Klohn Crippen Berger

Teck Coal Limited

Elkview Operations

Coarse Coal Refuse Dump

2022 Annual Facility Performance Report

BEST MANAGED COMPANIES Platinum member

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March 2023

March 15, 2022

Teck Coal Ltd.
Elkview Operations
Sparwood, British Columbia
V0B 2G1

Patrick Green, P.Eng.
Senior Engineer Advisor, Tailings

Dear Mr. Green:

Coarse Coal Refuse Dump
2022 Annual Facility Performance Report

We are pleased to submit the 2022 Annual Facility Performance Report for the Teck Elkview Operations Coarse Coal Refuse Dump.

Please contact us if you have any questions regarding this report.

Yours truly,

KLOHN CRIPPEN BERGER LTD.

Michelle Murphy, P.Eng.,
Project Manager

JK:jc/db

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Teck Coal Limited

Elkview Operations

Coarse Coal Refuse Dump

2022 Annual Facility Performance Report

EXECUTIVE SUMMARY

Presented is the 2022 Annual Facility Performance Report (AFPR) for the Teck Elkview Operations (EVO) Coarse Coal Refuse (CCR) and Mixed Coal Refuse (MCR) Dump facility (herein referred to as the CCR Dump), between November 2021 and September 2022, herein referred to as the reporting period.

The 2022 AFPR site visit of the CCR Dump was completed on September 20, 2022 by Mr. Michael Tin, P.Eng., and Mr. Justin Kelly, EIT, of Klohn Crippen Berger (KCB). The Tailings Storage Facility (TSF) Qualified Person at the time of the inspection was Mr. Patrick Green, P.Eng. The Engineer of Record (EoR) for the CCR Dump is Mr. Andy Small, P. Eng., of KCB, who completed a separate site visit shortly following the 2022 AFPR site visit. This report was prepared under Mr. Small's supervision.

The CCR Dump appeared to be in good physical condition overall based on observations during the 2022 AFPR, except for a crack that was observed on the shoulder of the southwest corner of the dump. This is described further below.

Summary of Facility Description

The CCR Dump is constructed against a natural hillside located north of the processing plant. Current operations involve the placement of MCR material, comprising a mix of fine and coarse refuse from the coal washing process, and is typically placed on the crest of the CCR Dump and compacted in 1.5 m thick lifts by routine trafficking of loaded 830E, 230 tonne haul trucks and dozers.

Summary of Key External Hazards

The key external hazards for the CCR Dump are seismic and meteorological hazards. The CCR Dump meets contemporary guidelines with respect to withstanding seismic load conditions, based on "Guidelines for Mine Waste Dump and Stockpile Design" (Hawley and Cunning 2017). Toe erosion due to flooding of the Elk River is a key hazard for the southern portion of the CCR Dump and this was addressed by riprap that has been placed at the toe of the dump.

Summary of Significant Changes in 2022

No significant physical changes have occurred at the CCR Dump during 2022, other than the routine raising of the dump with MCR material.

Significant Changes to Stability and / or Surface Water Control

There were no significant changes to the stability of the CCR Dump in 2022. The overall global slope has been maintained in accordance with the design. Surficial cracking was observed on the southwest corner of the active lift during the 2022 AFPR. This is likely due to differential settlement of the placed MCR material due to differential compaction. The crack was first observed by EVO personnel on July 30, 2022. EVO implemented an instrumentation monitoring system, and since August 4, 2022, there has not been observed movement. No other signs of significant cracking, wet spots, or deformations were observed during the 2022 AFPR site visit.

Summary of Review of OMS Manual

An Operation, Maintenance, and Surveillance Manual (OMS) for the CCR Dump was last updated in January 2021. A subsequent update is expected to be issued in Q4 2022[1].

Summary of Review of ERP

There is no specific Emergency Response Plan (ERP) for the CCR Dump but there is an overall Mine Emergency Response Plan (MERP). The HSRC requires that all TSFs have an ERP, although this is intended for conventional storage facilities. Nonetheless, Teck will review specific aspects related to the CCR Dump and work with KCB to see if additional contributions to the existing ERP within the overall MERP is required[2].

Summary of Recommendations

There are no outstanding or new Priority[3] 1 or 2 recommendations for the CCR Dump. Section 9 presents additional, lower priority recommendations.

[1] CCR Dump OMS Manual issued November 2022.
[2] The CCR Dump was incorporated into the Tailings & Water Storage Facilities ERP issued November 2022.
[3] Recommendation priority guidelines specified in the Health, Safety and Reclamation Code for Mines in British Columbia (HSRC) Guidance Document (MEM, 2016). and assigned by KCB. Refer Table 9.1 for description of priorities.

TABLE OF CONTENTS

TABLE OF CONTENTS
(continued)

List of Tables

List of Figures

List of Appendices

CLARIFICATIONS REGARDING THIS REPORT

This report is an instrument of service of Klohn Crippen Berger Ltd. (KCB). The report has been prepared for the exclusive use of Teck Coal Limited (Client) and the applicable regulatory authorities for the specific application to the Coarse Coal Refuse (CCR) Dump AFPR, and it may not be relied upon by any other party without KCB's written consent.

KCB has prepared this report in a manner consistent with the level of care, skill and diligence ordinarily provided by members of the same profession for projects of a similar nature at the time and place the services were rendered. KCB makes no warranty, express or implied.

Use of or reliance upon this instrument of service by the Client is subject to the following conditions:

1. The report is to be read in full, with sections or parts of the report relied upon in the context of the whole report.
2. The Executive Summary is a selection of key elements of the report. It does not include details needed for the proper application of the findings and recommendations in the report.
3. The observations, findings and conclusions in this report are based on observed factual data and conditions that existed at the time of the work and should not be relied upon to precisely represent conditions at any other time.
4. The report is based on information provided to KCB by the Client or by other parties on behalf of the client (Client-supplied information). KCB has not verified the correctness or accuracy of such information and makes no representations regarding its correctness or accuracy. KCB shall not be responsible to the Client for the consequences of any error or omission contained in Client-supplied information.
5. KCB should be consulted regarding the interpretation or application of the findings and recommendations in the report.

1 INTRODUCTION

1.1 General

Klohn Crippen Berger Ltd. (KCB) was engaged by Teck Coal Limited (Teck) to prepare the 2022 Annual Facility Performance Report (AFPR) for the Coarse Coal Refuse (CCR) Dump at the Elkview Operations (EVO) site. The 2022 AFPR includes a review of facility performance and available monitoring data from November 2021 to September 2022, herein referred to as the reporting period.

The site visit for the CCR Dump was conducted on September 20, 2021, by Mr. Michael Tin, P.Eng., and Mr. Justin Kelly, EIT, of KCB.

This report is organized as follows:

- Section 2: overview of the project background and facility description as it relates to the AFPR
- Section 3: summary of activities since the last AFPR related to the safety of the facility
- Section 4: review of 2022 AFPR observations
- Section 5: summary of 2022 climate aspects
- Section 6: summary of water management aspects
- Section 7: review of monitoring records
- Section 8: review of documentation and relevant failure modes to support the structure safety assessment
- Section 9: recommendations for ongoing operations, maintenance, and surveillance of the facility

1.2 Engineer of Record and Tailings Storage Facility Qualified Person

Mr. Andy Small, P.Eng., as a representative of KCB, is the Engineer of Record (EoR) for the EVO tailings storage facilities (TSF), including the CCR Dump. He visited the site once in 2022 shortly after the AFPR site visit and supervised the preparation of this report.

Mr. Patrick Green, P.Eng., of EVO, is the TSF Qualified Person at the site (beginning in June 2021), as defined by the Health, Safety, and Reclamation Code (HSRC) for Mines in British Columbia, by the British Columbia Ministry of Energy, Mines and Low Carbon Innovation (EMLI 2022).

1.3 Consequence of Failure Framework

Teck has advised that it is aligned with the most conservative interpretation of the GISTM which, in turn, is consistent with Teck's safety culture. Commensurately, Teck has advised that consequence classification is not a part of its tailings management governance going forward and has indicated to EMLI in the 2021 AFPR.

2 BACKGROUND

2.1 General

The EVO coal mine site is located approximately 3 km east of the town of Sparwood, in southeastern British Columbia. Underground coal mining at the site began in the late 1890's, with open pit mining operating since 1969. The site comprises the following key tailings management and processing facilities:

- West Fork Tailings Facility (WFTF);
- Lagoon Tailings Area (Lagoons A, B, C, and D); and
- CCR Dump, which is considered a "Tailings Storage Facility" under the HSRC (EMLI 2022).

The focus of this report is on the CCR Dump. The AFPR for other TSFs have been reported separately. An overview of the CCR Dump is presented in the following section.

2.2 Facility Description

General

The CCR Dump is constructed against a natural hillside beginning approximately 400 m to the north of the wash plant. Waste materials from the coal washing process are separated into coarse and fine refuse materials, with the coarse materials being stored in the CCR Dump. Fine refuse materials were historically stored in the Lagoon Tailings Area (Lagoons A, B, C, and D) and since 2006 also in the WFTF.

Originally the CCR Dump stored CCR materials produced by cyclone fractionation of the total wash tailings feed, and consisting mainly of sand and fine gravel fractions, with trace to some fines. Starting in 2004, changes in the wash plant allowed production of Mixed Coal Refuse (MCR), which incorporated filter-dried fine tailings into the CCR Dump tailings source. MCR includes a higher proportion of silt and clay sized particles. It has similar geotechnical strength as CCR, with somewhat reduced permeability.

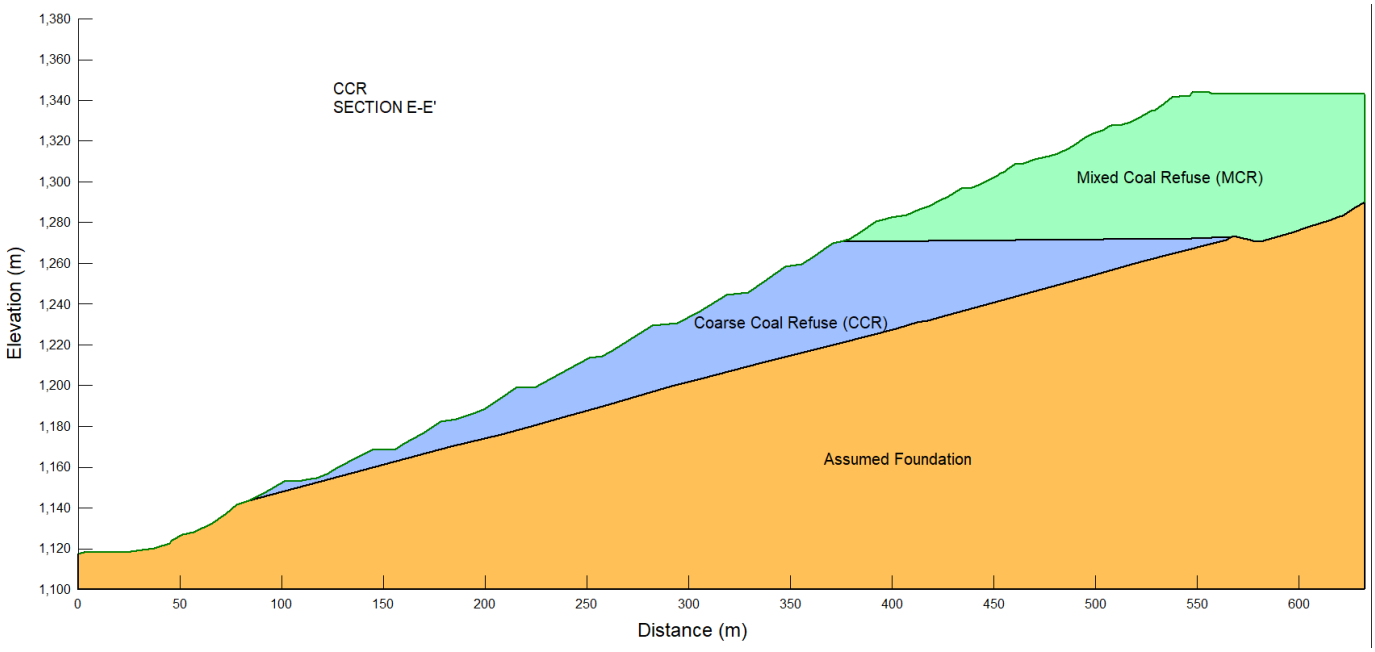
The CCR Dump originated as a series of semi-contiguous smaller dumps referred to as the South Dump, North Dump, Goddard Dump, and Lindsay Dump. Management of these four areas was combined in 2000 under the present single dump configuration. The key components of the CCR Dump are described below. The general plan layout for the CCR Dump is shown in Figure 2.2.

CCR Dump Geometry

The CCR Dump geometry varies, with the local slope bench width ranging from 4 m to 25 m. Local bench slopes are typically constructed at the angle of repose for the material (37 degrees), with an overall global slope ranging from 2.3H:1V at the northern portion of the dump to 3H:1V at the southern portion of the dump. The overall slope of the CCR Dump at a portion of the southern area (formerly known as the Goddard Dump) is about 1.3H:1V. Individual benches are typically about 15 m

high, with a few areas having contiguous bench faces up to about 30 m high (e.g., at Goddard Dump). The downstream slope of the CCR Dump is progressively vegetated as the CCR Dump is raised. A typical cross-section of the CCR Dump is provided in Figure 2.1.

Figure 2.1 Typical Cross-Section of the CCR Dump at Section E-E' (Adapted from EVO).



Interceptor Ditch

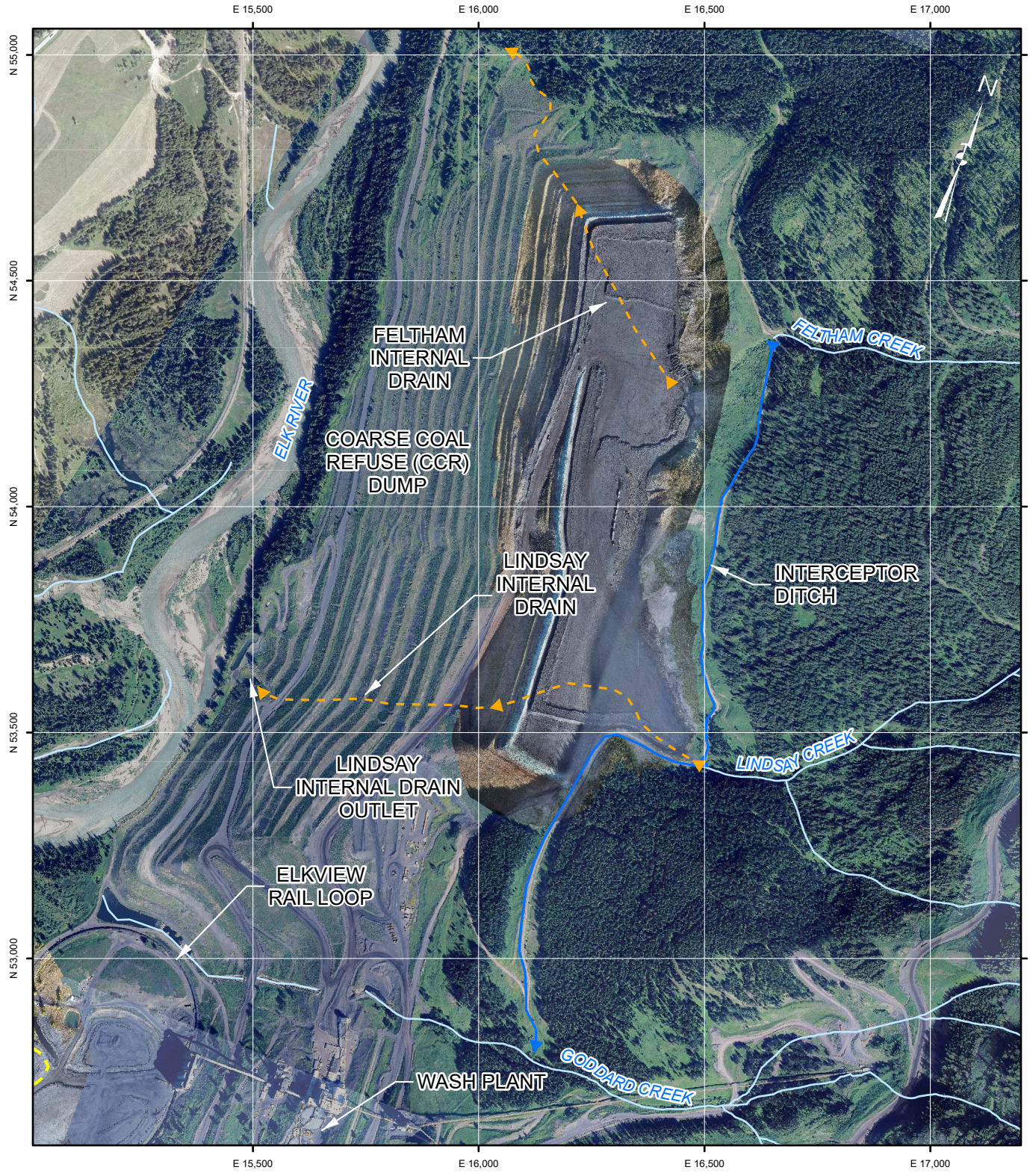
The Interceptor Ditch was constructed on the eastern perimeter of the CCR Dump, with a purpose to collect upslope runoff from the natural hillside and divert the flow south into Goddard Creek.

Internal Drains

The CCR Dump incorporates two internal drains; the Feltham and Lindsay Drains. The Lindsay Drain is located in the former channel of Lindsay Creek in the southern portion of the CCR Dump and outlets via a corrugated metal pipe at the western toe and into the Lindsay Pond, where the flow is measured via a v-notch weir before discharging to the Elk River. The Feltham Drain is located on the northern portion of the CCR Dump and runs diagonally across the slope to the northern perimeter near Fennelon Creek. Water is discharged to the natural ground surface at the edge of the dump.

