Dam C.	The structure should be monitored for changing conditions that might affect its integrity.	Ongoing	3
Diversion Ditches	2018 - 15	A pipeline crossing was constructed in the winter of 2012/2013 across Diversion Ditch A2 at Sta. 0+350. The pipeline crossing includes a 0.3 m diameter HDPE culvert through the diversion ditch. The culvert is likely too small to convey the design storm flow and appears to be partially blocked with sediment and vegetation. However, the diversion ditch would not be overtopped under the design storm event as there is sufficient freeboard above the crossing to the top of bank on the diversion ditch.	The pipeline crossing should be monitored closely and repaired if damaged.	Ongoing	4
TMF	2019 - 01	Additional flows will be entering the TMA from Boundary site and the underground workings.	Once the flows from the underground workings and Boundary site are better understood, the TMF water balance should be reviewed and updated for impacts on water levels and discharge rates.	Outstanding – Teck plans to initiate a study in 2021.	3
Dam B	2020-01	A low area at the north abutment of Dam B was identified between the crest and spillway that may be lower than the crest elevation.	A topographic survey of the area should be completed to confirm the crest elevations and freeboard is maintained.	Open	3
General	2020-02	A large amount of ponded water was observed along the downstream toe of Dams A, B, and C during the inspection.	Drainage could be improved to prevent ponding water.	Open	4

Table 2: Summary of the 2020 Annual Facility Inspection Report Recommended Actions

Structure	ID Number	Deficiency or Non-Conformance	Recommended Action	Status	Priority ⁽¹⁾
Piezometers	2020-03	Piezometers are present on the crest of Dams A, B, and C. Four of the piezometers have experienced water levels up to the dam crest elevation. The surface casings on all piezometer nests were raised in 2019 to prevent the ingress of surface runoff. Since the raise, three of the piezometers have begun to return to historical levels while one is still experiencing higher levels. The piezometer data should be reviewed.	Teck should continue to monitor the piezometers on Dams A, B, and C monthly during non-freezing conditions and provide the data to Golder for review during the annual facility inspection.	Open	3
Spillways	2020-04	Spillways observed to be generally clear with some vegetation present during the inspection.	On-going maintenance should include routine clearing in the spillway channels to maintain their flow capacity and permit visual inspection. Another round of vegetation clearing is required in 2021.	Open	4
Diversion Ditches	2020-05	The Diversion Ditch C1 CSP culvert beneath the mine access road is partially filled with debris, significantly reducing its capacity.	The culvert should be cleared of the debris.	Open	3

Legend:

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

1) Source: British Columbia Health, Safety and Reclamation Code Guidance document, Section 4.2 (MEM 2016)

6.0 CLOSING

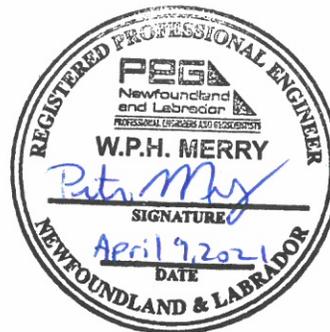
Based on the facility inspection completed on September 30th, 2020, the TMF generally appeared to be performing as intended. All dams appeared to be in a stable condition. Minor deficiencies noted during the inspection are not considered to be indicative of poor performance. Observations and recommendations for improvement are provided in the above sections of the report. The structures should continue to function as intended, provided they are routinely inspected and maintained.

We trust that this report satisfies your immediate requirements. Please feel free to contact us if you require additional information or wish to discuss any aspect of the report.

Golder Associates Ltd.



Michael Morris, P.Eng.
Geotechnical Engineer



Peter Merry, P.Eng.
Principal, Project Manager

MM/WPM

Golder and the G logo are trademarks of Golder Associates Corporation

[https://golderassociates.sharepoint.com/sites/123020/project files/5 technical work/1000 dsi/report/final/20139279 2020 annual facility report \(rev0\) 09apr2021.docx](https://golderassociates.sharepoint.com/sites/123020/project%20files/5%20technical%20work/1000%20dsi/report/final/20139279%20annual%20facility%20report%20(rev0)%2009apr2021.docx)