The design of the Lindsay Drain consists of coarse rockfill and a filter layer. Documentation of the construction of the drain is limited to only recent years. Design details and construction documentation for the Feltham Drain are not available; however, the drain is thought to be similar in nature to the Lindsay Drain.

Early dump designs also include subdrains constructed at intervals (AGRA 1998); however, no documentation is available to indicate these were constructed.



LEGEND

- DITCH
- INTERNAL DRAIN
- CREEK

NOTES:
1. DATUM, PROJECTION: EVO MINEGRID.
2. NORTH ARROW ORIENTATED TO TRUE NORTH.
3. IMAGERY FROM EVO (COLLECTED IN 2022) AND ESRI.

TO BE READ WITH KLOHN CRIPPEN BERGER REPORT DATED: 2023-03-15

SCALE 0 500m

CLIENT: Teck

Klohn Crippen Berger

PROJECT: TECK ELKVIEW OPERATIONS
2022 ANNUAL FACILITY PERFORMANCE REPORT

TITLE: COARSE COAL REFUSE DUMP
PLAN LAYOUT

SCALE	PROJECT No.	FIG No.
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3 ACTIVITIES IN 2022 RELATED TO SAFETY OF THE CCR DUMP

3.1 Construction Activities

EVO are constructing to the permitted CCR Dump design elevation of 1,395 m. The following construction activities were undertaken at the CCR Dump over the period from November 2021 to September 2022:

- The CCR Dump crest elevation was raised from an approximate elevation of El. 1,337.7 m to El. 1,340.0 m at the beginning of the reporting period to an approximate elevation of El. 1,342.5 m to El. 1,345.0 m at the end of the reporting period.
- Typically, the CCR Dump has been raised at an average rate of 6 m per year (based on annual surveys), constructed in 1.5 m thick lifts of MCR material. The CCR Dump was raised approximately 4.5 to 5 m during the reporting period.
- Approximately 2,000,000 tonnes of MCR was placed during the 2022 reporting period.
- The slopes and the benches of the CCR Dump have been progressively vegetated as lifts are completed.
- Routine maintenance to remedy local dump slope erosion gullies was undertaken throughout the reporting period. Areas prone to erosion are hydroseeded with the inclusion of a tackifier and heliseeded for areas of poor hydroseed cover.
- A site-wide survey was completed by EVO in August 2022, and an additional photogrammetry survey of the upper portion of the CCR Dump was completed October 17, 2022.

A representative plan layout and cross sections are presented in Appendix III.

3.2 Construction Quality Control Activities

Compaction control of MCR material at the CCR Dump is implemented using a method specification, which requires the compacted lift thickness to not exceed 1.5 m and a minimum of four passes by a loaded 830E haul truck. Lift thickness and construction surveys are reviewed by EVO to assess the CCR Dump construction against the specification. Compaction testing is also conducted on each lift, but recognizing that the compaction testing does not test the entire 1.5 m lift thickness. EVO conducts periodic inspections of the CCR Dump construction area to observe MCR dumping, placement, and compaction practices. Review of quality control data is presented in the 2022 CCR Dump Construction Summary Report, issued separately.

4 SITE OBSERVATIONS / RESULTS OF SITE VISIT

The visual review conducted by Mr. Tin and Mr. Kelly included observing the condition of the CCR Dump to identify deficiencies and other potential concerns regarding the geotechnical stability of the dump. There were no significant concerns related to water management.

Site visit checklist forms and selected photographs of the facilities are presented in Appendix I and II, respectively.

A summary of notable observations is included in Table 4.1. Only observations that are of specific interest are included. The table indicates whether the observations are new and whether there is a possible safety concern to the facility that should be addressed. Comments and recommendations arising from notable observations are summarized in Section 9.

Except for the surficial cracks noted in Table 4.1, there were no signs of structural instability observed during the inspections of the crest, downstream slope, and toe area.

Table 4.1 Summary of Notable Observations

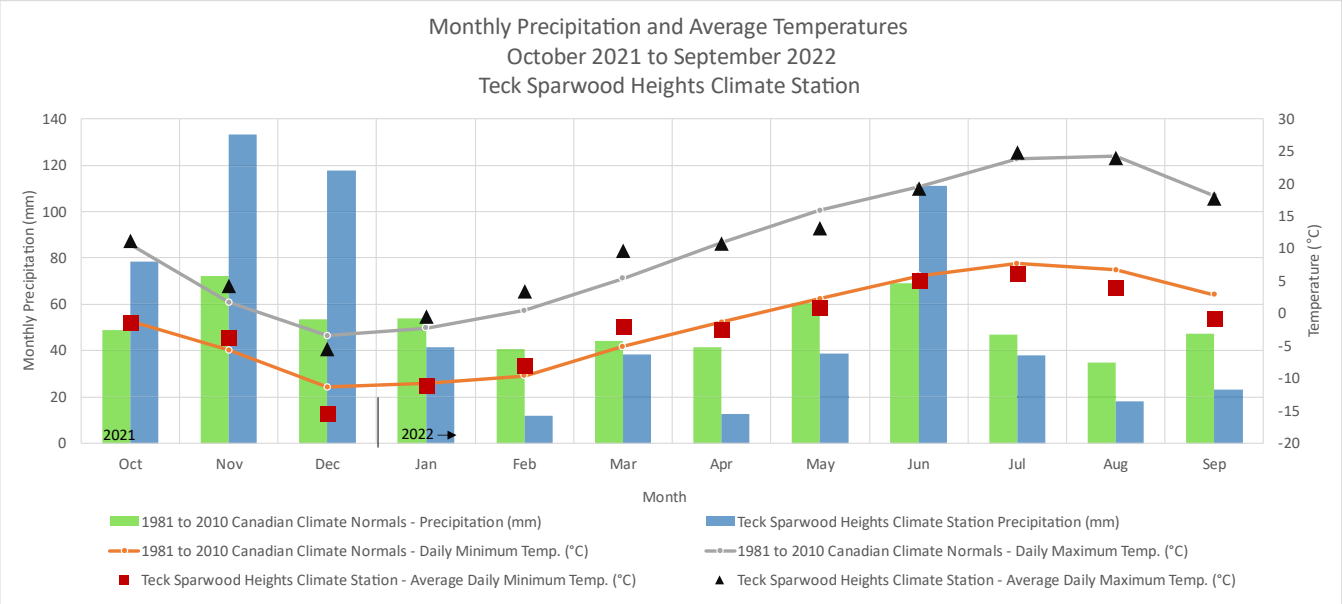
No.	Notable Observations	Change from 2021 AFPR?	Facility Safety Concern?	Photo Reference
CCR-1	Clear seepage was observed at some CCR Dump interbench ditches.	Yes, previously orange-stained	No	I-7
CCR-2	Minor erosion was observed on some sections of the interbench slopes.	No	No	N/A
CCR-3	The Lindsay Drain outlet was discharging with low flow at the time of the inspection. The drain outlet appeared to be in good condition.	No	No	I-4
CCR-4	Surficial cracks were observed along the crest surface at the southern extent of the CCR Dump, approximately 20 m setback from the crest. Section 7.2 discusses the results of instrumentation that was installed at the crack location.	Yes	No	I-13, I-14, I-15, I-16, I-17, I-18, I-19

5 CLIMATE

Figure 5.1 presents the climate averages for Sparwood based on the Teck Sparwood Heights climate station. The Teck Sparwood Heights climate station data was used for this reporting period. The total recorded precipitation from October 2021 to September 2022 was approximately 664 mm, compared to the average annual precipitation at Sparwood of 614 mm (based on Environment Canada Sparwood climate normal from 1981 to 2010).

Precipitation during October 2021, November 2021, December 2021, and June 2022 was higher than the 1981-2010 Canadian climate normal for Sparwood. The precipitation for the reporting period has generally been lower during the remaining months in comparison the 1981-2010 Canadian climate normal for Sparwood. KCB is not aware of any instances of decreased facility performance during the high precipitation months.

Figure 5.1 Climate Averages for Sparwood



Note:

1. Source: Environment Canada Sparwood Climate Normals (1981 to 2010) (Climate ID 1157630; El. 1138 m), and EVO Sparwood Heights Climate Station (El. 1138 m).

6 WATER MANAGEMENT

6.1 General Overview

As described in Section 2.2, surface water management at the CCR Dump comprises an upstream interceptor ditch, two internal drains, and several ditches along the access roads. Runoff from the natural hillside east of the CCR Dump is captured by the Interceptor Ditch. The Interceptor Ditch diverts flow from Feltham Creek and the adjacent hillside to the south, with the diverted runoff discharging into Goddard Creek.

The Lindsay Drain captures infiltration within the southern portion of the CCR Dump and drains towards the western toe of the dump. A series of corrugated metal pipe culverts discharges the drain into settling ponds, before discharging into the Elk River.

The Feltham drain captures infiltration within the northern portion of the CCR Dump and discharges to a location approximately at mid-slope of the CCR Dump on the northern perimeter. Obvious issues with the drain are not apparent from a surface review.

6.2 Seepage

Seepage was observed at several lower interbench slopes along the north end of the CCR Dump in the locations consistent with those observed during the 2021 AFPR site visit (KCB 2022). Seepage was observed to be clear compared to orange colouration observed in some ditch drains during the previous inspection. The observed seepage extent is consistent with historic observations and is not a facility safety concern.

6.3 Discharge Quantities and Quality

Rainfall infiltrates through the surface of the CCR Dump and discharges through the Lindsay and Feltham Drains. EVO reports water quality data directly to the BC Ministry of Environment and Climate Change Strategy (ECCS) under separate reports.

7 MONITORING AND INSTRUMENTATION REVIEW

The monitoring instrumentation at the CCR Dump comprises a network of VWPs, standpipe piezometers, GPS monitoring units, survey monuments, inclinometers, and wireline extensometers. Measurements are collected by the EVO Tailings Team, with the data evaluated against the Quantifiable Performance Objectives (QPOs) for the CCR Dump. The data is collected and reviewed by EVO, which advises KCB when there is an exceedance of a trigger level for the monitoring instruments.

The current monitoring program is considered sufficient to assess the performance of the current facility. During 2022 EVO documented the standards to be used for all tailings VWP calculations and corrections (Teck 2022). The EVO Tailings team also conducted a review and reconciliation of the instrumentation for the site in 2021.

A review of the monitoring and instrumentation data and procedures at site is presented below, with the location of each monitoring instrument and data shown in Appendix IV.

7.1 Piezometric Levels

Piezometer data for the reporting period indicates measurements are consistent with historical data trends. The instrumentation shows that in a general sense, ground water in the CCR Dump drains into or along the foundation contact (as expected) and implies a downward gradient in the CCR material.

A summary of results is presented in Appendix IV. For instruments along the CCR Dump toe, the readings fluctuate with the Elk River. For instruments above the toe, the readings have been consistent and are within the expected performance of the CCR Dump. Based on this, there are no structural concerns for the CCR Dump.

EVO conducted a reconciliation of operating instruments that included an audit of several VWPs. Errors were found in the application of calibration constants for some instruments and, as a result, the measurements for some of these instruments appear to show an increase in the pore water pressures to previous reporting periods; however, the measurements are consistent with the historic data when that data is also corrected (refer to Appendix IV). The reconciliation and adjustment to measurements also resulted in readings for some instruments to exceed their Trigger Action Response Plan (TARP) levels. Following the instrument reconciliation, a reassessment and update to the piezometer TARP levels should be made to ensure the levels are suitable for the updated data trends.

There were some additional standpipe piezometers and VWPs that were not reported during the reporting period, because the data was determined to be erroneous and corrections to the data logging system and/or calibration of the instruments have not yet been completed. These issues are being addressed by EVO and KCB.

7.2 Deformations

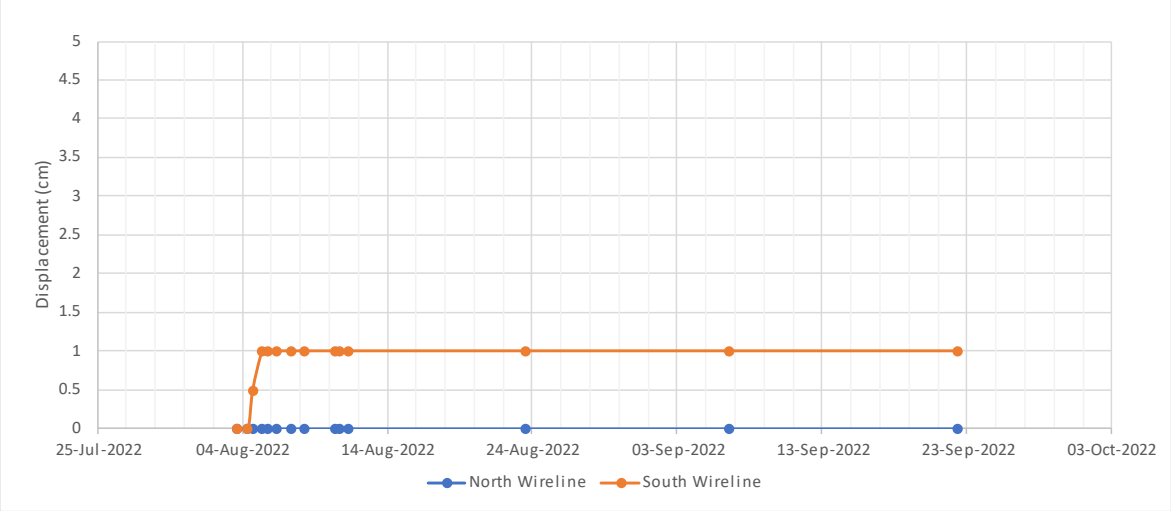
There are currently five inclinometers installed in the CCR Dump, of which three are active (CCR-South, CCR-North, and SI16-2). The remaining inclinometers (CCR-3 West and SI16-3) are no longer active due to the following reasons:

- CCR-3 West: inclinometer was destroyed in late 2015.
- SI16-3: readings are unreliable due to technical issues with the installation.

Inclinometers CCR-North and CCR-South were transitioned to an in-place Shape Accelerometer Array system in June of 2019. CCR-North was most recently measured in December 2021, SI16-2 in July 2022, and CCR-South in November 2022. Displacements for the inclinometers were consistent with previous trends and no significant discrete displacements or localized shear planes were recorded during the reporting period. Based on the instrumentation data, there are no safety concerns for the facility.

A GPS monitoring unit and two wireline extensometers were installed on the crest surface along the southwest extent of the CCR Dump to monitor the surficial crack at this location. Total displacements across the crack are shown in Figure 7.1. The instrumentation indicates displacements subsided on August 4, 2022, and no further movements have been observed.

Figure 7.1 Wireline Extensometer Displacements at Southwest Crest Crack



Note:

1. Displacement referenced to base reading taken on August 3, 2022.

Three GPS monitoring units were previously installed at the toe of the CCR Dump, between section D-D and E-E (refer to Appendix III). EVO continued to monitor the GPS monitoring units remotely, and the value of the units as a monitoring tool will be assessed.

There are also three sets of survey monuments installed along the toe of the CCR Dump between section D-D and E-E. But, due to previous erroneous measurements and issues with survey accuracy, EVO discontinued reading the survey monuments and no measurements were taken during the reporting period.

8 CCR DUMP SAFETY ASSESSMENT

The CCR Dump and the associated drainage structures appeared to be in good physical condition based on observations during the 2022 AFPR site visit. There were no signs of structural instability except for the surficial crack observed along the southwestern crest surface. At the time of site visit, the CCR Dump crest elevation was being raised in accordance with normal operating procedures. The following sections provide additional detail on specific structure safety categories.

8.1 Failure Modes Review

On an annual basis, EVO reviews the risks associated with the CCR Dump. Based on the risk assessment, a discussion of the key failure modes is provided in the following sub-sections.

8.1.1 Definition of Failure Modes

A failure mode commences with an initiating event (trigger) which is a loading or physical condition that starts the failure process. This is followed by the failure progression, which is the mechanism that can lead to a failure of the facility (such as overtopping, instability, or internal erosion), but it is important to note that not all failure mechanisms will result in a catastrophic failure. The failure mechanism may become arrested or there may be interventions that prevent the failure mechanism from progressing.

The failure mode is the end state of the failure where there is a loss of function; in this case, loss of CCR into the Elk River.

8.1.2 Internal Erosion and Piping

Internal erosion and piping are a failure mode almost universally reserved for fluid retention structures with potentially filter incompatible materials in the embankment and/or foundation/abutments along with a sufficiently high hydraulic gradient between the water pond and an embankment face. The CCR Dump has neither a water pond nor filter incompatible materials as this facility is composed of essentially the same material with variations in fines being the only differentiator.

Notwithstanding the above, the overall nature of the facility can still be assessed and summarized. Groundwater monitoring instruments historically indicate a downward gradient in the CCR Dump to the glacial till foundation level. Porewater pressures at the foundation level are typically between 0 m and 7 m of pressure head. Seepage was observed on some bench faces in the north area of the dump, near the toe, in areas thought to have relatively shallow depths of dumped materials, as shown in the CCR Dump cross sections provided in Appendix III. The seepage was clear, with no signs of turbid water.

Monitoring the embankment slopes, toes, and drains for seepage and erosion is part of the scheduled surveillance by EVO during routine inspections. No indications of piping or internal erosion of the CCR Dump were expected or observed during routine surveillance or during the 2022 AFPR site visit.

8.1.3 Slope Instability

The CCR Dump design currently considers an equivalent seismic load to a 1/475 AEP event (PGA = 0.044 g) (AMEC 2013). Stability analyses for the CCR Dump indicate that the facility meets or exceeds minimum stability indicators for relevant loading conditions.

The surficial cracking observed during the 2022 AFPR inspection at the southwest crest surface of the CCR Dump is a normal observed occurrence likely representative of differential settlement of the placed MCR material. Instrumentation monitoring at the cracking indicates displacement subsided in early August 2022. No indications of instability were observed on the CCR Dump surface below the crest at this location.