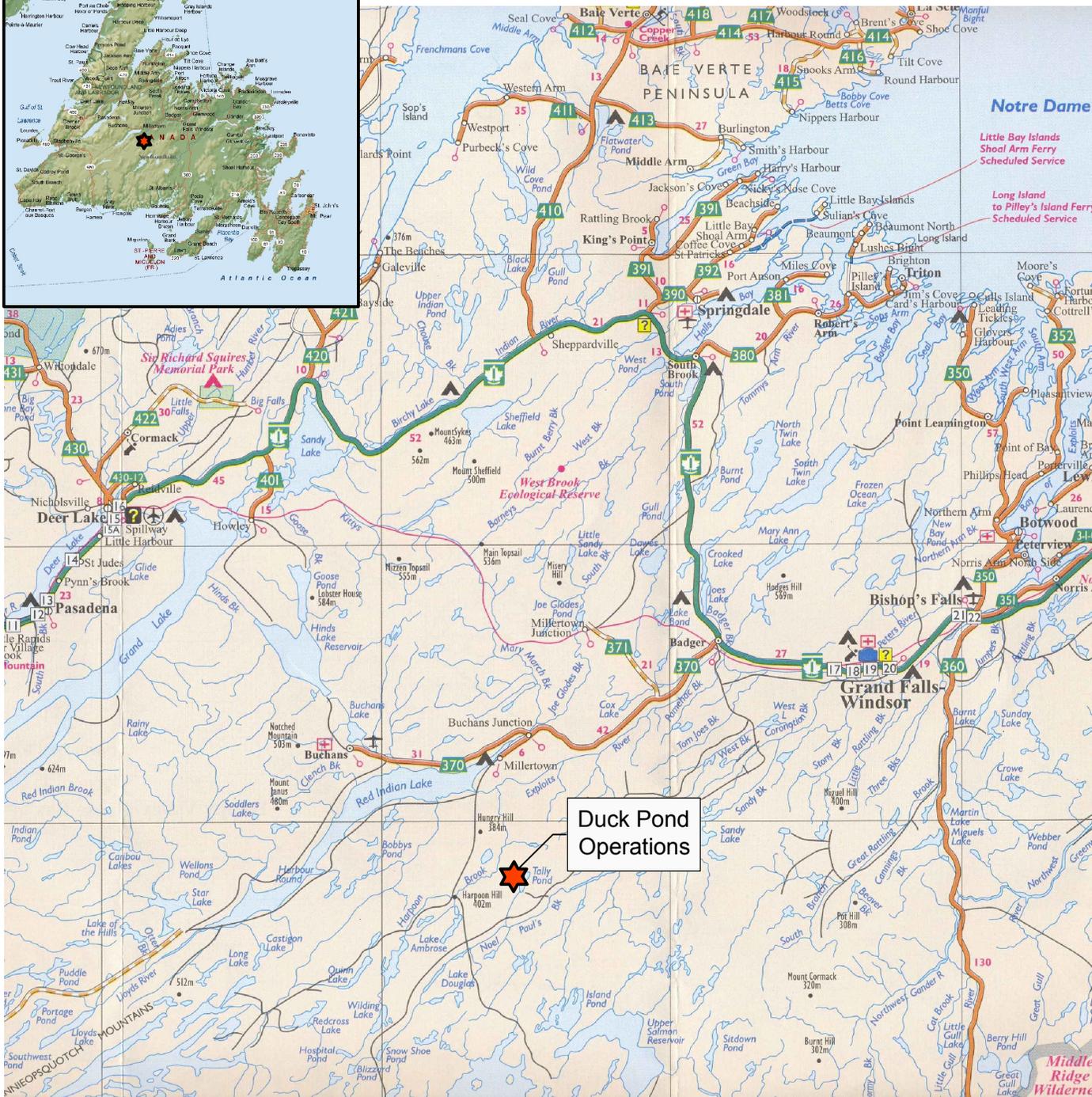


REFERENCES

- AMEC (2014). "Teck Resources Limited Rehabilitation and Closure Plan, Duck Pond Copper-Zinc Project, Newfoundland and Labrador". Report dated January 2014 prepared for Teck Resources Limited by AMEC Environment and Infrastructure.
- GEMTEC (2017). "2016 Dam Safety Review, Duck Pond Operations' Tailings Management Facility, Central Newfoundland". Report dated August 15, 2017 prepared for Teck Duck Pond Operation by GEMTEC Limited. Report No. 80003.01.
- Golder (2006). "Detailed Design Report, Tailings Management Facility, Duck Pond Mine, Newfoundland". Report No. 05-1118-018 (1000) dated March 2006 prepared for Met-Chem Canada Inc. by Golder Associates Ltd.
- Golder (2008a). "Dam Instrumentation As-Built Report, Duck Pond Mine Tailings Management Facility, Newfoundland". Report No. 07-1118-0041 dated January 2008 prepared for Teck Cominco Limited by Golder Associates Ltd.
- Golder (2008b). "2007 Annual Facility Inspection, Duck Pond Mine Tailings Management Facility, Newfoundland". Report No. 07-1118-0078 dated January 14, 2008 prepared for Teck Cominco Limited by Golder Associates Ltd.
- Golder (2010). "Duck Pond Operations Tailings Management Facility, 2009 Annual Facility Inspection". Report No. 09-1118-0027 (5000) dated February 2010 prepared for Teck Resources Limited by Golder Associates Ltd.
- Golder (2011a). "Duck Pond Operations Tailings Management Facility, 2010 Annual Facility Inspection". Report No. 10-1118-0056 (2000) dated February 2011 prepared for Teck Resources Limited by Golder Associates Ltd.
- Golder (2011b). "Duck Pond Operations Tailings Management Facility, 2011 Annual Facility Inspection". Report No. 11-1118-0035 (1000) dated October 2011 prepared for Teck Resources Limited by Golder Associates Ltd.
- Golder (2012). "Duck Pond Operations Tailings Management Facility, 2012 Annual Facility Inspection". Report No. 12-1118-0010 (1000) dated December 2012 prepared for Teck Resources Limited by Golder Associates Ltd.
- Golder (2013a). "Duck Pond Operations Tailings Management Facility, 2013 Annual Facility Inspection". Report No. 13-1118-0003 (1000) dated December 2013 prepared for Teck Resources Limited by Golder Associates Ltd.
- Golder (2014a). "Current Available Capacity in the Tailings Management Area, Duck Pond Operations, Newfoundland". Technical Memorandum dated August 7, 2014 prepared for Teck Resources Limited by Golder Associates Ltd. Project number 14-1164-0011.

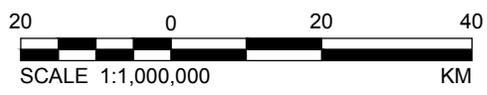
- Golder (2014b). "*Duck Pond Operations Tailings Management Facility, 2014 Annual Facility Inspection*". Report No. 14-1164-0011 (1000) dated October 2014 prepared for Teck Resources Limited by Golder Associates Ltd.
- Golder (2015a). "*Design Report for Construction of Internal Berms at the Tailings Management Facility, Teck Resources Limited, Duck Pond Operations*". Report No. 14-1164-0011 dated June 2015 prepared for Teck Resources Limited by Golder Associates Ltd.
- Golder (2015b). "*Duck Pond Operations Tailings Management Facility, 2015 Annual Facility Inspection*". Report No. 1540063 (1000) dated November 4, 2015 prepared for Teck Resources Limited by Golder Associates Ltd.
- Golder (2017). "*Weir Calibration and Certification of Flow Measurement Accuracy, Dam C Discharge Structure, Duck Pond Operations*". Report No. 1783622 (6000) dated December 12, 2017 prepared for Teck Resources Limited by Golder Associates Ltd.
- Golder (2018a). "*Duck Pond Operations Tailings Management Facility, 2017 Annual Facility Inspection*". Report No. 1783622 (2000) dated February 26, 2018 prepared for Teck Resources Limited by Golder Associates Ltd.
- Golder (2018b). "*Revision No. 8.0 Operation, Maintenance and Surveillance Manual, Teck Resources Limited Duck Pond Operations Tailings Management Facility*". Report No. 1783622 (7000) dated June 2018 prepared for Teck Resources Limited by Golder Associates Ltd.
- Golder (2018c). "*Weir Calibration and Certification of Flow Measurement Accuracy, Dam C Discharge Structure, Duck Pond Operations*". Report No. 18103800 (3000) dated October 5, 2018 prepared for Teck Resources Limited by Golder Associates Ltd.
- Golder (2020a). "*2019 Annual Dam Safety Inspection, Duck Pond Operations, Tailings Management Facility*". Report No. 19122976 (1000) dated February 13, 2020 prepared by Golder Associates Ltd. for Teck Resources Limited.
- Golder (2020b). "*Revision No. 9.0 Operation, Maintenance and Surveillance Manual, Teck Resources Limited Duck Pond Operations Tailings Management Facility*". Report No. 20139279 dated June 22, 2020 prepared for Teck Resources Limited by Golder Associates Ltd.
- Jacques Whitford (2009). "*2008 Dam Safety Review, Duck Pond Operations' Tailings Management Facility, Central Newfoundland*". Report dated January 13, 2009 prepared for Teck Duck Pond Operation by Jacques Whitford Limited. Report No. 1045138.
- SGEA (2007). "*Duck Pond Mine Site, Tailings Management Facility, Construction QA/QC Summary Report*". Report dated June 2007 prepared for Aur Resources Inc. by SGE Acres Limited.

FIGURES



REFERENCES:

MICROSOFT MAPPOINT COPYRIGHT 1988-2001 MICROSOFT CORP. AND/OR ITS SUPPLIERS. ALL RIGHTS RESERVED.
 DEPARTMENT OF TOURISM, CULTURE AND RECREATION, GOVERNMENT OF NEWFOUNDLAND, 2005.



CLIENT			PROJECT		
TECK RESOURCES LIMITED			DUCK POND OPERATIONS TAILINGS MANAGEMENT FACILITY MILLERTON, NEWFOUNDLAND, CANADA		
CONSULTANT			TITLE		
YYYY-MM-DD			SITE LOCATION PLAN		
2021-02-05			PROJECT No.		
PREPARED			20139279		
DESIGN			CONTROL		
WPM			0003		
REVIEW			Rev.		
WPM			0		
APPROVED			FIGURE		
WPM			1		



Path: \\golder.com\complex\data\offices\mississauga\GIS\Clients\Teck\Resources\Duck_Pond\09_PRCO\20139279_2020\DS1\40_PRCO\0003_2020\DSL_FEB2021_1_1 File Name: 20139279-0003-CM-0001.dwg

1 m IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/A

APPENDIX A

**Completed Inspection
Report Forms**

**DUCK POND TAILINGS MANAGEMENT FACILITY
FACILITY INSPECTION SUMMARY REPORT**

All parts of this inspection form should be completed. Adverse conditions should be described and location stated. Additional information and relevant photographs should be attached.

Inspector's Name: Andrew Peach Report No.: 20-1 Inspection Date: 30/09/2020
Golder Associates (DD/MM/YYYY)

WEATHER:

Temperature: 17 degrees Celsius Description: Overcast with moderate winds
Current Last 3 Days Other Comments: _____

dry	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
frost	<input type="checkbox"/>	<input type="checkbox"/>	
rain	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Periods of rain reported over the three days prior to the site visit
snow	<input type="checkbox"/>	<input type="checkbox"/>	

FACILITIES INSPECTED: (A separate report sheet, Form A or Form B, to be prepared for each structure)

<u>Structure</u>	
DAM A	<input checked="" type="checkbox"/>
DAM B AND WATER RECLAIM WELL	<input checked="" type="checkbox"/>
DAM C AND DECANT / HYDRAULIC DISCHARGE STRUCTURES	<input checked="" type="checkbox"/>
INTERNAL BERMS	<input checked="" type="checkbox"/>
SETTLING POND DYKE	<input type="checkbox"/>
DAM B EMERGENCY SPILLWAY & CHANNEL	<input checked="" type="checkbox"/>
DAM C EMERGENCY SPILLWAY	<input checked="" type="checkbox"/>
DIVERSION DITCHES A1, A2, B1 and C1	<input checked="" type="checkbox"/>
DISCHARGE DITCH	<input checked="" type="checkbox"/>
PIPELINES / ACCESS ROADS	<input checked="" type="checkbox"/>

Reviewer's Name: Peter Merry Date Reviewed: 11/02/2021
Golder Associates (DD/MM/YYYY)

IMMEIDATE ACTION REQUIRED: none

No additional comments beyond those discussed in the individual inspection forms.

**DUCK POND TAILINGS MANAGEMENT FACILITY
FIELD INSPECTION FORM A
DAM INSPECTION REPORT**

C) Upstream Slope and Tailings Surface

erosion	<input type="checkbox"/> none	<input checked="" type="checkbox"/> wave induced	<input type="checkbox"/> surface runoff
		location(s):	Minor benching noted at 538228E, 5389067N
		degree	<input type="checkbox"/> minor <input type="checkbox"/> moderate <input type="checkbox"/> severe
settlement	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	
bulging	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	
sloughing	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	
slope protection	<input type="checkbox"/> good	<input checked="" type="checkbox"/>	Poorly graded rip rap, with maximum diameter of roughly 300 mm.
slope vegetation	<input type="checkbox"/> none	<input checked="" type="checkbox"/>	Very little vegetation present.
animal burrows	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	
whirlpool	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	
sinkholes	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	
tailings surface	<input type="checkbox"/> water covered	<input checked="" type="checkbox"/>	TMA Pond level drawn down in 2020 for reclamation activities.

SPILLWAY / FLOW CONTROL STRUCTURE INSPECTION

Type:

<input type="checkbox"/> spillway	<input type="checkbox"/> water reclaim well
<input type="checkbox"/> decant	<input type="checkbox"/> weir
	<input checked="" type="checkbox"/> other

Water level in TMA controlled by pumping from the water reclaim well near Dam B

Flow: none clear muddy

Rate of discharge (m³/hr) estimated measured Gauge Reading _____

Conditions Observed:

<input type="checkbox"/> good	<input type="checkbox"/> blockage of inlet	<input type="checkbox"/> debris	_____	corrective action:	<input type="checkbox"/> taken
		<input type="checkbox"/> beaver dam	_____		<input type="checkbox"/> to follow
		<input type="checkbox"/> siltation	_____		
	<input type="checkbox"/> blockage of outlet	<input type="checkbox"/> debris	_____	corrective action:	<input type="checkbox"/> taken
		<input type="checkbox"/> beaver dam	_____		<input type="checkbox"/> to follow
		<input type="checkbox"/> siltation	_____		
	<input type="checkbox"/> erosion	<input type="checkbox"/> channel	_____	corrective action:	<input type="checkbox"/> taken
		<input type="checkbox"/> side slope	_____		<input type="checkbox"/> to follow
		<input type="checkbox"/> at discharge	_____		

Comments:

2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam A

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 1

View of crest looking southeast; no crossfall noted (not included as part of design). Tire tracks visible from light vehicles.



Photograph 2

Closeup view of crest material.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam A

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 3

View of settlement plate location along upstream shoulder, looking southeast.



Photograph 4

View of piezometer locations, looking southeast; note small ditches to channel surface water away from the wells.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam A

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 5

View of downstream slope looking southeast, note general lack of vegetation along the slope.



Photograph 6

Closeup view of rip rap along the downstream slope; note range of particle sizes.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam A

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 7

Area of ponded water along downstream toe.



Photograph 8

View along downstream slope, looking northwest. Thick vegetation (shrubs and grasses) growth obscuring inspection of the toe.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam A

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 9

View of seepage collection sump downstream of dam.



Photograph 10

Outlet of HDPE culvert in the access road; culvert associated with the seepage collection sump. Note minor bending visible along the soffit.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam A

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 11

View of outflow from HDPE culvert.



Photograph 12

View of crest and upstream slope, looking northwest. Note the normal high-water mark (staining) visible on the upstream slope.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam A

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 13

View of upstream slope.



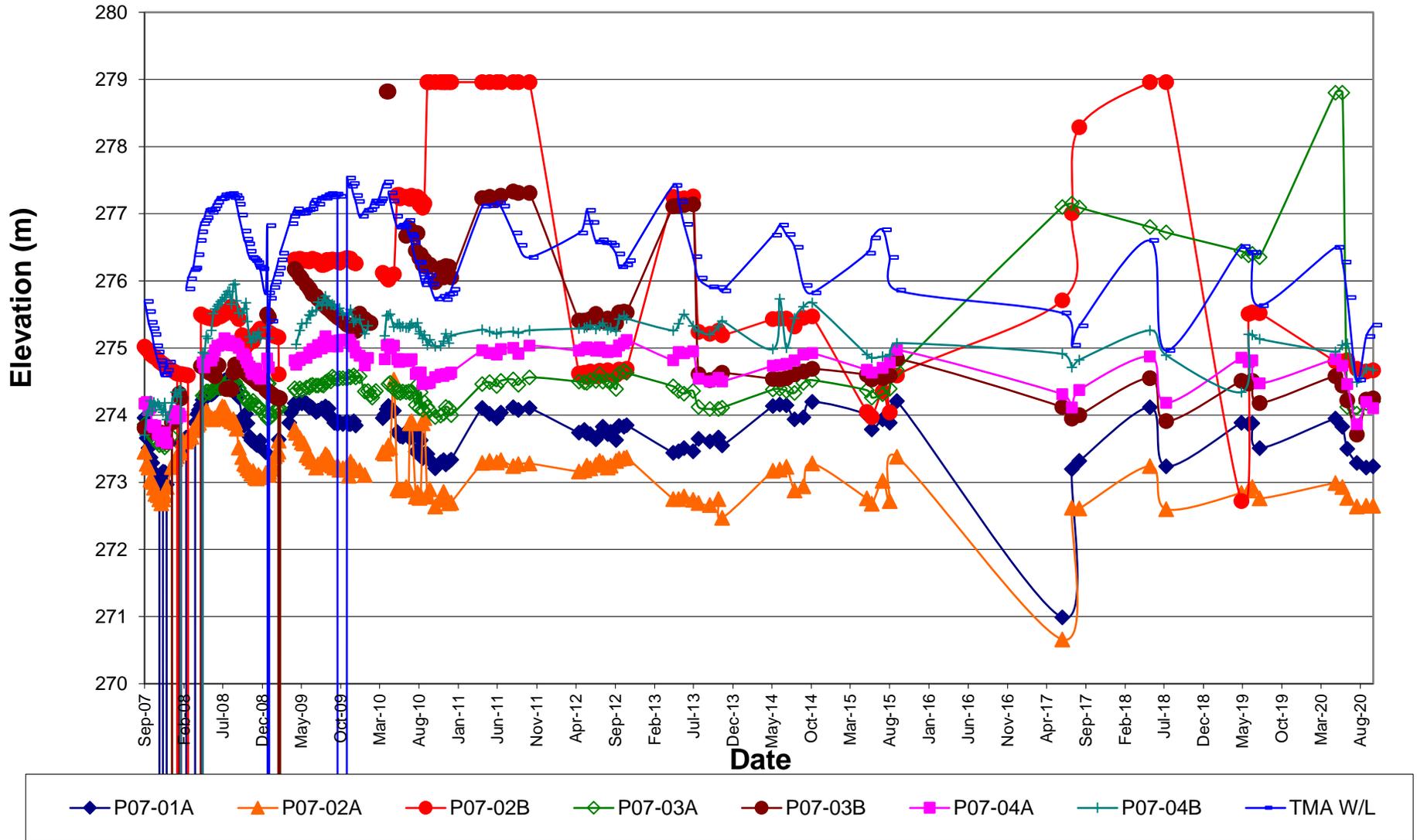
Photograph 14

Closeup view of rip rap along the upstream slope; note range of particle sizes.