8.1.4 Surface Erosion

EVO personnel conduct routine inspections of the tailings facilities and monitor the slopes for surface erosion caused by snow melt or rainfall runoff.

Rip-rap erosion protection at the toe of the CCR Dump appeared to be in good condition during the 2022 AFPR site visit.

The Interceptor ditch is located at the eastern extent of the CCR Dump and diverts surface runoff from the natural hillside south and into the Goddard Ponds. The ditch can accommodate the 1/200 AEP event (AMEC 2004), therefore limiting surface erosion on the CCR Dump during typical operating conditions.

Vegetation is sparse in some localized areas of the CCR Dump and minor gully erosion was observed at several locations. However, the magnitude of the observed erosion areas is not a concern to slope stability. EVO has been hydroseeding to effectively control most of the erosion on the downstream face of the structures. Therefore, large scale failure via surface erosion is considered non-credible as this is effectively managed with the current controls.

8.2 OMS Manual and EPRP

An Operation, Maintenance, and Surveillance (OMS) Manual for the CCR Dump was last updated in January 2021. A subsequent update is expected to be issued in Q4 2022[1].

There is no specific Emergency Response Plan (ERP) for the CCR Dump but there is an overall Mine Emergency Response Plan (MERP). The HSRC requires that all TSFs have an ERP though that was intended for conventional storage facilities. Nonetheless, Teck will review specific aspects related to the CCR Dump and work with KCB to see if additional contributions to the existing ERP within the overall MERP is required[2].

[1] CCR Dump OMS Manual issued November 2022.
[2] The CCR Dump was incorporated into the Tailings & Water Storage Facilities ERP issued November 2022.

9 SUMMARY OF RECOMMENDATIONS

A summary of recommendations from the 2022 AFPR are provided in Table 9.2. There are no outstanding recommendations from previous AFPRs. Recommendations are prioritized based on the framework recommended in the HSRC Guidance Document (MEM 2016), as shown in Table 9.1.

The action items in Table 9.2 are classified using the following terms, adapted from the BC Dam Safety Regulation Technical Resources (Gov. BC 2015) and the CDA Technical Bulletin: Dam Safety Reviews (CDA 2016):

- Non-Conformance: Defined as a deviation from established policies, procedures, operating instructions, maintenance requirements, or surveillance plans. A non-conformance is not an indication of unacceptable facility performance.
- Potential Deficiency: A facility performance condition that requires further evaluation to determine if the condition is a deficiency.
- Actual Deficiency: An unacceptable facility performance condition based on analysis results and/or site observations/instrumentation data with respect to criteria outlined in the HSRC (EMLI 2022), best practices, and/or applicable regulatory requirements.
- Opportunity for Improvement: Improvements to achieve good practices or reduce potential risk.

Table 9.1 Prioritization of Action Items

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

Recommendations arising from the 2022 AFPR for the CCR Dump are presented in Table 9.2. There are no previous outstanding recommendations from past AFPRs. Each recommendation is assigned a number with the prefix based on the year that item was recommended. Recommendations noted as completed or closed in this report are presented in gray and will be removed from the register in subsequent reports.

Table 9.2 Summary of Recommendations

Action ID	Deficiency or Non-Conformance	Applicable Regulation or OMS Manual Reference	Recommended Action	Priority	Status / Recommended Deadline
2022 Recommendations					
2022-01	Non-Conformance. Several piezometers were not read according to their stated data collection frequency. Refer to Appendix IV.	CCR Dump OMS Manual, Section 6.4	Assess the operationality of non-reported piezometers and determine their status. Collect measurements from identified functional instruments.	4	To be completed in 2023 by EVO and KCB as part of a comprehensive review of performance and monitoring programs at EVO.
2022-02	Non-Conformance. TARP levels for some piezometers are below the measured water table levels following the reconciliation.	CCR Dump OMS Manual, Section 6.4	Reassess the update the piezometer TARP levels to be suitable for the updated data trends.	3	To be completed in 2023 by EVO and KCB as part of a comprehensive review of performance and monitoring programs at EVO.
2022-03	Potential Deficiency. Surficial cracking developed along the southern crest surface in the summer of 2022. EVO installed a GPS monitoring hub and two wireline extensometers to monitor displacement.	CCR Dump OMS Manual, Section 4.5	Despite the instrument readings indicating displacement subsided in August 2022, continue to monitor the instruments for additional crack displacement. If the cracking continues, then conduct a geotechnical investigation to determine the cause.	3	Continue to monitor the crack displacement to the end of freshet 2023. Then re-evaluate.

Notes: Recommendation priority guidelines specified in the HSRC Guidance Document (MEM, 2016) and assigned by KCB. Refer to Table 9.1 for a description of priorities.

10 CLOSING

Based on the site visit observations and data reviewed, the CCR Dump is in adequate condition and continues to perform satisfactorily.

If you have any questions, please contact the undersigned.

KLOHN CRIPPEN BERGER LTD.
B.C. Permit to Practice No. 1000171

C.A. (Andy) Small, P.Eng.
Senior Geotechnical Engineer

REFERENCES

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Teck Elkview Operations (Teck). 2022. “Tailings Vibrating Wire Piezometer Calculations”. Issued March 15, 2022.

APPENDIX I

Site Visit Photographs

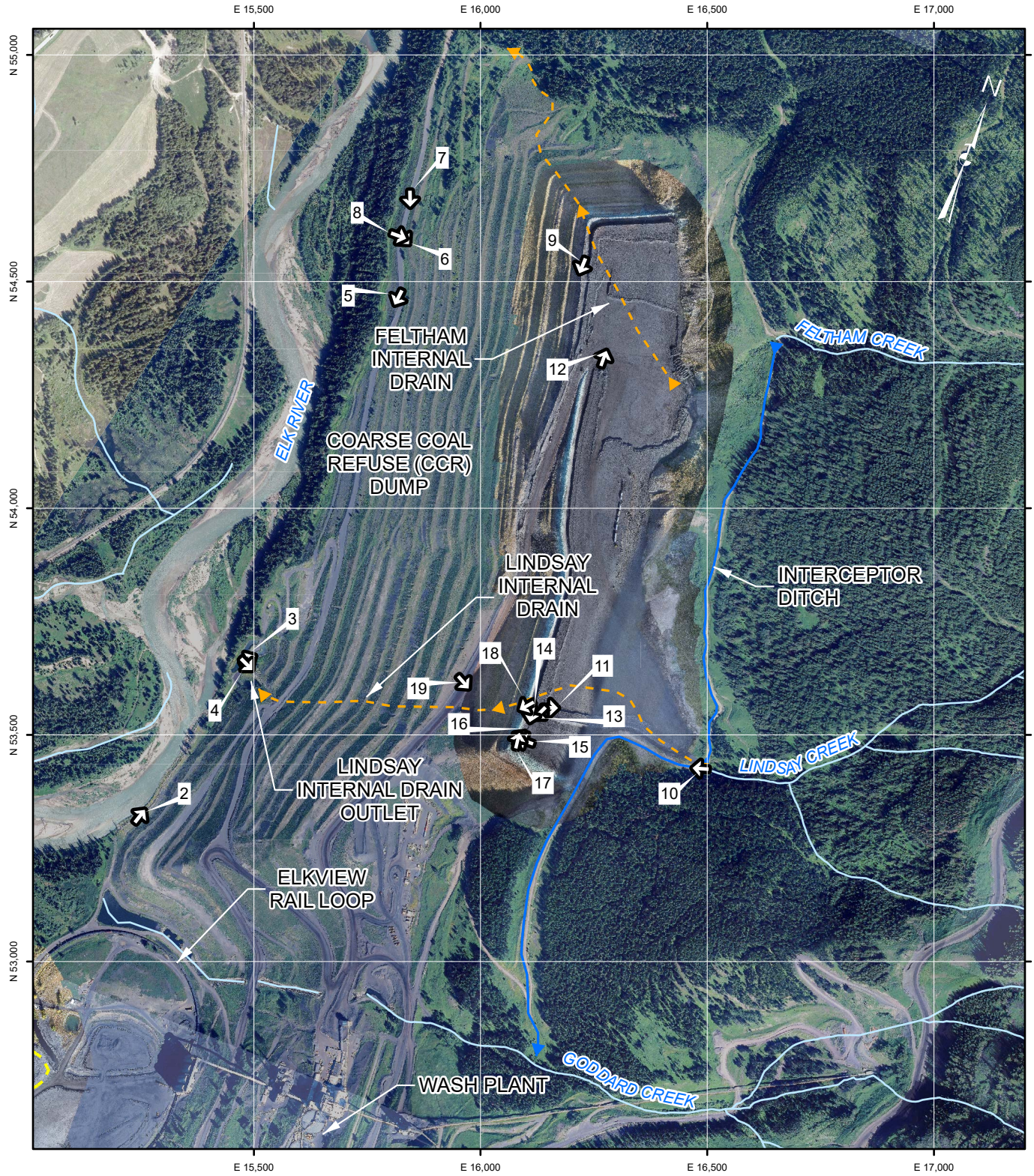
Appendix I
Site Visit Photographs
(Taken on September 20, 2022 during annual site visit)

I-1.1 Coarse Coal Refuse (CCR) Dump

The CCR Dump photograph location plan layout is presented on Figure I-1. The following general notes are applicable to the site visit photographs:

Notes:

1. Selected photo locations and direction taken are approximate only.
2. Selected photos are representative of the condition of the facility at the time of the site visit, and do not include all photos taken.



LEGEND

- PHOTO LOCATIONS
- DITCH
- INTERNAL DRAIN
- CREEK

NOTES:
1. DATUM, PROJECTION: EVO MINEGRID.
2. NORTH ARROW ORIENTATED TO TRUE NORTH.
3. IMAGERY FROM EVO (COLLECTED IN 2022) AND ESRI.

TO BE READ WITH KLOHN CRIPPEN BERGER REPORT DATED: 2023-03-15

SCALE 0 500m

CLIENT: Teck

Klohn Crippen Berger

PROJECT: TECK ELKVIEW OPERATIONS
2022 ANNUAL FACILITY PERFORMANCE REPORT

TITLE: COARSE COAL REFUSE DUMP
PHOTOGRAPH LOCATIONS
PLAN LAYOUT

SCALE	PROJECT No.	FIG No.
1:12,500	M09963A29	I-1

SAVE DATE: 2022-12-08 1:19 PM
FILE PATH: Z:\MVCR\M09963A29-TCL-EVO 2022 EoR Services\400 Drawings\GIS\AEPR\EVO_AFPR_2022_ProjEVO_AFPR_2022_Pro.aprx (DMase)

Photo I-1 CCR Dump overview. (Looking NE, from Lagoon C crest – Taken 20 September 2022)

Photo I-2 CCR Dump overview and slope toe along the Elk River with riprap. (Looking NE – Taken 20 September 2022)

Photo I-3 CCR Dump toe sedimentation ponds. (Looking NE – Taken 20 September 2022)

Photo I-4 CCR Dump Lindsay Drain outlet. (Looking east – Taken 20 September 2022)

Photo I-5 CCR Dump lower bench typical condition. (Looking south – Taken 20 September 2022)

Photo I-6 CCR Dump seepage at bench ditches. (Looking SE – Taken 20 September 2022)

Photo I-7 CCR Dump slope benches typical condition. Seepage present in upstream ditch. (Looking south – Taken 20 September 2022)

Photo I-8 CCR Dump slope benches typical condition. (Looking east – Taken 20 September 2022)

Photo I-9 CCR Dump crest and slope benches typical condition. (Looking south – Taken 20 September 2022)

Photo I-10 CCR Dump diversion ditch and Lindsay Drain extension. (Looking west – Taken 20 September 2022)

Photo I-11 CCR Dump crest pad material placement. (Looking east – Taken 20 September 2022)

Photo I-12 CCR Dump crest pad typical conditions. (Looking north – Taken 20 September 2022

Photo I-13 CCR Dump surficial cracking behind crest. (Looking SW – Taken 20 September 2022)

Photo I-3 CCR Dump surficial cracking behind crest. (Looking south – Taken 20 September 2022)

Photo I-15 CCR Dump surficial cracking behind crest, with monitoring instruments. (Looking north – Taken 20 September 2022)

Photo I-16 CCR Dump crack meter instrument monitoring for surficial cracking behind crest. (Looking west – Taken 20 September 2022)

Photo I-17 CCR Dump crest and slope below surficial cracking. (Looking north – Taken 20 September 2022)

Photo I-18 CCR Dump slope below surficial cracking. (Looking SW – Taken 20 September 2022)

Photo I-19 CCR Dump slope below surficial cracking. (Looking SE – Taken 20 September 2022)

APPENDIX II

Site Visit Checklist

Annual Facility Performance Report Site Visit Checklist

Klohn Crippen Berger

Site	Teck Elkview Operations		
Structure	Coarse Coal Refuse (CCR) Dump		
Reviewed by	Michael Tin P.Eng. / Justin Kelly EIT	Crest El.	1,342.5 m to 1,345.0 m
Accompanied by	Trevor Munn P.Geo / Patrick Gilliland P.Eng	Spillway Invert El.	None.
Date of Observations	September 21, 2022	Reservoir Level	None.
Walk Over Review	Crest/Benches/Toe	Available Freeboard	None.
Weather Conditions	Sunny		

ID	Observed Features	Yes	No	N/A	Comments
1.0	***Crest***				
1.1	Evidence of Shoulder/Erosion		X		
1.2	Evidence of Cracking	X			Cracking along southwestern crest, 10-20 m setback. Monitoring instruments in place.
1.3	Evidence of Movement		X		
1.4	Other Deformation/Settlement/Sinkholes		X		
1.5	Concerns with Low Areas on the Crest		X		
1.6	Concerns with crest width		X		
1.7	Other Unusual Conditions		X		
1.8	Repairs Required		X		
2.0	***Downstream Slope***				
2.1	Evidence of Erosion	X			Minor erosion on interbench slopes.
2.2	Evidence of Sloughing/Sliding		X		
2.3	Evidence of Cracking		X		
2.4	Evidence of Movement		X		
2.5	Any Other Deformation		X		
2.6	Signs of Phreatic Surface/Seepage		X		
2.7	Seepages Observed	X			Minor seepage at road ditch drains.
2.8	Is Seepage (if any) Turbid		X		Seepage was clear.
2.9	Other Unusual Conditions		X		
2.10	Repairs Required		X		
3.0	***Abutments***				
3.1	Seepages Observed			X	
3.2	Is Seepage (if any) Turbid			X	
3.3	Evidence of Erosion			X	
3.4	Evidence of Cracking			X	
3.5	Evidence of Movement			X	
3.6	Other Deformation/Settlement/Sinkholes			X	
3.7	Other Unusual Conditions			X	
3.8	Repairs Required			X	

Annual Facility Performance Report Site Visit Checklist

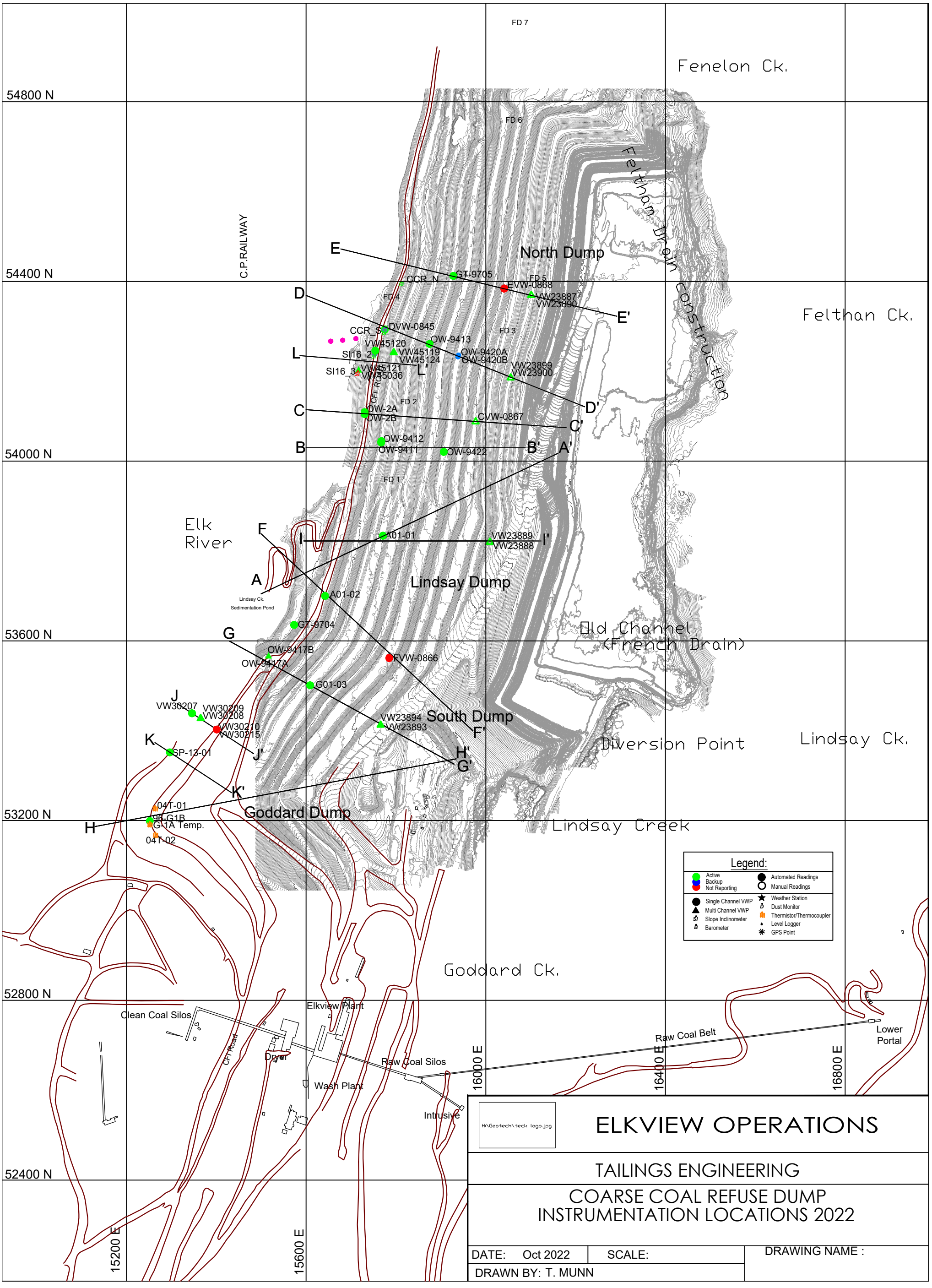
Klohn Crippen Berger

Site	Teck Elkview Operations		
Structure	Coarse Coal Refuse (CCR) Dump		
Reviewed by	Michael Tin P.Eng. / Justin Kelly EIT	Crest El.	1,342.5 m to 1,345.0 m
Accompanied by	Trevor Munn P.Geo / Patrick Gilliland P.Eng	Spillway Invert El.	None.
Date of Observations	September 21, 2022	Reservoir Level	None.
Walk Over Review	Crest/Benches/Toe	Available Freeboard	None.
Weather Conditions	Sunny		