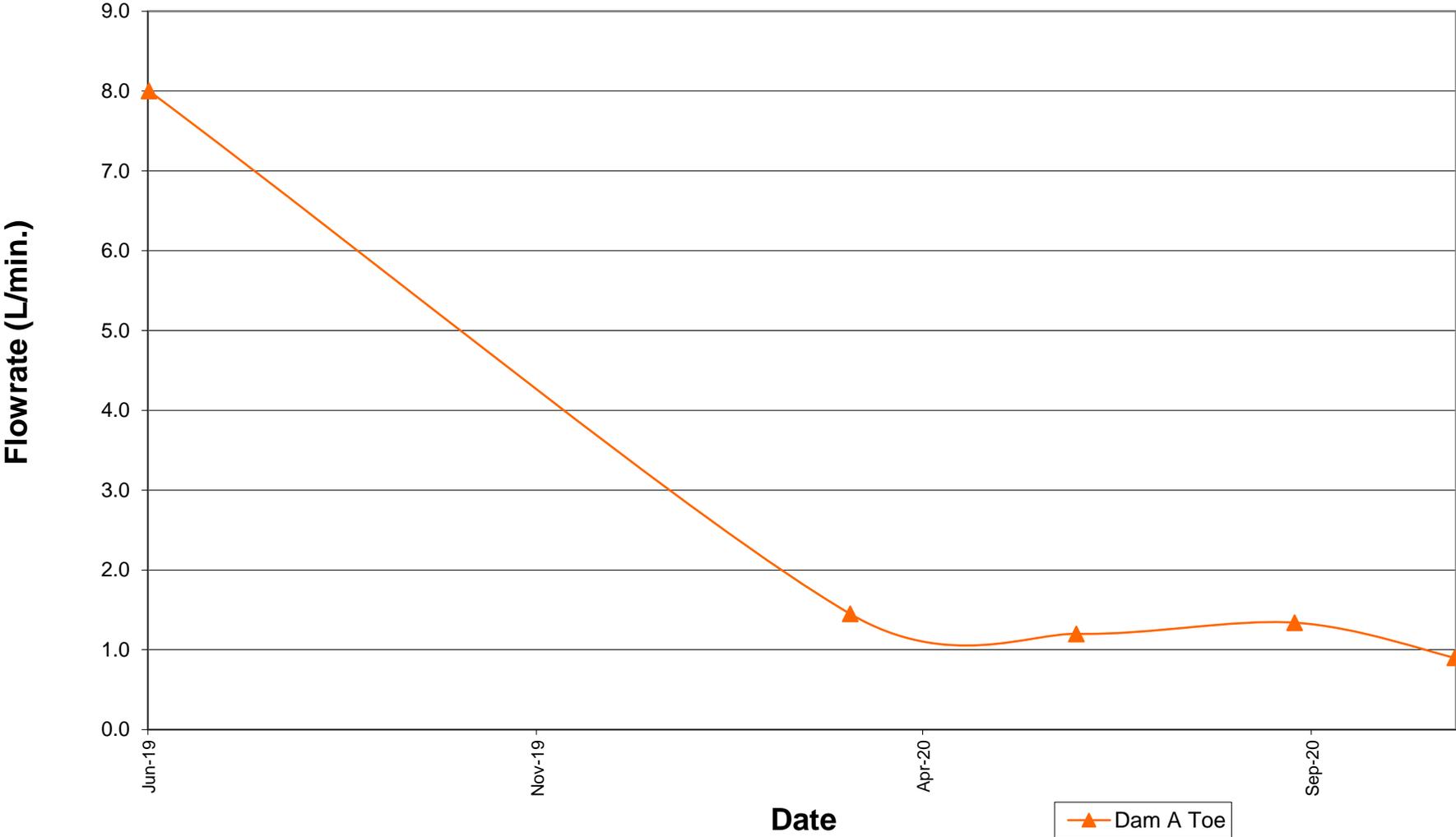
Dam Instrumentation Graph
Duck Pond TMA

DUCK POND OPERATIONS TMA PIEZOMETERS



Golder Associates

DUCK POND OPERATIONS SEEPAGE MONITORING



**DUCK POND TAILINGS MANAGEMENT FACILITY
FIELD INSPECTION FORM A
DAM INSPECTION REPORT**

C) Upstream Slope and Tailings Surface

erosion	<input checked="" type="checkbox"/> none	<input type="checkbox"/> wave induced	<input type="checkbox"/> surface runoff
		location(s):	
		degree	<input type="checkbox"/> minor <input type="checkbox"/> moderate <input type="checkbox"/> severe
settlement	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
bulging	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
sloughing	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
slope protection	<input checked="" type="checkbox"/> good	<input type="checkbox"/>	Graded rip rap, with maximum diameter of roughly 300 mm.
slope vegetation	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	Very little vegetation present.
animal burrows	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
whirlpool	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
sinkholes	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
tailings surface	<input type="checkbox"/> water covered	<input checked="" type="checkbox"/>	Some exposed tailings visible in TMF, as a result of low water level in the basin for reclamation activities.

SPILLWAY / FLOW CONTROL STRUCTURE INSPECTION

Type: Water level in TMA controlled by pumping from the water reclaim well.

<input checked="" type="checkbox"/> spillway	<input checked="" type="checkbox"/> water reclaim well
<input type="checkbox"/> decant	<input type="checkbox"/> weir
	<input type="checkbox"/> other

No flow in discharge ditch to the Polishing Pond; no flow in spillway.

Flow: none clear muddy

Rate of discharge (m³/hr) estimated measured Gauge Reading _____

Conditions Observed: Spillway

<input checked="" type="checkbox"/> good	<input type="checkbox"/> blockage of inlet	<input type="checkbox"/> debris	_____	corrective action:	<input type="checkbox"/> taken
		<input type="checkbox"/> beaver dam	_____		<input type="checkbox"/> to follow
		<input type="checkbox"/> siltation	_____		
	<input type="checkbox"/> blockage of outlet	<input type="checkbox"/> debris	_____	corrective action:	<input type="checkbox"/> taken
		<input type="checkbox"/> beaver dam	_____		<input type="checkbox"/> to follow
		<input type="checkbox"/> siltation	_____		
	<input type="checkbox"/> erosion	<input type="checkbox"/> channel	_____	corrective action:	<input type="checkbox"/> taken
		<input type="checkbox"/> side slope	_____		<input type="checkbox"/> to follow
		<input type="checkbox"/> at discharge	_____		

2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam B

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 1

View of crest looking southeast; no crossfall noted (not included as part of design). Ruts starting to form from vehicle/equipment access



Photograph 2

Closeup view of crest material.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam B

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 3

View of settlement plate location along upstream shoulder, looking south.



Photograph 4

View of downstream slope looking south, note general lack of vegetation along the slope. Small access road visible along the toe.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam B

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 5

View along downstream slope, looking south. Note isolated patch of lush vegetation, marking potential seepage location.



Photograph 6

View along downstream toe, past the end of the access road. Note thick vegetation (grass and shrub) obscuring inspection of the toe.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam B

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 7

View of seepage collection sump located beyond the toe of the downstream slope.



Photograph 8

View of upstream slope, looking south. Note the normal high-water mark (staining) visible on the upstream slope.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam B

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 9

Closeup view of riprap along the upstream slope, note range of particle sizes.



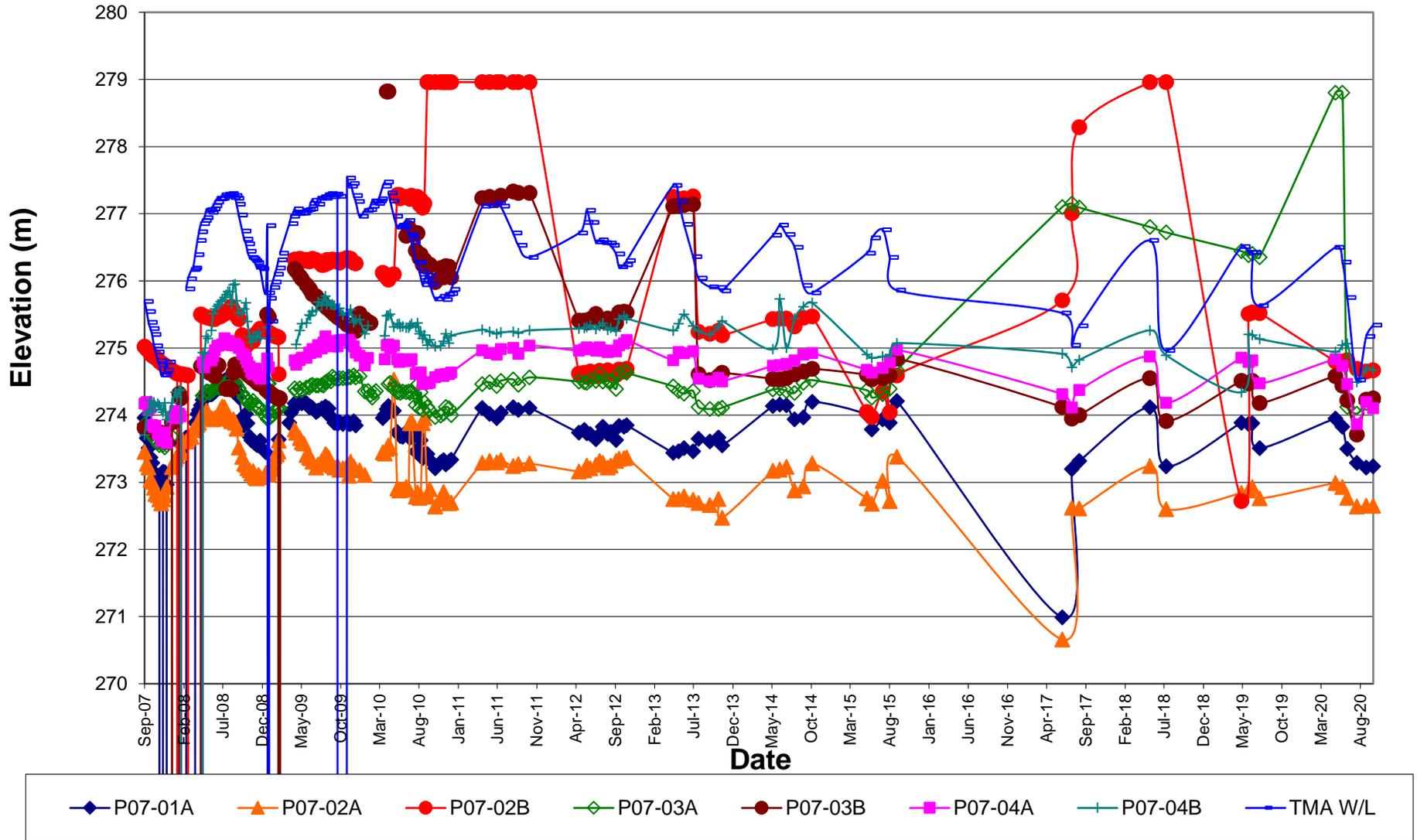
Photograph 10

Looking north towards spillway channel (not visible in background). Note, potential settlement or low point at north abutment between the dam and spillway.



Dam Instrumentation Graph
Duck Pond TMA

DUCK POND OPERATIONS TMA PIEZOMETERS



Golder Associates

[https://golderassociates.sharepoint.com/sites/123020/Project Files/5 Technical Work/1000 DSI/Instrumentation/Duck Pond Dam Instrumentation](https://golderassociates.sharepoint.com/sites/123020/Project%20Files/5%20Technical%20Work/1000%20DSI/Instrumentation/Duck%20Pond%20Dam%20Instrumentation)

**DUCK POND TAILINGS MANAGEMENT FACILITY
FIELD INSPECTION FORM A
DAM INSPECTION REPORT**

Sheet 1 of 3

All parts of this inspection form should be completed. Adverse conditions should be described and location stated. Additional information and relevant photographs should be attached.

Inspector's Name: Andrew Peach Report No.: 20-01 Inspection Date: 30/09/2020
Golder Associates (DD/MM/YYYY)

DAM INFORMATION:

Identification: Dam C Crest Elevation: 268.0 m Head Pond Elevation 264.9 m

Note: Position measurements are in UTM, WGS 84

DAM INSPECTION

A) Crest

cracking	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
settlement	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
erosion	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
other movement	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
crest vegetation	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____

B) Downstream Slope and Toe Area

erosion	<input type="checkbox"/> none	<input checked="" type="checkbox"/>	<u>Small erosion rill on downstream slope – 536452E, 5387442N</u>
settlement	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
bulging	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
sloughing	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
slope protection	<input checked="" type="checkbox"/> good	<input type="checkbox"/>	<u>Graded rip rap, with maximum diameter of roughly 300 mm.</u>
slope vegetation	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
animal burrows	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
seepage	<input type="checkbox"/> none	<input checked="" type="checkbox"/>	location 1: <u>Some ponded water along downstream toe. No visible seepage observed.</u>
	rate:	<input checked="" type="checkbox"/> damp	<input type="checkbox"/> trickle
		<input type="checkbox"/> steady	_____ (L/s)
	clarity:	<input checked="" type="checkbox"/> clear	<input type="checkbox"/> muddy
	sample taken:	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
	location 2:	<u>Some areas along the toe have lush plant growth suggesting seepage/water surface close to surface of shell.</u>	
	rate	<input checked="" type="checkbox"/> damp	<input type="checkbox"/> trickle
		<input type="checkbox"/> steady	_____ (L/s)
	clarity	<input checked="" type="checkbox"/> clear	<input type="checkbox"/> muddy
	sample taken	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
toe vegetation	<input type="checkbox"/> none	<input type="checkbox"/>	sparse <input checked="" type="checkbox"/> moderate <input type="checkbox"/> heavy
	type:	<u>Grasses and shrubs in some places obscuring inspection.</u>	
sand boils	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	location(s) _____

**DUCK POND TAILINGS MANAGEMENT FACILITY
FIELD INSPECTION FORM A
DAM INSPECTION REPORT**

C) Upstream Slope and Tailings Surface

erosion	<input checked="" type="checkbox"/> none	<input type="checkbox"/> wave induced	<input type="checkbox"/> surface runoff
		location(s):	
		degree	<input type="checkbox"/> minor <input type="checkbox"/> moderate <input type="checkbox"/> severe
settlement	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
bulging	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
sloughing	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
slope protection	<input type="checkbox"/> good	<input checked="" type="checkbox"/>	graded rip rap, with maximum diameter of roughly 300 mm.
slope vegetation	<input type="checkbox"/> none	<input checked="" type="checkbox"/>	Very little vegetation present.
animal burrows	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
whirlpool	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
sinkholes	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
tailings surface	<input type="checkbox"/> water covered	<input type="checkbox"/>	Not applicable to Polishing Pond, no tailings deposited.

SPILLWAY / FLOW CONTROL STRUCTURE INSPECTION

Type: Water level in Polishing Pond controlled by Decant Structure.

- | | |
|--|---|
| <input checked="" type="checkbox"/> spillway | <input type="checkbox"/> water reclaim well |
| <input checked="" type="checkbox"/> decant | <input checked="" type="checkbox"/> weir (at Hydraulic Discharge Structure) |
| | <input type="checkbox"/> other |

No flow in spillway. Hydraulic discharge structure was operating

Flow:	<input type="checkbox"/> none	<input checked="" type="checkbox"/> clear	<input type="checkbox"/> muddy
Rate of discharge	800 (m ³ /hr)	<input checked="" type="checkbox"/> estimated	<input type="checkbox"/> measured
			Gauge Reading <u>Approx. 1.41 m</u>

Conditions Observed: Spillway

<input checked="" type="checkbox"/> good	<input type="checkbox"/> blockage of inlet	<input type="checkbox"/> debris	_____	corrective action:	<input type="checkbox"/> taken
		<input type="checkbox"/> beaver dam	_____		<input type="checkbox"/> to follow
		<input type="checkbox"/> siltation	_____		
	<input type="checkbox"/> blockage of outlet	<input type="checkbox"/> debris	_____	corrective action:	<input type="checkbox"/> taken
		<input type="checkbox"/> beaver dam	_____		<input type="checkbox"/> to follow
		<input type="checkbox"/> siltation	_____		
	<input type="checkbox"/> erosion	<input type="checkbox"/> channel	_____	corrective action:	<input type="checkbox"/> taken
		<input type="checkbox"/> side slope	_____		<input type="checkbox"/> to follow
		<input type="checkbox"/> at discharge	_____		

2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam C

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 1

View of crest looking south; no crossfall noted (not included as part of design), tire tracks from light vehicles visible.



Photograph 2

Closeup view of crest material.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam C

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 3

View of decant structure along upstream slope.



Photograph 4

Closer view of decant structure showing high-water mark. Small breakwater also visible in the Polishing Pond for protection.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam C

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 5

View of downstream slope, looking southeast. Note thick vegetation growth (grass and shrubs) along toe obscuring inspection.



Photograph 6

View along downstream slope, showing ponded water, but no visible seepage observed.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam C

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 7

View of hydraulic discharge structure looking southwest. Outflow channel visible in the background.



Photograph 8

Minor erosion rill visible along downstream slope, section of slope with concentrated runoff.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam C

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

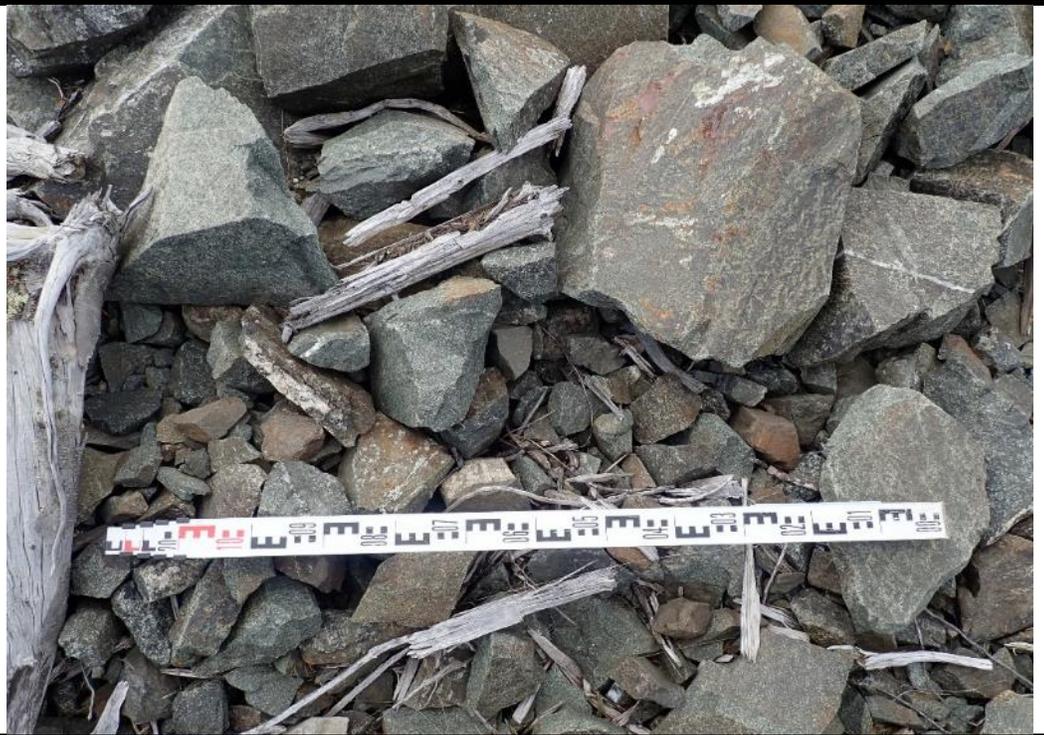
Photograph 9

View of upstream slope showing general lack of vegetation. Woody debris is likely due to high water and wind waves or were transported by ice.