ID	Observed Features	Yes	No	N/A	Comments
4.0	***Downstream Toe***				
4.1	Seepages Observed	X			Seepage observed at toe of Lindsay Drain.
4.2	Is Seepage (if any) Turbid		X		Seepage was clear.
4.3	Evidence of Soft Toe Condition		X		
4.4	Evidence of Sloughing/Sliding		X		
4.5	Evidence of Boils		X		
4.6	Evidence of Contamination/Vegetation Kills		X		
4.7	Excessive Vegetation		X		
4.8	Other Unusual Conditions		X		
4.9	Repairs Required		X		
5.0	***Spillway***				
5.1	Obstruction by debris or vegetation			X	
5.2	Lack of Erosion Protection			X	
5.3	Slope Deterioration (Sloughing, Erosion etc...)			X	
5.4	Other Unusual Conditions			X	
5.5	Repairs Required			X	
6.0	***Other***				
6.1	Other Unusual Conditions			X	
6.2	Sketch (if required):				

APPENDIX III

CCR Dump Plan Layout and Cross Sections (provided by EVO)


FD 7
Fenelon Ck.
54800 N
FD 6
Felthan Drain construction
C.P.RAILWAY
North Dump
E
E'
GT-9705
CCR_N
EVW-0868
FD 5
VW23887
VW23890
D
D'
FD 4
DVW-0845
CCR_S
FD 3
OW-9413
VW45120
VW45119
VW45124
OW-9420A
OW-9420B
SI16_2
L
L'
SI16_3
VW45121
VW45036
VW23899
VW23900
Felthan Ck.
54400 N
CFT RD
FD 2
C
C'
OW-2A
OW-2B
CVW-0867
OW-9412
OW-9411
OW-9422
B
B'
A'
54000 N
FD 1
Elk River
F
I
I'
A01-01
VW23889
VW23888
A
Lindsay Dump
A01-02
Lindsay Ck.
Sedimentation Pond
GT-9704
Old Channel
(French Drain)
53600 N
G
OW-9417B
OW-9417A
FVW-0866
G01-03
J
VW30207
VW30209
VW30208
VW30210
VW30215
VW23894
VW23893
South Dump
F'
K
SP-13-01
J'
H'
G'
K'
04T-01
06-G1B
G-1A Temp.
04T-02
53200 N
H
Goddard Dump
Diversion Point
Lindsay Ck.
Lindsay Creek
Goddard Ck.
52800 N
Clean Coal Silos
Elkview Plant
CFT Road
Dryer
Raw Coal Silos
Raw Coal Belt
Lower Portal
Wash Plant
Intrusive
16000 E
16400 E
16800 E
52400 N
15200 E
15600 E
Legend:
Active
Backup
Not Reporting
Automated Readings
Manual Readings
Single Channel VWP
Multi Channel VWP
Slope Inclinometer
Barometer
Weather Station
Dust Monitor
Thermistor/Thermocoupler
Level Logger
GPS Point
H:\Geotech\teck logo.jpg
ELKVIEW OPERATIONS
TAILINGS ENGINEERING
COARSE COAL REFUSE DUMP
INSTRUMENTATION LOCATIONS 2022
DATE: Oct 2022
SCALE:
DRAWING NAME :
DRAWN BY: T. MUNN

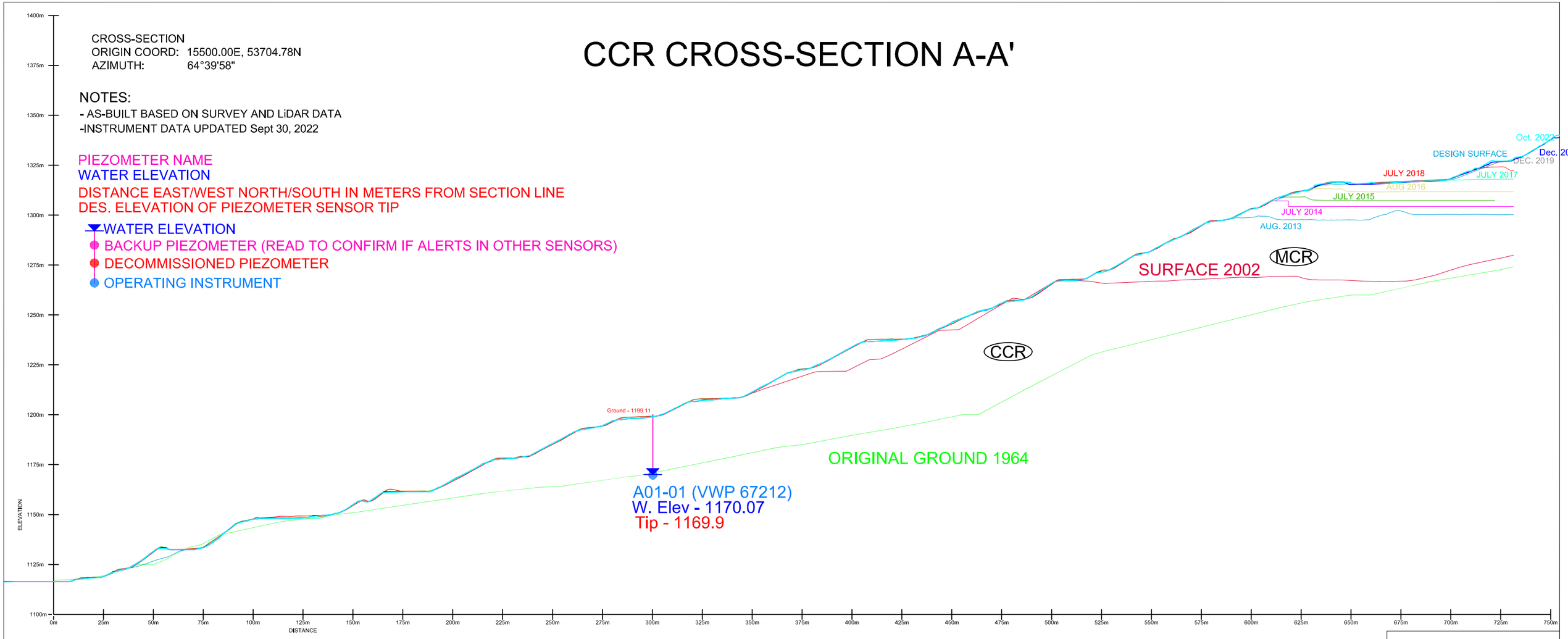
CCR CROSS-SECTION A-A'

CROSS-SECTION
ORIGIN COORD: 15500.00E, 53704.78N
AZIMUTH: 64°39'58"

NOTES:
- AS-BUILT BASED ON SURVEY AND LiDAR DATA
-INSTRUMENT DATA UPDATED Sept 30, 2022

PIEZOMETER NAME
WATER ELEVATION
DISTANCE EAST/WEST NORTH/SOUTH IN METERS FROM SECTION LINE
DES. ELEVATION OF PIEZOMETER SENSOR TIP

- WATER ELEVATION
- BACKUP PIEZOMETER (READ TO CONFIRM IF ALERTS IN OTHER SENSORS)
- DECOMMISSIONED PIEZOMETER
- OPERATING INSTRUMENT



Elkview Operations

Tailings Engineering

CCR CROSS-SECTION A-A'
2022

DATE: Oct. 2022	SCALE:	DWG. NO. :
DWN BY: T. Munn	REV BY:	

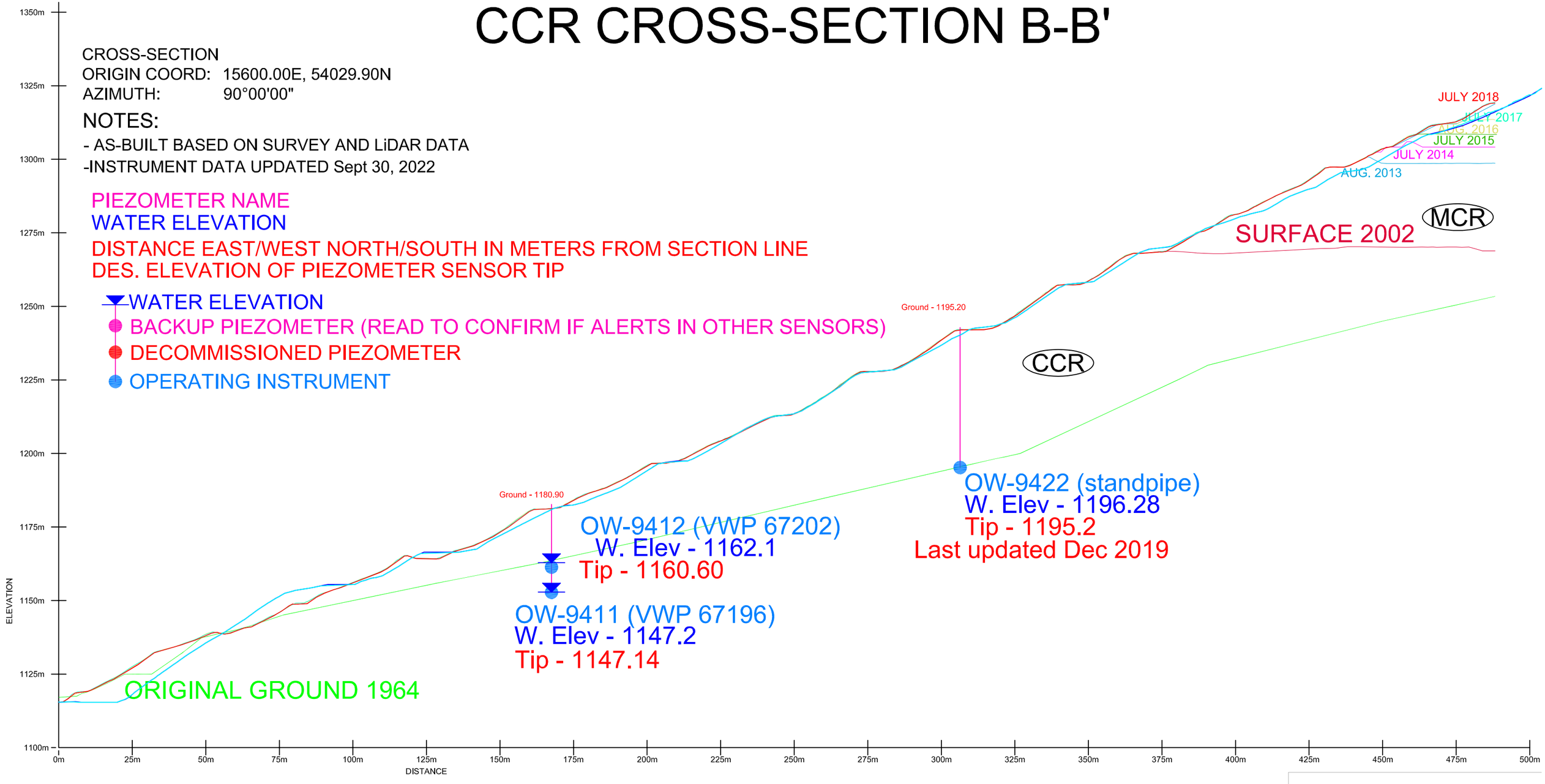
CCR CROSS-SECTION B-B'

CROSS-SECTION
ORIGIN COORD: 15600.00E, 54029.90N
AZIMUTH: 90°00'00"

NOTES:
- AS-BUILT BASED ON SURVEY AND LiDAR DATA
-INSTRUMENT DATA UPDATED Sept 30, 2022

PIEZOMETER NAME
WATER ELEVATION
DISTANCE EAST/WEST NORTH/SOUTH IN METERS FROM SECTION LINE
DES. ELEVATION OF PIEZOMETER SENSOR TIP

WATER ELEVATION
BACKUP PIEZOMETER (READ TO CONFIRM IF ALERTS IN OTHER SENSORS)
DECOMMISSIONED PIEZOMETER
OPERATING INSTRUMENT



Elkview Operations

Tailings Engineering

CCR CROSS-SECTION B-B'
2022

DATE: Oct 2022	SCALE:	DWG. NO.:
DWN BY: T. Munn	REV BY:	

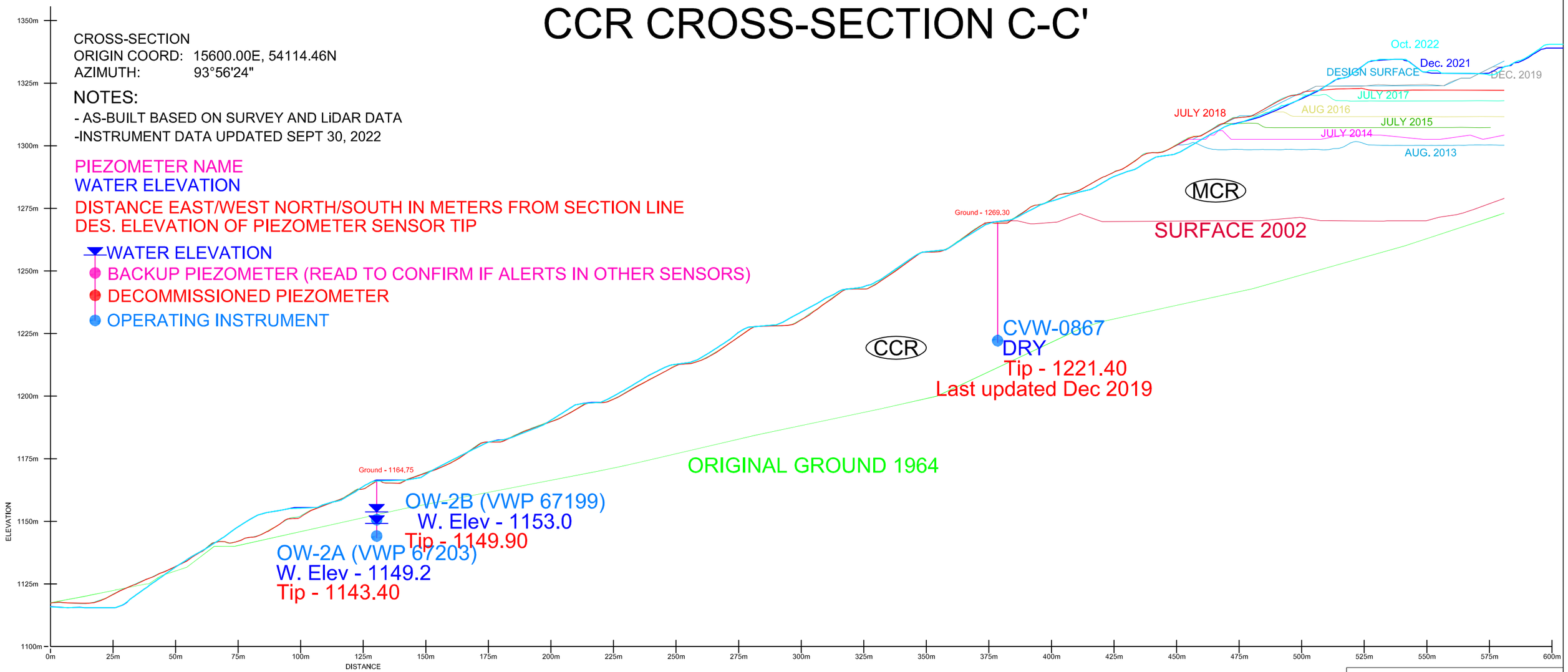
CCR CROSS-SECTION C-C'

CROSS-SECTION
ORIGIN COORD: 15600.00E, 54114.46N
AZIMUTH: 93°56'24"

NOTES:
- AS-BUILT BASED ON SURVEY AND LiDAR DATA
-INSTRUMENT DATA UPDATED SEPT 30, 2022

PIEZOMETER NAME
WATER ELEVATION
DISTANCE EAST/WEST NORTH/SOUTH IN METERS FROM SECTION LINE
DES. ELEVATION OF PIEZOMETER SENSOR TIP

WATER ELEVATION
BACKUP PIEZOMETER (READ TO CONFIRM IF ALERTS IN OTHER SENSORS)
DECOMMISSIONED PIEZOMETER
OPERATING INSTRUMENT



Elkview Operations		
Tailings Engineering		
CCR CROSS-SECTION C-C' 2022		
DATE: Oct. 2022	SCALE:	DWG. NO. :
DWN BY: T. Munn	REV BY:	