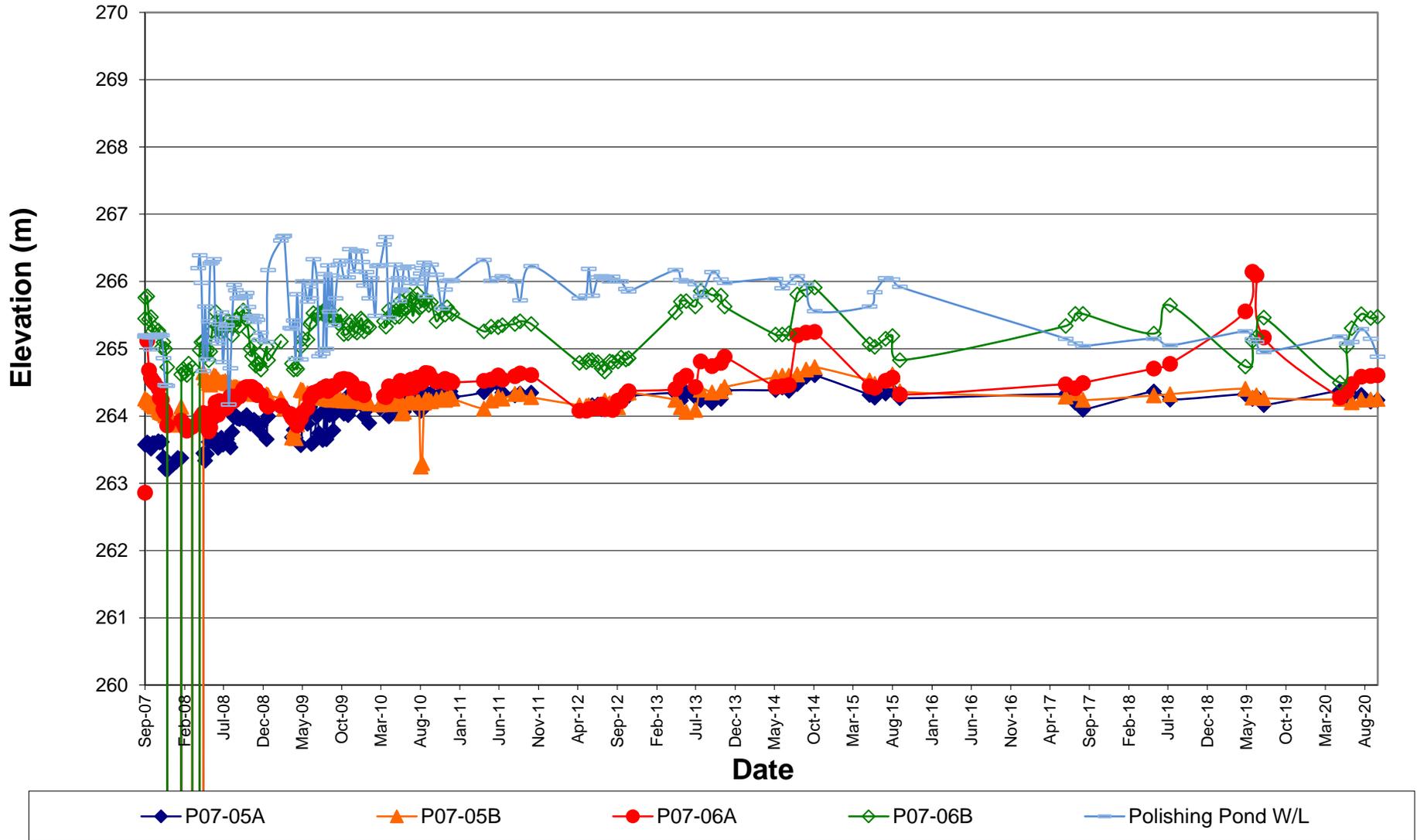


Photograph 10

Closeup view of rip rap along the upstream slope, note range of particle sizes.



DUCK POND OPERATIONS POLISHING POND PIEZOMETERS



**DUCK POND TAILINGS MANAGEMENT FACILITY
FIELD INSPECTION FORM A
DAM INSPECTION REPORT**

All parts of this inspection form should be completed. Adverse conditions should be described and location stated. Additional information and relevant photographs should be attached.

Inspector's Name: Andrew Peach Report No.: 20-01 Inspection Date: 30/09/2020
Golder Associates (DD/MM/YYYY)

DAM INFORMATION:

Identification: TMA Internal Berms Crest Elevation: 278.5 m Head Pond Elevation 275.3 m

DAM INSPECTION

A) Crest

cracking	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
settlement	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
erosion	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
other movement	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
crest vegetation	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____

B) West Slope and Toe Area

erosion	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
settlement	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
bulging	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
sloughing	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
slope protection	<input checked="" type="checkbox"/> good	<input type="checkbox"/>	_____
slope vegetation	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
animal burrows	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	_____
seepage	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	location 1: _____
			rate: <input type="checkbox"/> damp <input type="checkbox"/> trickle <input type="checkbox"/> steady _____ (L/s)
			clarity: <input type="checkbox"/> clear <input type="checkbox"/> muddy _____
			sample taken: <input type="checkbox"/> yes <input type="checkbox"/> no _____
			location 2: _____
			rate <input type="checkbox"/> damp <input type="checkbox"/> trickle <input type="checkbox"/> steady _____ (L/s)
			clarity <input type="checkbox"/> clear <input type="checkbox"/> muddy _____
			sample taken <input type="checkbox"/> yes <input type="checkbox"/> no _____
toe vegetation	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	sparse <input type="checkbox"/> moderate <input type="checkbox"/> heavy _____
			type: <u>Shrubs</u>
sand boils	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	location(s) _____

**DUCK POND TAILINGS MANAGEMENT FACILITY
FIELD INSPECTION FORM A
DAM INSPECTION REPORT**

Dam Identification: TMA Internal Berms

C) East Slope

erosion	<input checked="" type="checkbox"/> none	<input type="checkbox"/> wave induced	<input type="checkbox"/> surface runoff
		location(s):	
		Degree	<input type="checkbox"/> minor <input type="checkbox"/> moderate <input type="checkbox"/> severe
settlement	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	
bulging	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	
sloughing	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	
slope protection	<input checked="" type="checkbox"/> good	<input type="checkbox"/>	
slope vegetation	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	
animal burrows	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	
whirlpool	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	
sinkholes	<input checked="" type="checkbox"/> none	<input type="checkbox"/>	
tailings surface	<input type="checkbox"/> water covered	<input checked="" type="checkbox"/>	Some exposed tailings in TMA

SPILLWAY / FLOW CONTROL STRUCTURE INSPECTION

Type:

- | | |
|--|---|
| <input checked="" type="checkbox"/> spillway | <input type="checkbox"/> water reclaim well |
| <input type="checkbox"/> decant | <input type="checkbox"/> Weir (at Hydraulic Discharge Structure) |
| | <input checked="" type="checkbox"/> other <u>HDPE culverts present to maintain a consistent water level in TMF.</u> |

Flow: none clear muddy
 Rate of discharge m³/hr estimated measured Gauge Reading

Conditions Observed:

<input checked="" type="checkbox"/> good	<input type="checkbox"/> blockage of inlet	<input type="checkbox"/> debris	corrective action:	<input type="checkbox"/> taken
		<input type="checkbox"/> beaver dam		<input type="checkbox"/> to follow
		<input type="checkbox"/> siltation		
	<input type="checkbox"/> blockage of outlet	<input type="checkbox"/> debris	corrective action:	<input type="checkbox"/> taken
		<input type="checkbox"/> beaver dam		<input type="checkbox"/> to follow
		<input type="checkbox"/> siltation		
	<input type="checkbox"/> erosion	<input type="checkbox"/> channel	corrective action:	<input type="checkbox"/> taken
		<input type="checkbox"/> side slope		<input type="checkbox"/> to follow
		<input type="checkbox"/> at discharge		

Comments:

Northwest abutment for Internal berm 3 extended to 537233E, 5388608N and grades into natural ground surface in 2020.

2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Internal Berms

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 1

View of Internal Berm 1 crest looking northwest.



Photograph 2

View of Internal Berm 1 crest looking northwest.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Internal Berms

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: . Peach

Photograph 3

View of Internal Berm 1 slope looking southeast showing normal high-water mark (staining).



Photograph 4

View of Internal Berm 1 slope looking northwest showing normal high-water mark (staining).



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Internal Berms

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: . Peach

Photograph 5

View of northwest abutment of Internal Berm 1 showing level grade with existing ground.



Photograph 6

View of Internal Berm 2 crest looking northwest. Finger dikes visible on left and right.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Internal Berms

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: . Peach

Photograph 7

View of Finger Dikes 2 & 4 adjacent to Internal Berm 2, looking northwest.



Photograph 8

View of Internal Berm 2 slope looking northwest.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Internal Berms

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: . Peach

Photograph 9

View of Internal Berm 2 slope looking southeast, showing normal high-water mark (staining).



Photograph 10

View of northwest abutment of Internal Berm 2 showing level grade with existing ground.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Internal Berms

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: . Peach

Photograph 11

View of Internal Berm 3 crest looking northwest.



Photograph 12

View of Internal Berm 3 slope looking northwest.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Internal Berms

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: . Peach

Photograph 13

View of Internal Berm 3 slope looking southeast.



Photograph 14

View of northwest abutment of Internal Berm 3 showing level grade with existing ground.



**DUCK POND TAILINGS MANAGEMENT FACILITY
FIELD INSPECTION FORM B
DITCHES, CHANNELS & MISCELLANEOUS ITEMS**

All parts of this inspection form should be completed. Adverse conditions should be described and location stated. Additional information and relevant photographs should be attached.

Inspector's Name: Andrew Peach Report No.: 20-01 Inspection Date: 30/09/2020
Golder Associates (DD/MM/YYYY)

DITCHES & CHANNELS:

Identification: Dam B Emergency Spillway and Channel Inlet Invert Elevation: 277.7 m

Flow Control Structure: none Concrete sill

A) Inlet Conditions

- good
- scour & erosion
- blockage
- debris
- beaver dam
- siltation
- vegetation Some minor vegetation growth present.
- slope or bank
- erosion
- failure/instability
- corrective action taken
- to follow

B) Outlet Conditions

- good
- scour & erosion
- blockage
- debris
- beaver dam
- siltation
- vegetation
- slope or bank
- erosion
- failure/instability
- corrective action taken
- to follow

ACCESS ROADS / SHORELINE:

Location: N/A vegetation debris erosion
Location: N/A vegetation debris erosion

**DUCK POND TAILINGS MANAGEMENT FACILITY
FIELD INSPECTION FORM B
DITCHES, CHANNELS & MISCELLANEOUS ITEMS**

CULVERTS

Location: <u>Beneath mine site access road</u>	<input checked="" type="checkbox"/> good	<input type="checkbox"/> blocked	<input type="checkbox"/> damaged	<u>Three CSP culverts</u>
Location: _____	<input type="checkbox"/> good	<input type="checkbox"/> blocked	<input type="checkbox"/> damaged	_____
Location: _____	<input type="checkbox"/> good	<input type="checkbox"/> blocked	<input type="checkbox"/> damaged	_____
Location: _____	<input type="checkbox"/> good	<input type="checkbox"/> blocked	<input type="checkbox"/> damaged	_____
Location: _____	<input type="checkbox"/> good	<input type="checkbox"/> blocked	<input type="checkbox"/> damaged	_____

PIPELINES - None

<input type="checkbox"/> good	<input type="checkbox"/> damaged	_____
<input type="checkbox"/> good	<input type="checkbox"/> damaged	_____
<input type="checkbox"/> good	<input type="checkbox"/> damaged	_____
<input type="checkbox"/> good	<input type="checkbox"/> damaged	_____
<input type="checkbox"/> good	<input type="checkbox"/> damaged	_____
<input type="checkbox"/> good	<input type="checkbox"/> damaged	_____
<input type="checkbox"/> good	<input type="checkbox"/> damaged	_____

COMMENTS AND RECOMMENDATIONS:

1. Minor erosion noted during previous inspections on the upstream slope near Sta. 0+900 (see Photo 6) was repaired in 2018 with the placement of rip rap to prevent further erosion. The rip rap appears to be functioning well and the area can return to normal surveillance.
2. Spillway generally clear (rock-lined portion starts at 537197E, 5288398N; rock-lined portion ends at 536918E, 5388290N).
3. On-going maintenance should include routine clearing in the spillway channel to maintain its flow capacity and permit visual inspection.
4. Vegetation was cleared from the spillway channel downstream of the mine access road crossing in 2020 (Sta. 0+700 to 1-350), following recommendations provided in the 2019 annual inspection report.

<input checked="" type="checkbox"/> Action Required:	<input checked="" type="checkbox"/> none	<input type="checkbox"/> further monitoring	<input type="checkbox"/> maintenance	<input type="checkbox"/> immediate remediation
<input checked="" type="checkbox"/> Plan or Sketch Attached	Figure 2			
<input checked="" type="checkbox"/> Photographs Attached	1 - 10			

Reviewer's Name: <u>Peter Merry</u>	Date Reviewed: <u>11/02/2021</u>
<u>Golder Associates</u>	<u>(DD/MM/YYYY)</u>

REVIEW COMMENTS: none

2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam B Emergency Spillway and Channel

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 1

View of Dam B Spillway inlet, note minor vegetation growth.



Photograph 2

View of Dam B Spillway approaching the north abutment of the dam. Beginning of clearly defined channel, some minor vegetation growth.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam B Emergency Spillway and Channel

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: . Peach

Photograph 3

View of concrete sill along Dam B Spillway.



Photograph 4

View along Dam B Spillway looking south, note minor vegetation growth in channel.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam B Emergency Spillway and Channel

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: . Peach

Photograph 5

Section along Dam B Spillway with ponded water, near the outlet (Stn. 0+725 m) of Diversion Ditch B1



Photograph 6

View along Dam B Spillway after ponded area; Mine Access Road visible in the background.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam B Emergency Spillway and Channel

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: . Peach

Photograph 7

View of Dam B Spillway channel looking northeast from culverts along Mine Access Road.



Photograph 8

View of inlets of three CSP culverts along Dam B Spillway at Mine Access Road.



2020 Inspection - Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam B Emergency Spillway and Channel

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: . Peach

Photograph 9

View of outlets of three CSP culverts along Dam B Spillway at Mine Access Road.



Photograph 10

View of Dam B Spillway downstream of culvert outlets, looking southwest.



**DUCK POND TAILINGS MANAGEMENT FACILITY
FIELD INSPECTION FORM B
DITCHES, CHANNELS & MISCELLANEOUS ITEMS**

All parts of this inspection form should be completed. Adverse conditions should be described and location stated. Additional information and relevant photographs should be attached.

Inspector's Name: Andrew Peach Report No.: 20-01 Inspection Date: 30/09/2020
Golder Associates (DD/MM/YYYY)

DITCHES & CHANNELS:

Identification: Dam C Emergency Spillway Inlet Invert Elevation: 267.2 m

Flow Control Structure: none Concrete sill

A) Inlet Conditions

- good
- scour & erosion
- blockage
- debris
- beaver dam
- siltation
- vegetation Minor vegetation growth present
- slope or bank
- erosion
- failure/instability
- corrective action taken
- to follow

B) Outlet Conditions

- good
- scour & erosion
- blockage
- debris
- beaver dam
- siltation
- vegetation
- slope or bank
- erosion
- failure/instability
- corrective action taken
- to follow

ACCESS ROADS / SHORELINE:

Location: N/A vegetation debris erosion
Location: N/A vegetation debris erosion

2020 Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam C Emergency Spillway and Channel

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 1

View of Dam C spillway inlet, note minor vegetation growth.



Photograph 2

View along Dam C spillway looking towards inlet, concrete sill in background is covered with vegetation.



2020 Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam C Emergency Spillway and Channel

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 3

View along Dam C spillway looking southwest.



Photograph 4

View along Dam C spillway.



2020 Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Dam C Emergency Spillway and Channel

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 5

View of ponded water at the end of the Dam C spillway.



**DUCK POND TAILINGS MANAGEMENT FACILITY
FIELD INSPECTION FORM B
DITCHES, CHANNELS & MISCELLANEOUS ITEMS**

All parts of this inspection form should be completed. Adverse conditions should be described and location stated. Additional information and relevant photographs should be attached.

Inspector's Name: Andrew Peach Report No.: 20-01 Inspection Date: 30/09/2020
Golder Associates (DD/MM/YYYY)

DITCHES & CHANNELS:

Identification: Diversion Ditches A1, A2, B1, C1 Inlet Invert Elevation: Varies

Flow Control Structure: none Culverts at road crossings

A) Inlet/Outlet Conditions

- good
- scour & erosion
- blockage
- debris
- beaver dam
- siltation
- vegetation
- slope or bank
- erosion
- failure/instability
- corrective action taken
- to follow

B) Channel Conditions

- good
 - scour & erosion
 - blockage
 - debris
 - beaver dam
 - siltation
 - vegetation
 - slope or bank
 - erosion
 - failure/instability
 - corrective action taken
 - to follow
- Some vegetation within the various channels

ACCESS ROADS / SHORELINE:

Location: N/A vegetation debris erosion
Location: N/A vegetation debris erosion

2020 Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Diversion Ditches A1, A2, B1, C1

Photographed by: A. Peach

Date: September 30, 2020

Drawn By : A. Peach

Photograph 1

View of Diversion Ditch A1,
looking northeast near
Stn. 0+850 m.



Photograph 2

View of Diversion Ditch A1,
looking southwest near
Stn. 0+850 m.



2020 Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Diversion Ditches A1, A2, B1, C1

Photographed by: A. Peach

Date: 2020

Drawn By: A. Peach

Photograph 3

View of Diversion Ditch A1,
looking northeast near
Stn. 0+500 m



Photograph 4

View of Diversion Ditch A1,
looking southwest near
Stn. 0+500 m.