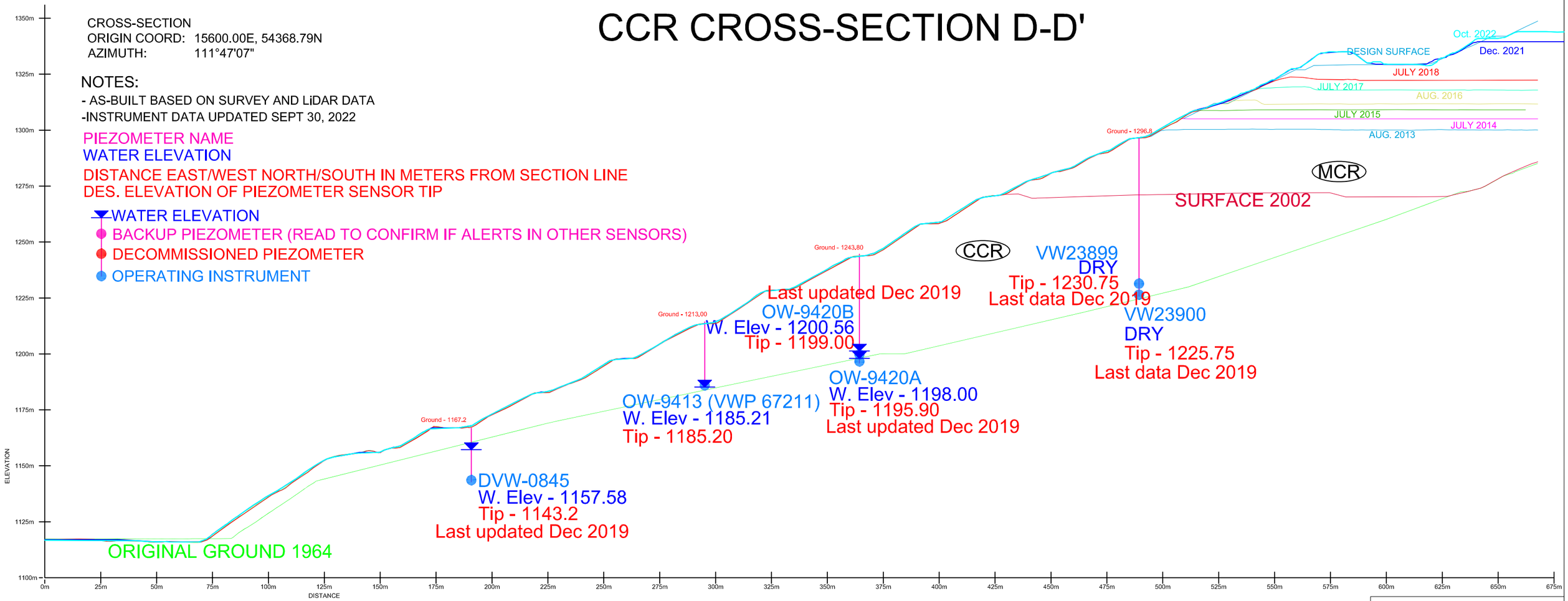
CCR CROSS-SECTION D-D'

CROSS-SECTION
ORIGIN COORD: 15600.00E, 54368.79N
AZIMUTH: 111°47'07"

NOTES:
- AS-BUILT BASED ON SURVEY AND LiDAR DATA
-INSTRUMENT DATA UPDATED SEPT 30, 2022

PIEZOMETER NAME
WATER ELEVATION
DISTANCE EAST/WEST NORTH/SOUTH IN METERS FROM SECTION LINE
DES. ELEVATION OF PIEZOMETER SENSOR TIP

- WATER ELEVATION
- BACKUP PIEZOMETER (READ TO CONFIRM IF ALERTS IN OTHER SENSORS)
- DECOMMISSIONED PIEZOMETER
- OPERATING INSTRUMENT



Elkview Operations

Tailings Engineering

CCR CROSS-SECTION D-D'
2022

DATE: Oct. 2022	SCALE:	DWG. NO.:
DWN BY:T. Munn	REV BY:	

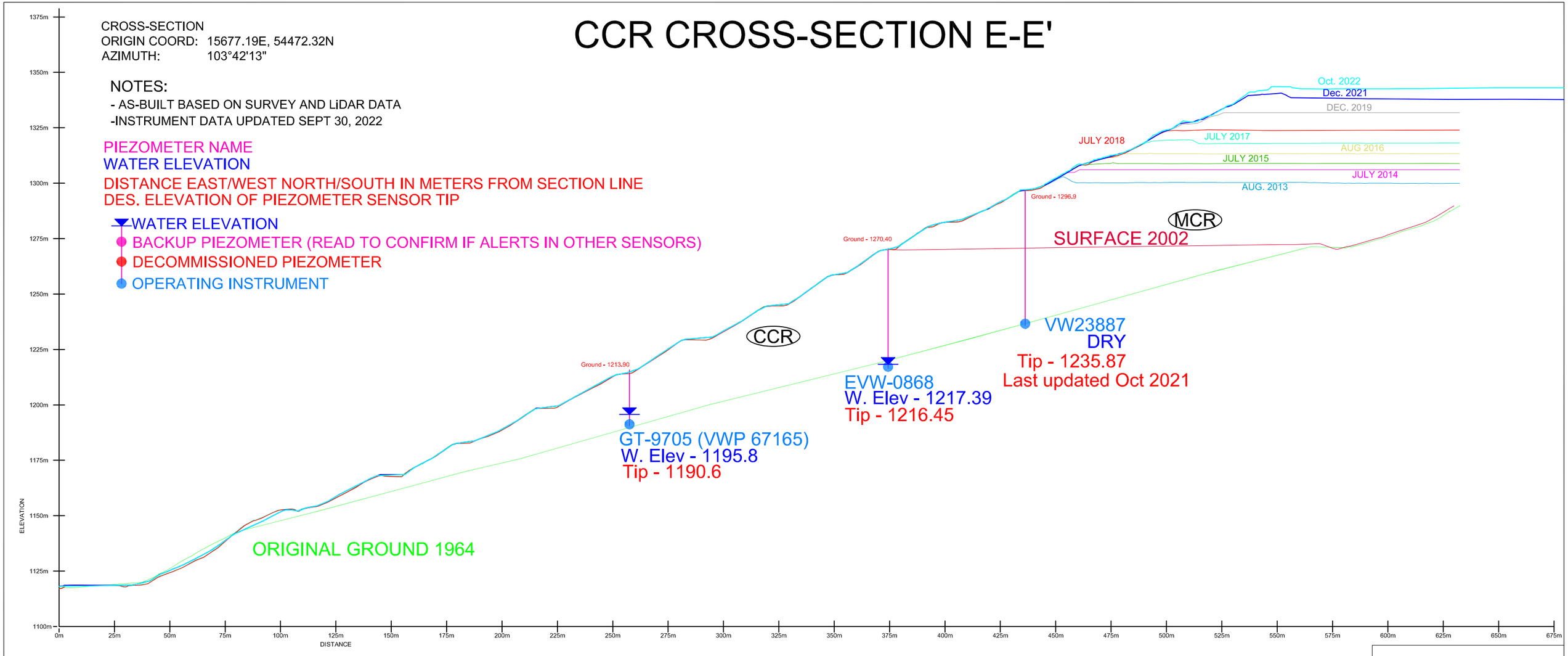
CCR CROSS-SECTION E-E'

CROSS-SECTION
ORIGIN COORD: 15677.19E, 54472.32N
AZIMUTH: 103°42'13"

NOTES:
- AS-BUILT BASED ON SURVEY AND LiDAR DATA
-INSTRUMENT DATA UPDATED SEPT 30, 2022

PIEZOMETER NAME
WATER ELEVATION
DISTANCE EAST/WEST NORTH/SOUTH IN METERS FROM SECTION LINE
DES. ELEVATION OF PIEZOMETER SENSOR TIP

- WATER ELEVATION
- BACKUP PIEZOMETER (READ TO CONFIRM IF ALERTS IN OTHER SENSORS)
- DECOMMISSIONED PIEZOMETER
- OPERATING INSTRUMENT



Elkview Operations

Tailings Engineering

CCR CROSS-SECTION E-E'
2022

DATE: Oct. 2022	SCALE:	DWG. NO. :
DWN BY: T. Munn	REV BY:	

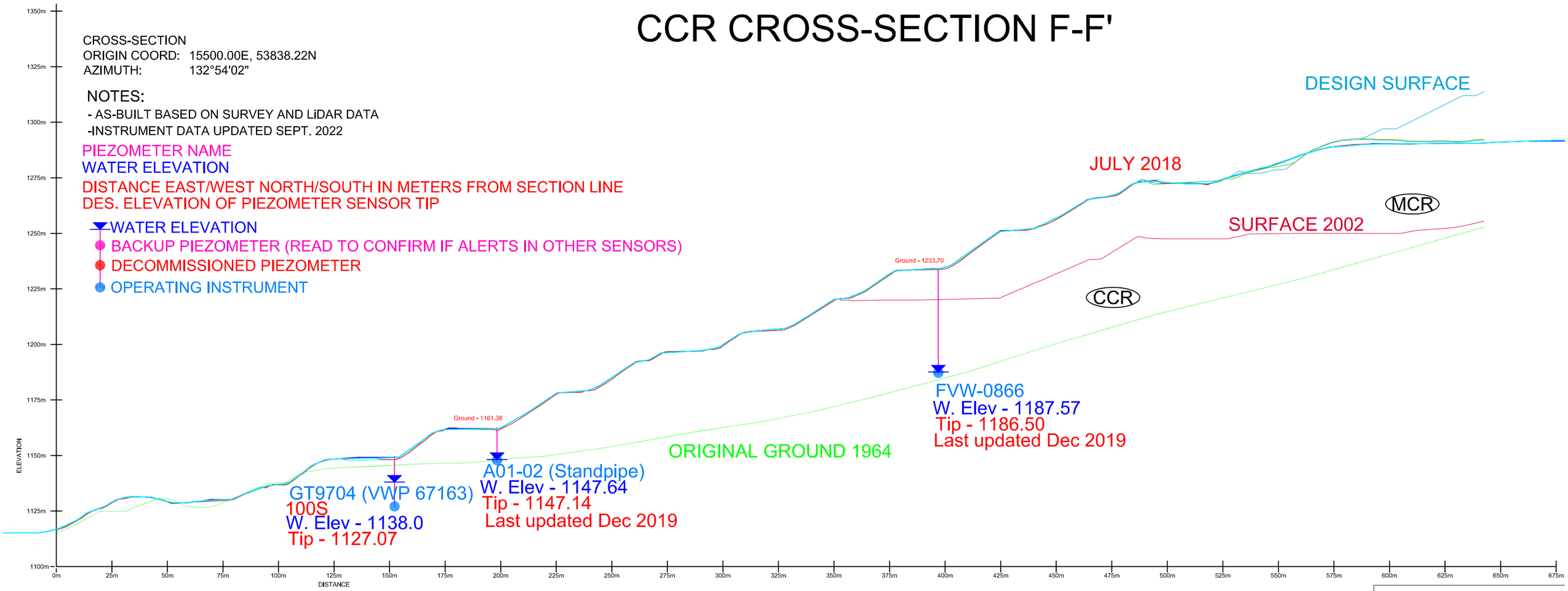
CCR CROSS-SECTION F-F'

CROSS-SECTION
ORIGIN COORD: 15500.00E, 53838.22N
AZIMUTH: 132°54'02"

NOTES:
- AS-BUILT BASED ON SURVEY AND LiDAR DATA
-INSTRUMENT DATA UPDATED SEPT. 2022

PIEZOMETER NAME
WATER ELEVATION
DISTANCE EAST/WEST NORTH/SOUTH IN METERS FROM SECTION LINE
DES. ELEVATION OF PIEZOMETER SENSOR TIP

WATER ELEVATION
BACKUP PIEZOMETER (READ TO CONFIRM IF ALERTS IN OTHER SENSORS)
DECOMMISSIONED PIEZOMETER
OPERATING INSTRUMENT



Elkview Operations

Tailings Engineering

CCR CROSS-SECTION F-F'
2022

DATE: Oct. 2022	SCALE:	DWG. NO.:
DWN BY: T. Munn	REV BY:	

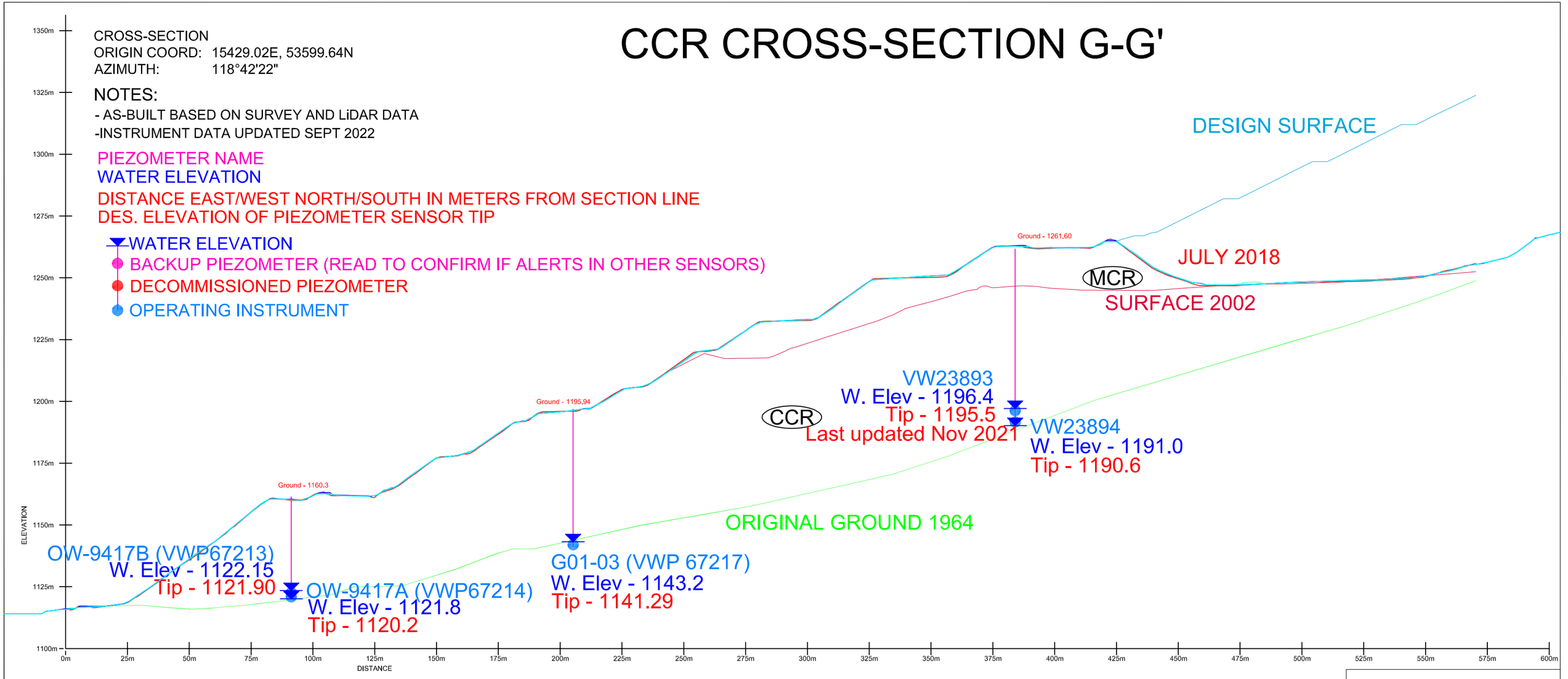
CCR CROSS-SECTION G-G'

CROSS-SECTION
ORIGIN COORD: 15429.02E, 53599.64N
AZIMUTH: 118°42'22"

NOTES:
- AS-BUILT BASED ON SURVEY AND LiDAR DATA
-INSTRUMENT DATA UPDATED SEPT 2022

PIEZOMETER NAME
WATER ELEVATION
DISTANCE EAST/WEST NORTH/SOUTH IN METERS FROM SECTION LINE
DES. ELEVATION OF PIEZOMETER SENSOR TIP

- WATER ELEVATION
- BACKUP PIEZOMETER (READ TO CONFIRM IF ALERTS IN OTHER SENSORS)
- DECOMMISSIONED PIEZOMETER
- OPERATING INSTRUMENT



Elkview Operations

Tailings Engineering

CCR CROSS-SECTION G-G'
2022

DATE: Oct. 2022	SCALE:	DWG. NO.:
DWN BY: T. Munn	REV BY:	

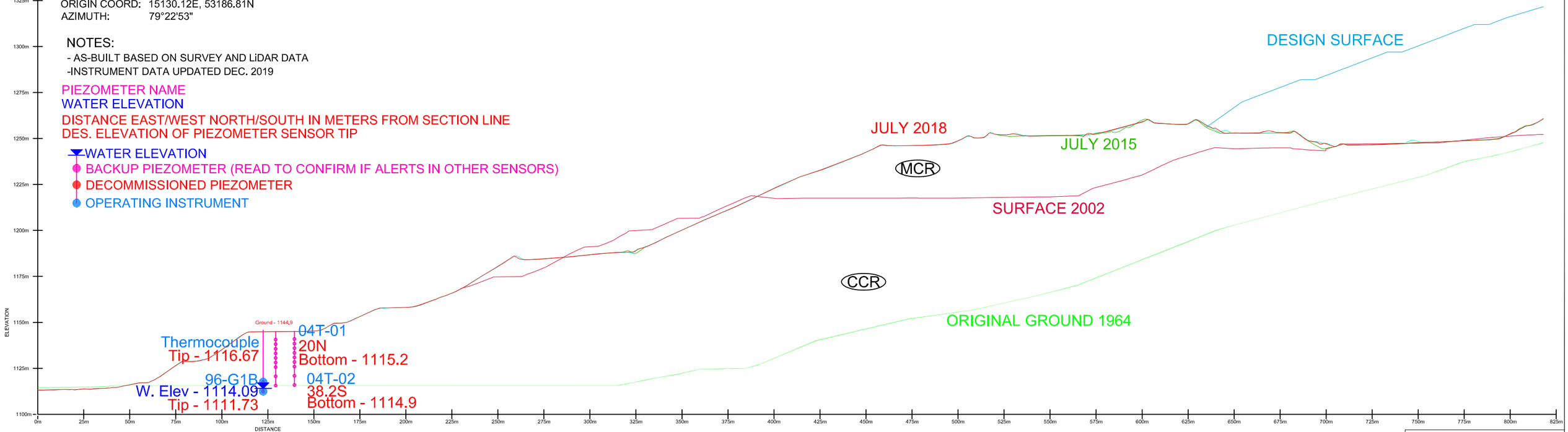
CCR CROSS-SECTION H-H'