2020 Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Diversion Ditches A1, A2, B1, C1

Photographed by: A. Peach

Date: 2020

Drawn By: A. Peach

Photograph 5

View of Diversion Ditch B1 near outlet (Strn. 0+700 m), looking northeast towards A1.



Photograph 6

View of Diversion Ditch A2 culverts (outlets) along access road to Dam A, looking southwest.



2020 Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Diversion Ditches A1, A2, B1, C1

Photographed by: A. Peach

Date: 2020

Drawn By: A. Peach

Photograph 7

View of Diversion Ditch A2 culverts (outlets) along access road to Dam A, looking northeast.



Photograph 8

View of Diversion Ditch A2 culverts (inlets) along access road to Dam A, looking northeast.



2020 Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Diversion Ditches A1, A2, B1, C1

Photographed by: A. Peach

Date: 2020

Drawn By: A. Peach

Photograph 9

View of Diversion Ditch A2, looking northeast. Culverts in Dam A access road visible.



Photograph 10

View of Diversion Ditch A2, looking southwest near Stn. 0+425 m.



2020 Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Diversion Ditches A1, A2, B1, C1

Photographed by: A. Peach

Date: 2020

Drawn By: A. Peach

Photograph 11

View of Diversion Ditch C1 culvert (inlet) along Mine Access Road.



Photograph 12

View of Diversion Ditch C1 looking upstream (northeast) of culvert inlet along Mine Access Road.



2020 Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Diversion Ditches A1, A2, B1, C1

Photographed by: A. Peach

Date: 2020

Drawn By: A. Peach

Photograph 13

View of Diversion Ditch C1 culvert (outlet) along Mine Access Road. Outlet is partially blocked.



Photograph 14

View of Diversion Ditch C1 looking downstream (southwest) of culvert outlet along Mine Access Road.



2020 Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Diversion Ditches A1, A2, B1, C1

Photographed by: A. Peach

Date: 2020

Drawn By: A. Peach

Photograph 15

View of Diversion Ditch C1 culverts (inlets) along Dam C access road.



Photograph 16

View of Diversion Ditch C1 looking upstream (northeast) of culvert inlets along Dam C access road.



2020 Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Diversion Ditches A1, A2, B1, C1

Photographed by: A. Peach

Date: 2020

Drawn By: A. Peach

Photograph 17

View of Diversion Ditch C1 culverts (outlets) along Dam C access road.



Photograph 18

View of Diversion Ditch C1 looking downstream (southwest) of culvert outlets along Dam C access road.



**DUCK POND TAILINGS MANAGEMENT FACILITY
FIELD INSPECTION FORM B
DITCHES, CHANNELS & MISCELLANEOUS ITEMS**

All parts of this inspection form should be completed. Adverse conditions should be described and location stated. Additional information and relevant photographs should be attached.

Inspector's Name: Andrew Peach Report No.: 20-01 Inspection Date: 30/09/2020
Golder Associates (DD/MM/YYYY)

DITCHES & CHANNELS:

Identification: Discharge Ditch Inlet Invert Elevation: Varies

Flow Control Structure: none HDPE culvert at Mine Access Road crossing

A) Inlet/Outlet Conditions

- good scour & erosion
- blockage debris
- slope or bank beaver dam
- corrective action siltation
- vegetation
- erosion
- failure/instability
- taken
- to follow

B) Channel Conditions

- good scour & erosion
- blockage debris
- slope or bank beaver dam
- corrective action siltation
- vegetation
- erosion
- failure/instability
- taken
- to follow

ACCESS ROADS / SHORELINE:

Location: N/A vegetation debris erosion
Location: N/A vegetation debris erosion

2020 Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Discharge Ditch

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 1

View of water transfer pipeline near south abutment of Dam B. Water transfer pipeline empties into Discharge Ditch.



Photograph 2

View of overland portion of water transfer pipeline, downstream slope of Dam B visible on the right.



2020 Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Discharge Ditch

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 3

View of Discharge Ditch for water transfer pipeline, looking east from HDPE culvert along mine access road.



Photograph 4

View of HDPE culvert inlet along Discharge Ditch at Mine Access Road, Polishing Pond visible in the background.



2020 Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Discharge Ditch

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: A. Peach

Photograph 5

View of HDPE culvert outlet along Discharge Ditch at Mine Access Road.



Photograph 6

View of Discharge Ditch for water transfer pipeline, looking west from HDPE culvert along Mine Access Road. Polishing Pond visible in background.



**DUCK POND TAILINGS MANAGEMENT FACILITY
FIELD INSPECTION FORM B
DITCHES, CHANNELS & MISCELLANEOUS ITEMS**

All parts of this inspection form should be completed. Adverse conditions should be described and location stated. Additional information and relevant photographs should be attached.

Inspector's Name: Andrew Peach Report No.: 20-01 Inspection Date: 30/09/2020
Golder Associates (DD/MM/YYYY)

DITCHES & CHANNELS:

Identification: Pipelines and Access Roads Inlet Invert Elevation: N/A

Flow Control Structure: none

A) Inlet Conditions

- good
- scour & erosion
- blockage
- debris
- beaver dam
- siltation
- vegetation
- slope or bank
- erosion
- failure/instability
- corrective action taken
- to follow

B) Outlet Conditions

- good
- scour & erosion
- blockage
- debris
- beaver dam
- siltation
- vegetation
- slope or bank
- erosion
- failure/instability
- corrective action taken
- to follow

ACCESS ROADS / SHORELINE:

Location: General Access Roads vegetation debris erosion

Location: _____ vegetation debris erosion

**DUCK POND TAILINGS MANAGEMENT FACILITY
FIELD INSPECTION FORM B
DITCHES, CHANNELS & MISCELLANEOUS ITEMS**

CULVERTS

Location: _____	<input type="checkbox"/> good	<input type="checkbox"/> blocked	<input type="checkbox"/> damaged	_____
Location: _____	<input type="checkbox"/> good	<input type="checkbox"/> blocked	<input type="checkbox"/> damaged	_____
Location: _____	<input type="checkbox"/> good	<input type="checkbox"/> blocked	<input type="checkbox"/> damaged	_____
Location: _____	<input type="checkbox"/> good	<input type="checkbox"/> blocked	<input type="checkbox"/> damaged	_____
Location: _____	<input type="checkbox"/> good	<input type="checkbox"/> blocked	<input type="checkbox"/> damaged	_____

PIPELINES

Lime addition pipeline	<input checked="" type="checkbox"/> good	<input type="checkbox"/> damaged	_____
Water reclaim pipeline	<input checked="" type="checkbox"/> good	<input type="checkbox"/> damaged	_____
Discharge pipeline to Polishing Pond	<input checked="" type="checkbox"/> good	<input type="checkbox"/> damaged	_____
	<input type="checkbox"/> good	<input type="checkbox"/> damaged	_____

COMMENTS AND RECOMMENDATIONS:

Only the water reclaim pipeline (for water treatment) and discharge pipeline to the Polishing Pond remain functional from the pipelines utilized during operations.

In 2017 two new pipelines were installed from the water treatment plant to Berms 1 and 3. The pipelines appear to be a combination of 10", 12", and 14" HDPE pipelines with tee valve at the discharge locations to allow flow into all 4 cells (see Photo 4). Teck reports that the pipelines are functioning as required.

Some dredging was conducted in 2013 to lower high cones within the TMA that were above the design elevation of 274.2 m. A bathymetric survey of the TMA should be conducted once all contaminated soils have been placed in the TMA to identify the areas where tailings need to be relocated to a deeper part of the TMA. It is understood this dredging campaign will take place after placement of all contaminated soils, after 2021.

<input checked="" type="checkbox"/> Action Required:	<input type="checkbox"/> none	<input checked="" type="checkbox"/> further monitoring	<input type="checkbox"/> maintenance	<input type="checkbox"/> immediate remediation
<input checked="" type="checkbox"/> Plan or Sketch Attached	Figure 2			
<input checked="" type="checkbox"/> Photographs Attached	1 - 5			

Reviewer's Name: <u>Peter Merry</u>	Date Reviewed: <u>11/02/2021</u>
Golder Associates	(DD/MM/YYYY)

REVIEW COMMENTS: none

2020 Dam Safety Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Pipelines

Photographed by: A. Peach

Date: September 30, 2020

Drawn By : P. Merry

Photograph 1

Water Reclaim Well.



Photograph 2

Pipeline from water treatment plant (2019 Photo).



2020 Dam Safety Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Pipelines

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: P. Merry

Photograph 3

Water treatment pipeline along southern shore of the TMA with T valves (2019 photo).



Photograph 4

Water treatment plant discharge pipeline on Berm 1.



2020 Dam Safety Inspection – Duck Pond Tailings Management Facility

Client: Teck Resources Limited

Project Number: 20139279

Site Location: Pipelines

Photographed by: A. Peach

Date: September 30, 2020

Drawn By: P. Merry

Photograph 5

Water treatment plant
discharge pipeline on Berm 3.





golder.com