CROSS-SECTION
ORIGIN COORD: 15130.12E, 53186.81N
AZIMUTH: 79°22'53"

NOTES:
- AS-BUILT BASED ON SURVEY AND LiDAR DATA
-INSTRUMENT DATA UPDATED DEC. 2019

PIEZOMETER NAME
WATER ELEVATION
DISTANCE EAST/WEST NORTH/SOUTH IN METERS FROM SECTION LINE
DES. ELEVATION OF PIEZOMETER SENSOR TIP

- WATER ELEVATION
- BACKUP PIEZOMETER (READ TO CONFIRM IF ALERTS IN OTHER SENSORS)
- DECOMMISSIONED PIEZOMETER
- OPERATING INSTRUMENT



Elkview Operations

Geotechnical Engineering

CCR CROSS-SECTION H-H'
2019

DATE: Dec. 2019	SCALE:	DWG. NO.:
DWN BY:A. Yeomans	REV BY:	

CCR CROSS-SECTION I-I'

CROSS-SECTION
ORIGIN COORD: 15595.05E, 53822.30N
AZIMUTH: 90°00'00"

NOTES:
- AS-BUILT BASED ON SURVEY AND LiDAR DATA
-INSTRUMENT DATA UPDATED SEPT 2022

PIEZOMETER NAME
WATER ELEVATION
DISTANCE EAST/WEST NORTH/SOUTH IN METERS FROM SECTION LINE
DES. ELEVATION OF PIEZOMETER SENSOR TIP

WATER ELEVATION
BACKUP PIEZOMETER (READ TO CONFIRM IF ALERTS IN OTHER SENSORS)
DECOMMISSIONED PIEZOMETER
OPERATING INSTRUMENT

DESIGN SURFACE
AUG. 2016
JULY 2015
JULY 2014
AUG. 2013
JULY 2018
SURFACE 2002
ORIGINAL GROUND 1964

Ground - 1289.5
MCR
VW23889
DRY
Tip - 1242.90
Last updated Dec 2019
VW23888
Dry
Tip - 1238.00
Last updated Dec 2019

Ground - 1199.11
CCR
A01-01(VWP 67212)
W. Elev - 1169.9
Tip - 1169.87

ELEVATION
1325m
1300m
1275m
1250m
1225m
1200m
1175m
1150m
1125m
1100m

DISTANCE
0m 25m 50m 75m 100m 125m 150m 175m 200m 225m 250m 275m 300m 325m 350m 375m 400m 425m 450m 475m 500m 525m 550m 575m 600m

Elkview Operations

Tailings Engineering

CCR CROSS-SECTION I-I
2022

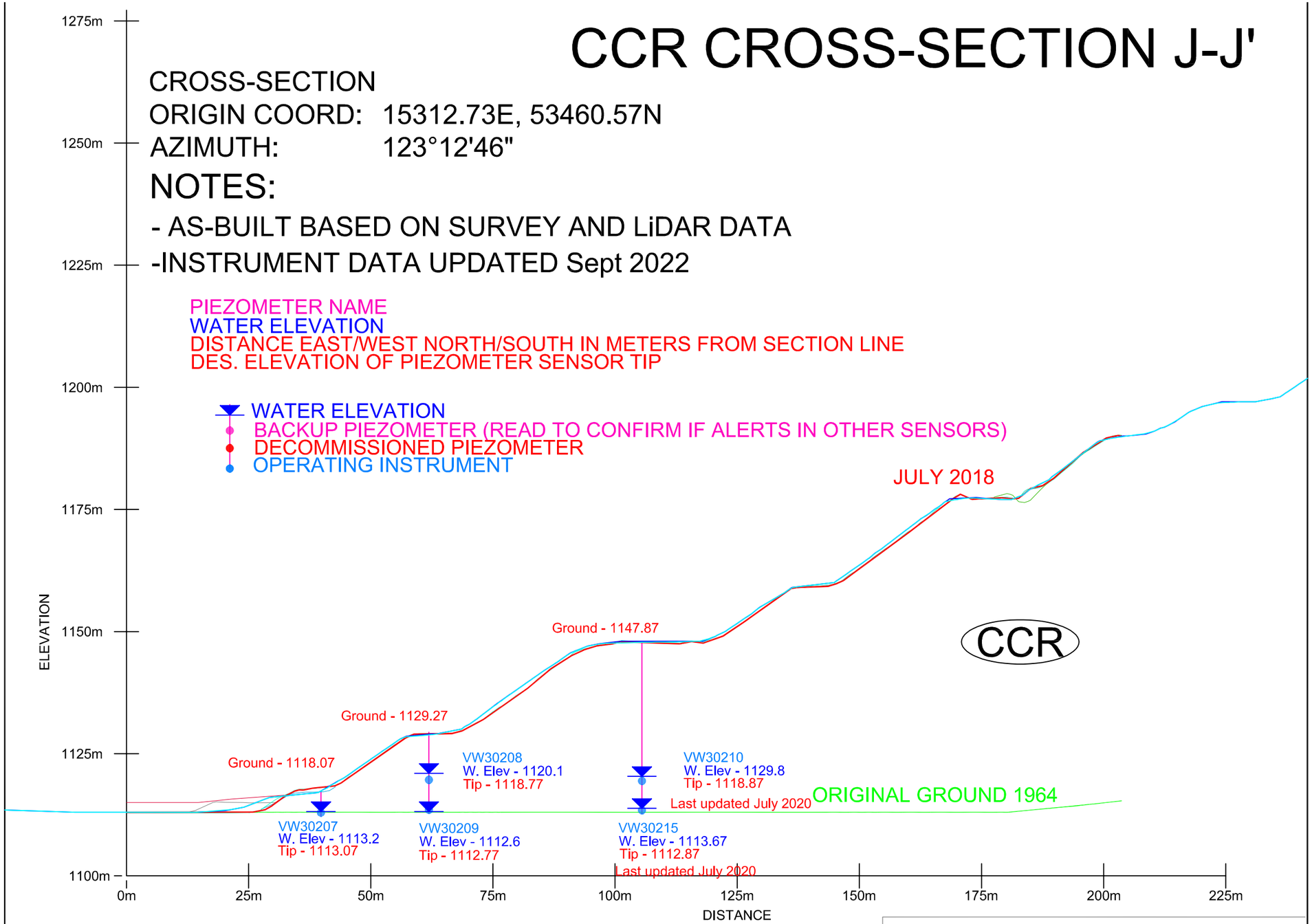
DATE: Oct, 2022	SCALE:	DWG. NO.:
DWN BY: T. Munn	REV BY:	

CCR CROSS-SECTION J-J'

CROSS-SECTION
ORIGIN COORD: 15312.73E, 53460.57N
AZIMUTH: 123°12'46"

NOTES:

- AS-BUILT BASED ON SURVEY AND LiDAR DATA
-INSTRUMENT DATA UPDATED Sept 2022



Elkview Operations

Tailings Engineering

CCR CROSS-SECTION J-J
2022

DATE:	Oct 2022	SCALE:	DWG. NO. :
DWN BY:	T. Munn	REV BY:	

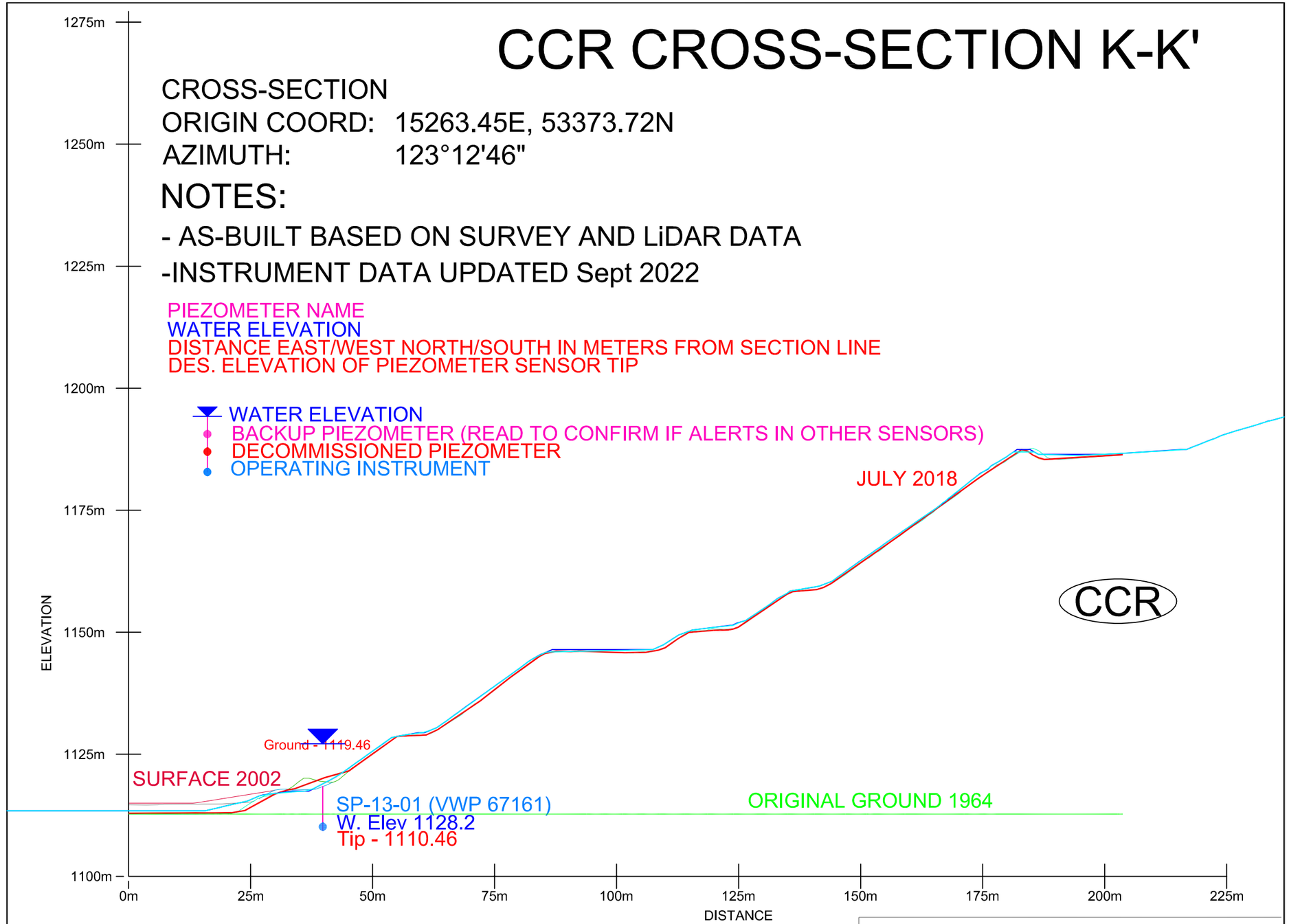
CCR CROSS-SECTION K-K'

CROSS-SECTION
ORIGIN COORD: 15263.45E, 53373.72N
AZIMUTH: 123°12'46"

NOTES:

- AS-BUILT BASED ON SURVEY AND LiDAR DATA
-INSTRUMENT DATA UPDATED Sept 2022

PIEZOMETER NAME
WATER ELEVATION
DISTANCE EAST/WEST NORTH/SOUTH IN METERS FROM SECTION LINE
DES. ELEVATION OF PIEZOMETER SENSOR TIP



Elkview Operations

Tailings Engineering

CCR CROSS-SECTION K-K
2022

DATE: Oct 2022	SCALE:	DWG. NO. :
DWN BY: T. Munn	REV BY:	

APPENDIX IV

Monitoring Instrument Data and Plots
(provided by EVO)

Piezometer Plots
Inclinometer Plots

Appendix IV
2022 Piezometric Level Observations

Table IV-1 presents a brief assessment for each piezometer measurement associated with the stability of the CCR Dump.

Table IV-1 2022 Piezometric Level Observation

Piezometer ID	Stability Section	Zone of Installation	VWP Tip or Screen Center Elevation (El. m)	Till Contact Elevation (El. m)	Maximum Measured Water Table Elevation[(1)] (El. m)	Yellow TARP Trigger Level Elevation (El. m)	Red TARP Trigger Level Elevation (El. m)	2022 Observations
VWP 67161	N/A	N/A	1110.46	N/A	1129.6	N/A	N/A	Steady trend. Readings fluctuate with Elk River level. 1.6 m increase during 2022 freshet.
VWP 67170	N/A	N/A	1110.80	N/A	1117.5	N/A	N/A	Steady trend. Readings fluctuate with Elk River level. 0.5 m during 2022 freshet.
VWP 67196	N/A	N/A	1147.14	N/A	1147.5	N/A	N/A	Steady trend.
VWP 23887	E-E	CCR	1235.90	1231.40	1235.84	N/A	N/A	Potential instrument malfunction or calibration required. 2021 reading shown.
VWP 23890	E-E	N/A	N/A	N/A	N/A	N/A	N/A	Scheduled to be decommissioned (not read).
VWP EVW- 0868	E-E	CCR	1216.40	1214.40	1217.39	N/A	N/A	Instrument not read in 2022. Value from 2020 shown.
Standpipe GT-9705 (VWP 67165)	E-E	CCR	1190.45	1188.00	1196.3	1193.00	1198.00	Steady trend. 0.4 m increase in Apr. 2022. Increase of 4.1 m compared to 2021 measurements due to instrument recalibration. However, trend remains consistent when historical data is adjusted. TARP levels require updating.
VWP 23899	D-D	CCR	1230.70	1225.80	1230.8	1232.2	N/A	Potential instrument malfunction or

Piezometer ID	Stability Section	Zone of Installation	VWP Tip or Screen Center Elevation (El. m)	Till Contact Elevation (El. m)	Maximum Measured Water Table Elevation[1] (El. m)	Yellow TARP Trigger Level Elevation (El. m)	Red TARP Trigger Level Elevation (El. m)	2022 Observations
								calibration required. 2020 reading shown.
VWP 23900	D-D	CCR	1224.94	1225.80	1225.4	1226.8	N/A	Potential instrument malfunction or calibration required. 2019 reading shown.
Standpipe OW-9420A	D-D	Glacial Till	1195.90	1198.00	1197.52	1203.00	1208.00	Instrument not read in 2022. Value from 2020 shown.
Standpipe OW-9420B	D-D	CCR	1199.00	1198.00	1200.44	1203.00	1208.00	Instrument not read in 2022. Value from 2020 shown.
Standpipe OW-9413 (VWP 67211)	D-D	CCR	1185.20	1185.00	1185.4	1190.00	1195.00	Steady trend.
VWP DVW-0845	D-D	Glacial Till	1143.20	1161.7	1157.72	N/A	N/A	Instrument not read in 2022. Value from 2020 shown.
VWP 45119	L-L	CCR	1170.24	~1165	1170.96	N/A	N/A	Potential instrument malfunction or calibration required. 2020 reading shown.
VWP 45124	L-L	Glacial Till	1155.91	~1165	1163.82	N/A	N/A	Potential instrument malfunction or calibration required. 2020 reading shown.
VWP 45120	L-L	CCR	1155.88	~1155	1165.03	N/A	N/A	Instrument not read in 2022. Value from 2021 shown.
VWP 45121	L-L	Glacial Till	1144.73	~1150	1145.4	1137.4	N/A	0.5 m increase from Jan. to Apr. 2022.
VWP 45036	L-L	Glacial Till	1133.15	~1150	1140.1	N/A	N/A	0.4 m increase from Dec. 2021 to Feb. 2022.
VWP CVW-0867	C-C	CCR	1221.40	1219.40	1221.15	1222.7	N/A	Instrument not read in 2022. Value from 2019 shown.
Standpipe OW2A (VWP 67203)	C-C	Glacial Till	1143.40	1158.00	1149.6	1163.00	1168.00	0.6 m increase from Dec. 2021 to Mar. 2022. Levels have

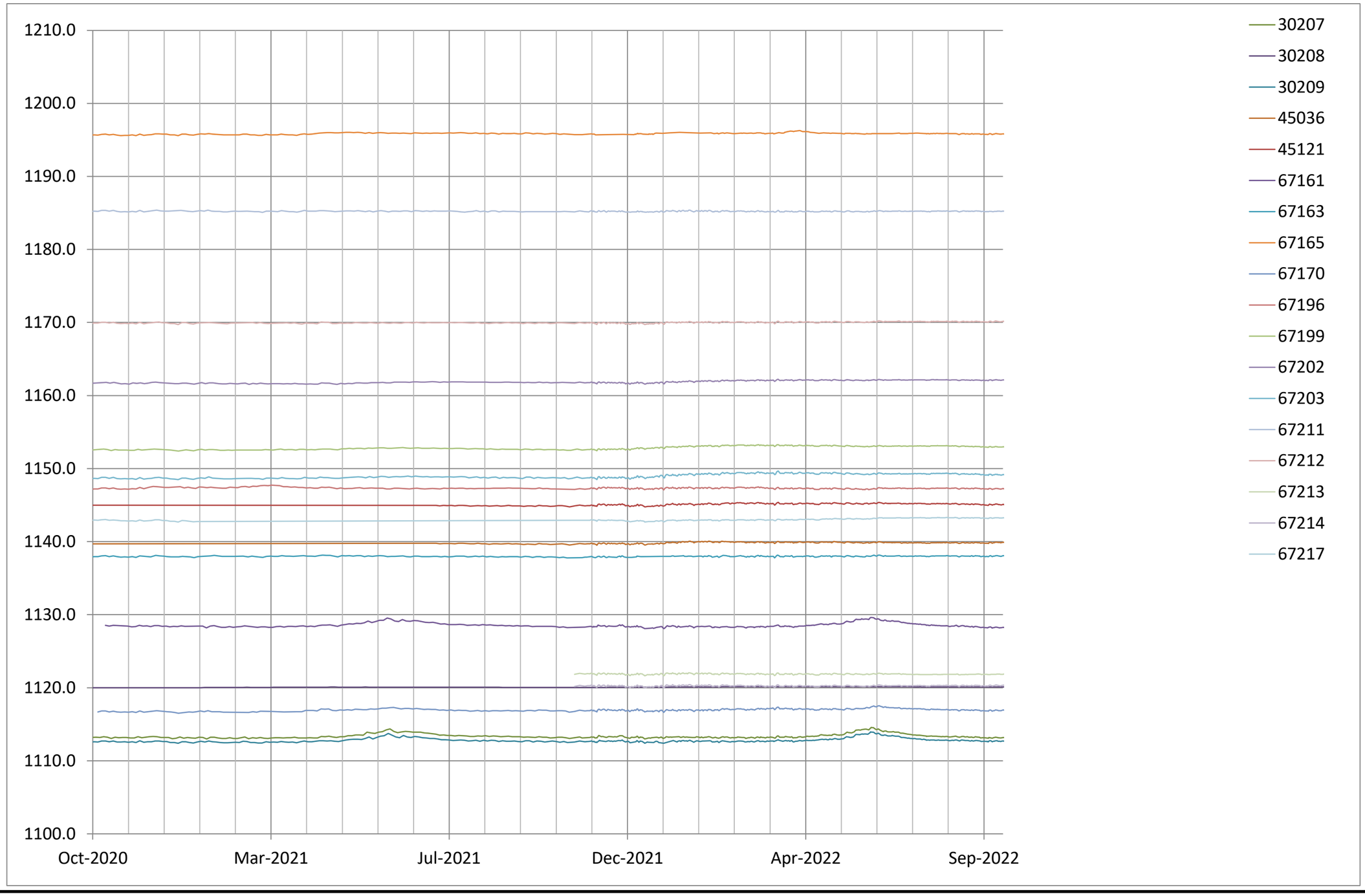
Piezometer ID	Stability Section	Zone of Installation	VWP Tip or Screen Center Elevation (El. m)	Till Contact Elevation (El. m)	Maximum Measured Water Table Elevation[1] (El. m)	Yellow TARP Trigger Level Elevation (El. m)	Red TARP Trigger Level Elevation (El. m)	2022 Observations
								remained steadily elevated.
Standpipe OW2B (VWP 67199)	C-C	Glacial Till	1149.90	1158.00	1153.3	1163.00	1168.00	0.6 m increase from Dec. 2021 to Mar. 2022. Levels have remained steadily elevated.
Standpipe OW-9422	B-B	CCR	1195.20	1195.00	1196.07	1200.00	1205.00	Instrument not read in 2022. Value from 2020 shown.
Standpipe OW-9411 (VWP 67210)	B-B	CCR	1152.80	1160.00	1157.09	1165.00	1170.00	Potential instrument malfunction or calibration required. 2021 reading shown.
Standpipe OW-9412 (VWP 67202)	B-B	CCR	1160.60	1160.00	1162.2	1165.00	1170.00	0.4 m increase from Jan. to Mar. 2022. Levels have remained steadily elevated.
Standpipe A01-01 (VWP 67212)	A-A, I-I	Glacial Till	1169.87	1170.00	1170.6	1175.00	1180.00	Steady trend. 0.2 m increase during 2022 freshet.
VWP 23888	I-I	Glacial Till	1238.00	~1246	1238.3	1239.6	N/A	Not read in 2022. Value from 2020 shown.
VWP 23889	I-I	Glacial Till	1242.90	~1246	Dry	1244.2	N/A	Potential instrument malfunction or calibration required. 2021 reading shown.
VWP FVW-0866	F-F	CCR	1186.50	1184.50	1187.57	N/A	N/A	Instrument not read in 2022. Value from 2020 shown.
Standpipe A01-02	F-F	Glacial Till	1147.14	1147.50	1147.65	1152.50	1157.14	Instrument not read in 2022. Value from 2020 shown.
Standpipe GT-9704 (VWP 67163)	F-F	CCR	1127.07	1127.00	1138.2	1132.00	1137.00	Steady trend. Increase of 10.22 m compared to 2020 measurements due to instrument recalibration. However, trend remains

Piezometer ID	Stability Section	Zone of Installation	VWP Tip or Screen Center Elevation (El. m)	Till Contact Elevation (El. m)	Maximum Measured Water Table Elevation[1] (El. m)	Yellow TARP Trigger Level Elevation (El. m)	Red TARP Trigger Level Elevation (El. m)	2022 Observations
								consistent when historical data is adjusted. Levels require updating.
VWP 23893	G-G	CCR	1195.5	1190.60	1196.93	N/A	N/A	Potential instrument malfunction or calibration required. 2021 reading shown.
VWP 23894	G-G	CCR	1190.60	1190.60	1191.14	N/A	N/A	Potential instrument malfunction or calibration required. 2021 reading shown.
Standpipe G01-03 (VWP 67217)	G-G	Glacial Till	1141.29	1141.50	1143.3	1146.50	1151.50	0.3 m increase during 2022 freshet. Levels have remained steadily elevated.
Standpipe 94-17A (VWP 67214)	G-G	CCR	1120.2	1121.00	1120.4	1126.00	1131.00	Steady trend. Increase from 2020 “dry” measurement to 0.2 m above VWP tip.
Standpipe 94-17B (VWP 67213)	G-G	Glacial Till	1121.9	1121.00	1122.1	1126.00	1131.00	Steady trend. Increase from 2020 “dry” measurement to 0.2 m above VWP tip.
VWP 30210 (VW-13-01A)	J-J	CCR	1118.87	~1113	1122.58	1123.1	N/A	Instrument not read in 2022. Value from 2020 shown.
VWP 30215 (VW-13-01B)	J-J	Glacial Till	1112.87	~1113	1114.06	1114.1	N/A	Instrument not read in 2022. Value from 2020 shown.
VWP 30208 (VW-13-02A)	J-J	CCR	1118.77	~1113	1120.1	N/A	N/A	Steady trend. 0.1 m increase during the 2022 freshet.
VWP 30209 (VW-13-02B)	J-J	Glacial Till	1112.77	~1113	1113.9	N/A	N/A	Steady trend. Readings fluctuate with Elk River level. 1.3 m increase during the 2022 freshet.
VWP 30207 (VW-13-03)	J-J	CCR	1113.07	~1113	1114.6	1115.1	N/A	Steady trend. Readings fluctuate with Elk River level. 1.4 m increase

Piezometer ID	Stability Section	Zone of Installation	VWP Tip or Screen Center Elevation (El. m)	Till Contact Elevation (El. m)	Maximum Measured Water Table Elevation[1] (El. m)	Yellow TARP Trigger Level Elevation (El. m)	Red TARP Trigger Level Elevation (El. m)	2022 Observations
								during the 2022 freshet.
VWP 67161 SP-13-01	K-K	Glacial Till	1110.46	N/A	1129.6	N/A	N/A	Steady trend. Readings fluctuate with Elk River level. 1.6 m increase during 2022 freshet. Increase of 19.6 m compared to 2020 measurements due to instrument recalibration. However, trend remains consistent when historical data is adjusted. Levels require updating.
Standpipe 96-G1B	H-H	Glacial Till	1111.80	1114.30	1114.10	1119.30	1124.30	Instrument not read in 2022. Value from 2020 shown.

Note: 1. Max measured water table elevation refers to the maximum recorded level for the 2021/2022 period since the previous annual facility performance reporting period (up to October 2021). This level may vary from the drawing cross-sections which shows the last recorded measurement for each instrument.

PROJECT: TECK (EVO)	CCR Piezometer Plots	COMMENTS:
LOCATION: CCR		



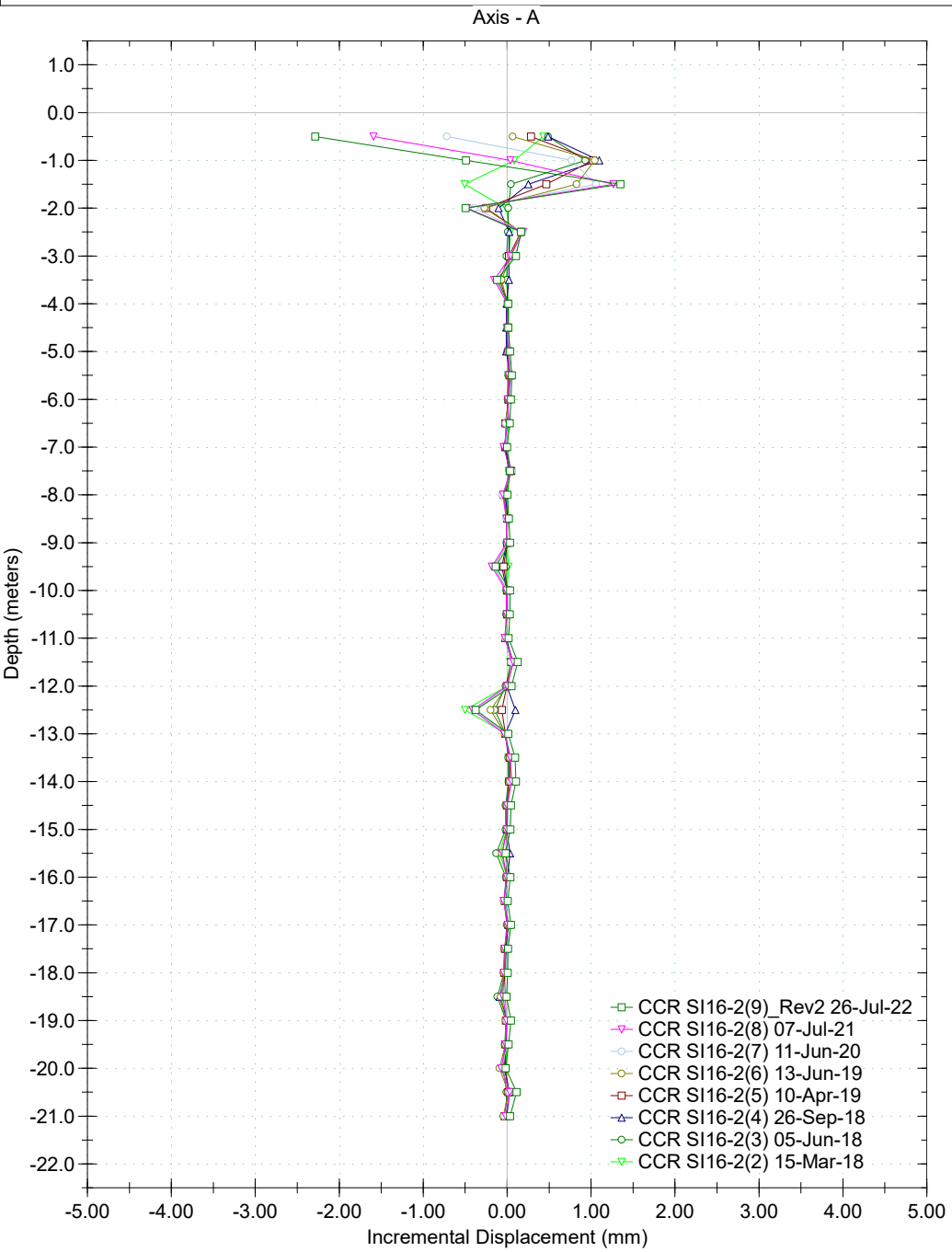
RST Instruments Ltd.

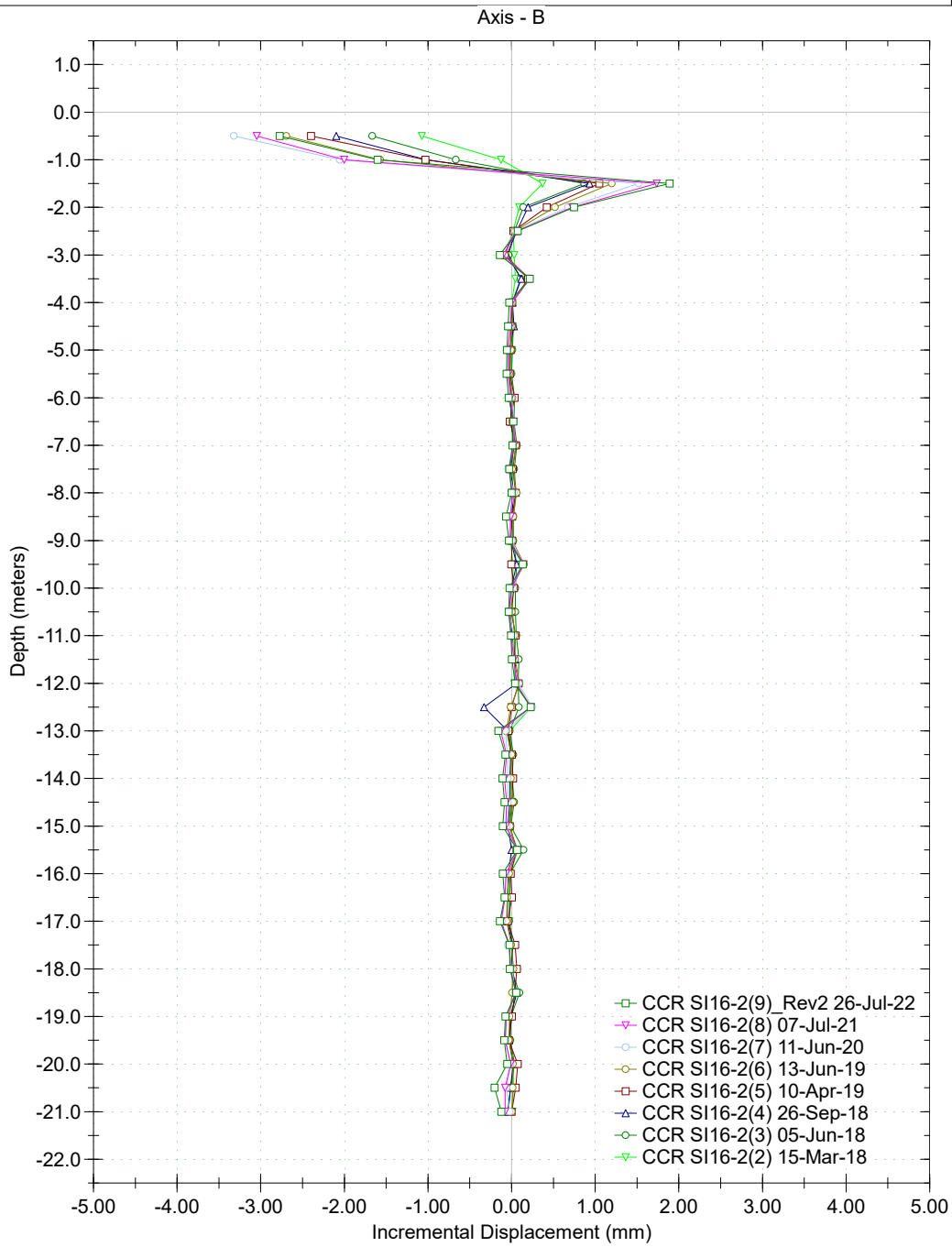
INCREMENTAL DISPLACEMENT

Inclinalysis v. 2.48.9

Borehole : CCR SI16-2
Project : CCR
Location : CFI Road
Northing : 54292.8
Easting : 15775.1
Collar : 1167.2

Spiral Correction : N/A
Collar Elevation : 0.00 meters
Reading Depth : 21.0 meters
A+ Groove Azimuth :
Base Reading : 2017 Nov 27 13:17
Applied Azimuth : 0.0 degrees





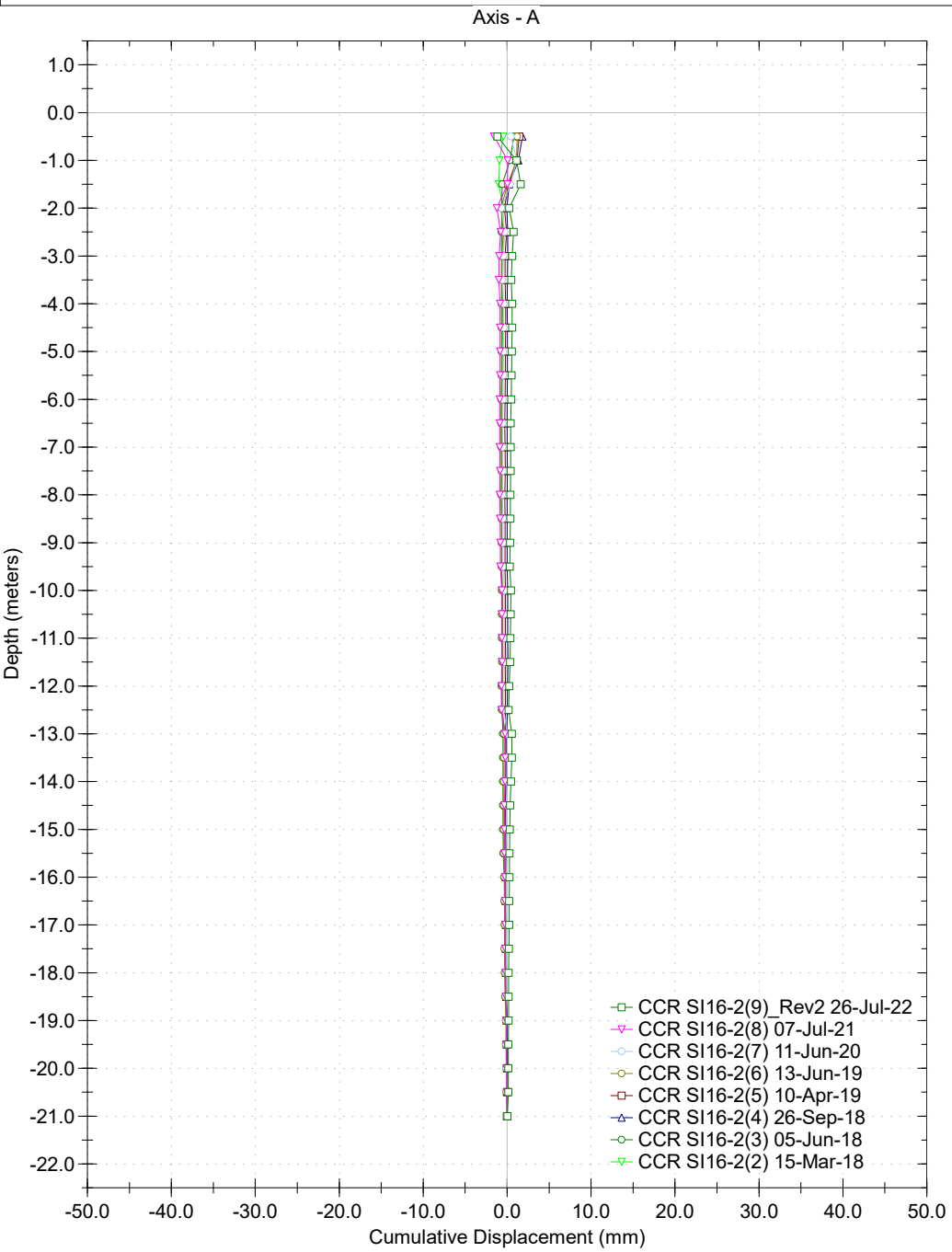
RST Instruments Ltd.

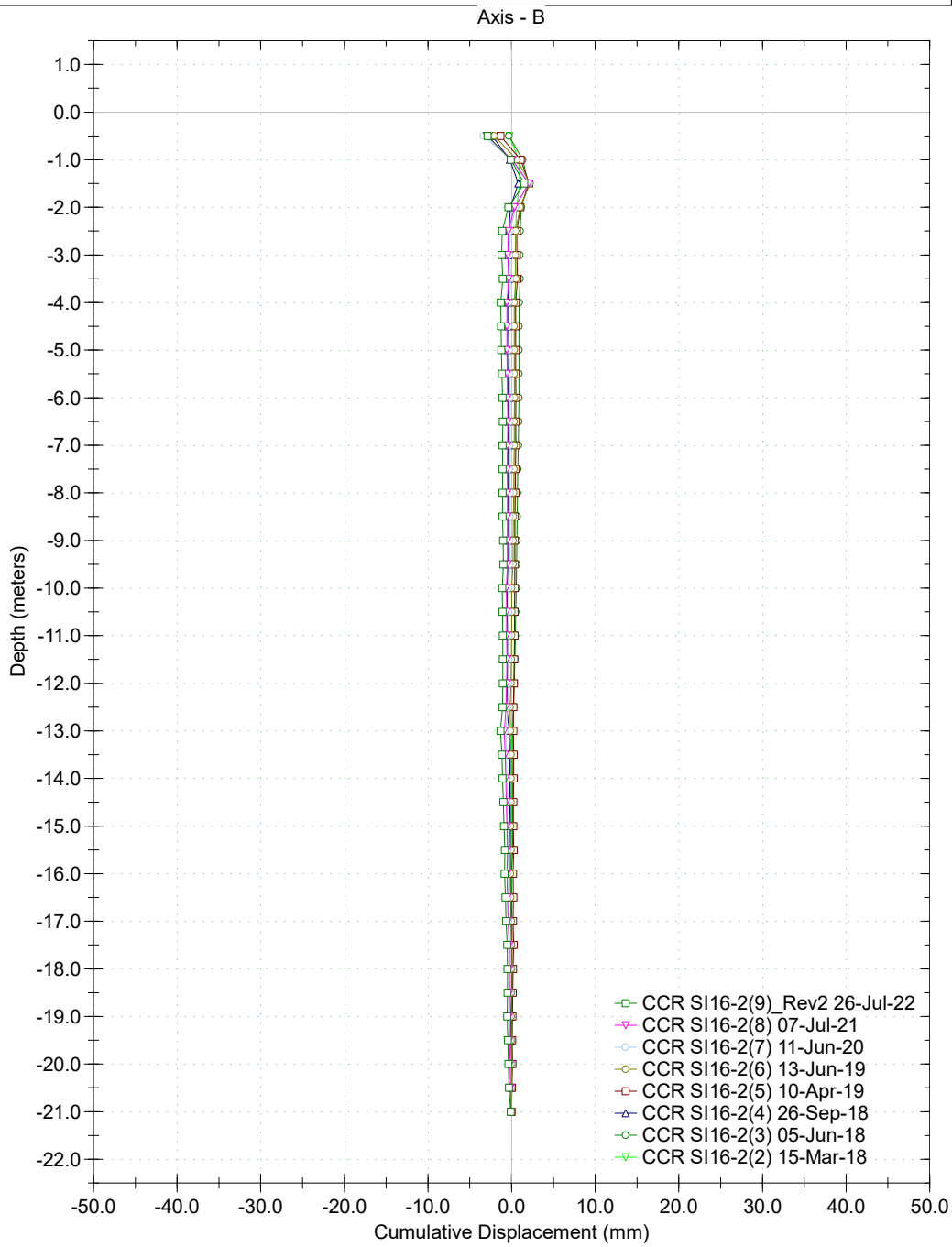
CUMULATIVE DISPLACEMENT

Inclinalysis v. 2.48.9

Borehole : CCR SI16-2
Project : CCR
Location : CFI Road
Northing : 54292.8
Easting : 15775.1
Collar : 1167.2

Spiral Correction : N/A
Collar Elevation : 0.00 meters
Reading Depth : 21.0 meters
A+ Groove Azimuth :
Base Reading : 2017 Nov 27 13:17
Applied Azimuth : 0.0 degrees





RST Instruments Ltd.

TIME PLOT

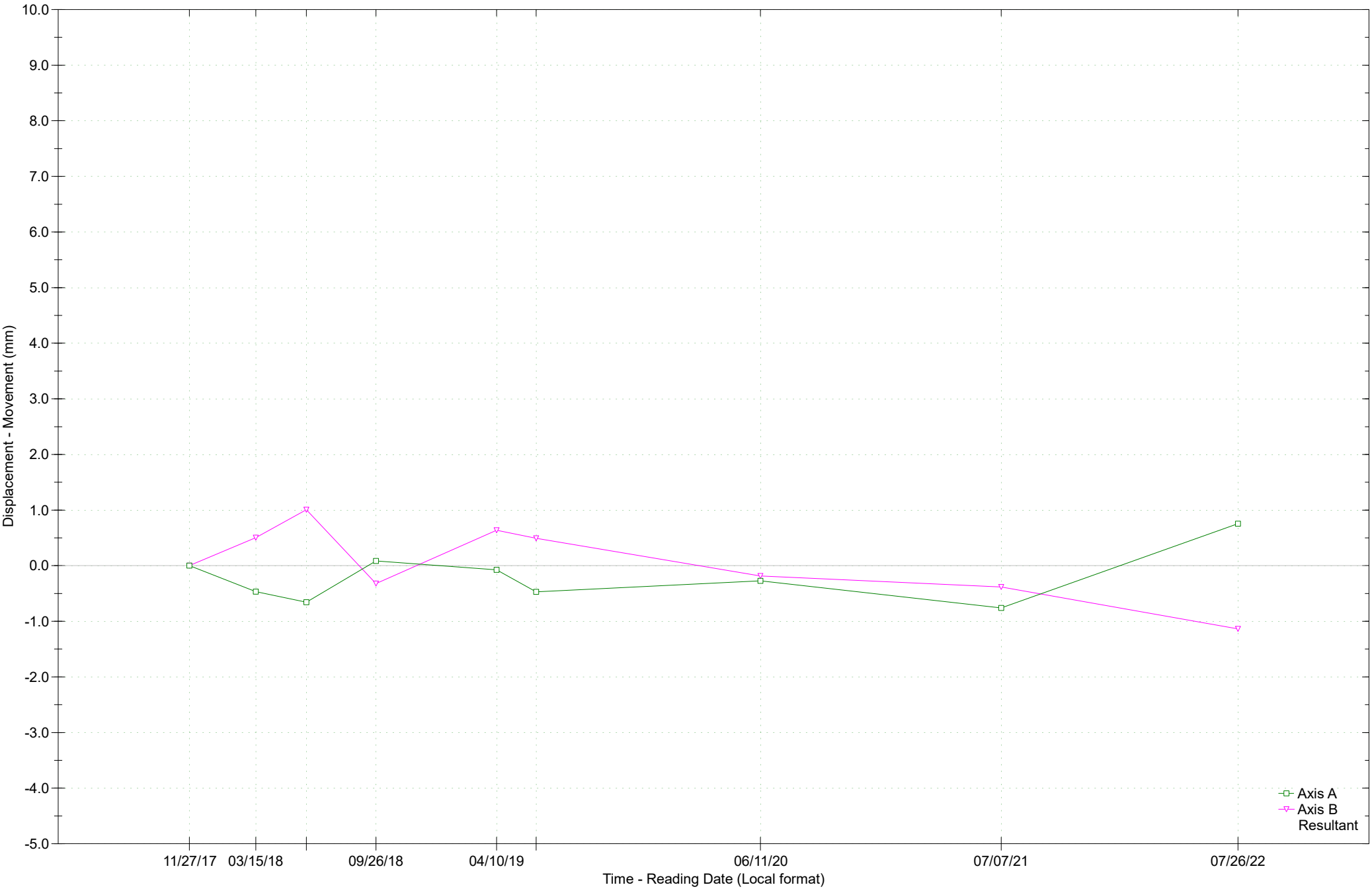
Displacement vs. Time

Inclinalysis v. 2.48.9

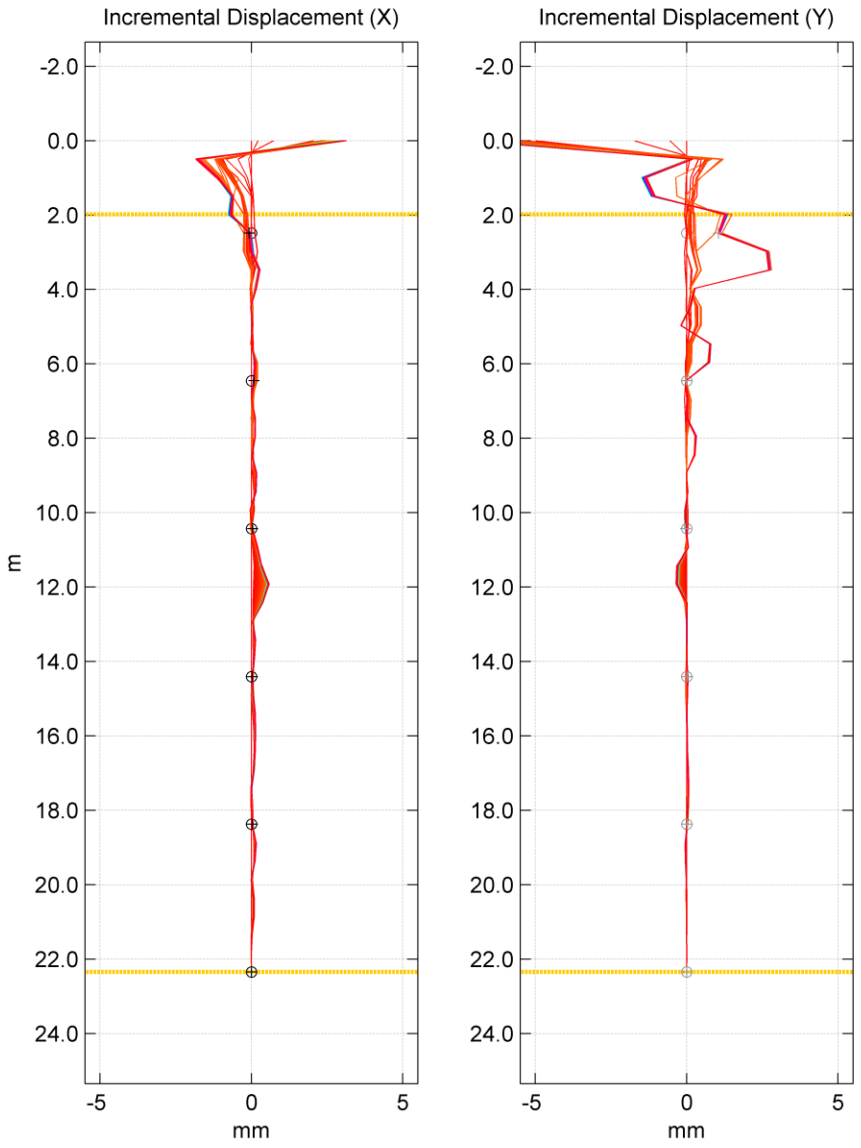
Borehole : CCR SI16-2
Project : CCR
Location : CFI Road
Northing : 54292.8
Easting : 15775.1
Collar : 1167.2
Collar Elev : 0.00 meters

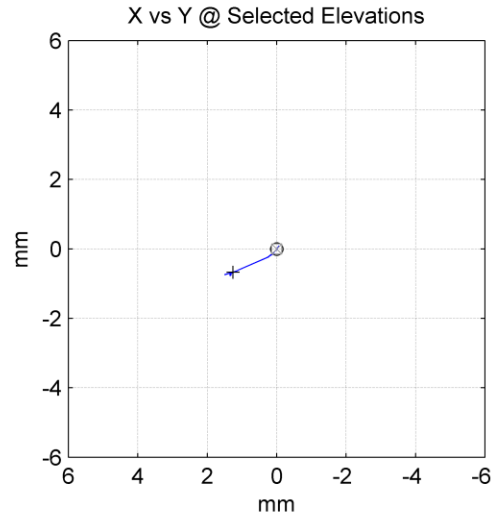
Spiral Correction : N/A
Movement Depth : 2.5 - 21.0 meters
Reading Depth : 21.0 meters
A+ Groove Azimuth :
Latest Reading : 2022 Jul 26 11:49
Initial Reading : 2017 Nov 27 13:17
Applied Azimuth : 0.0 degrees

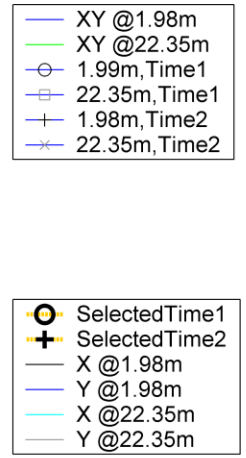
Time Plot : 2.5 - 21.0 meters

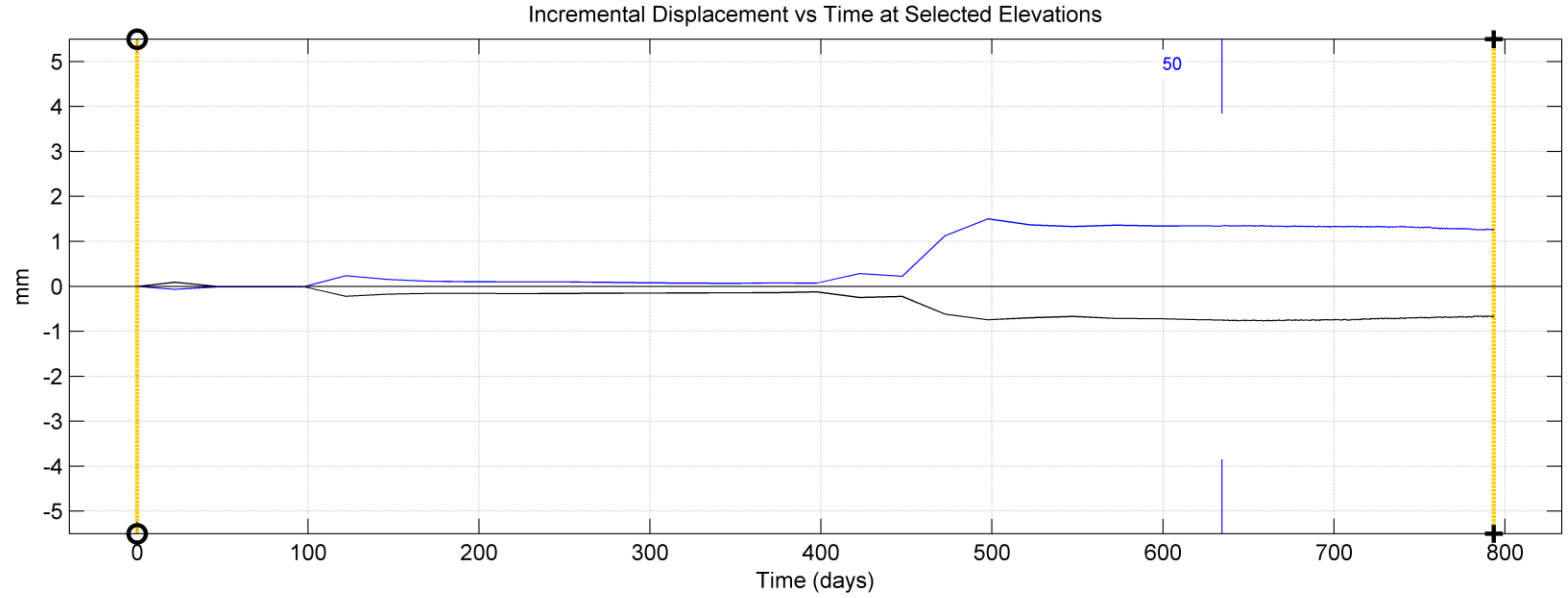


ver3.05 [CCR_N]





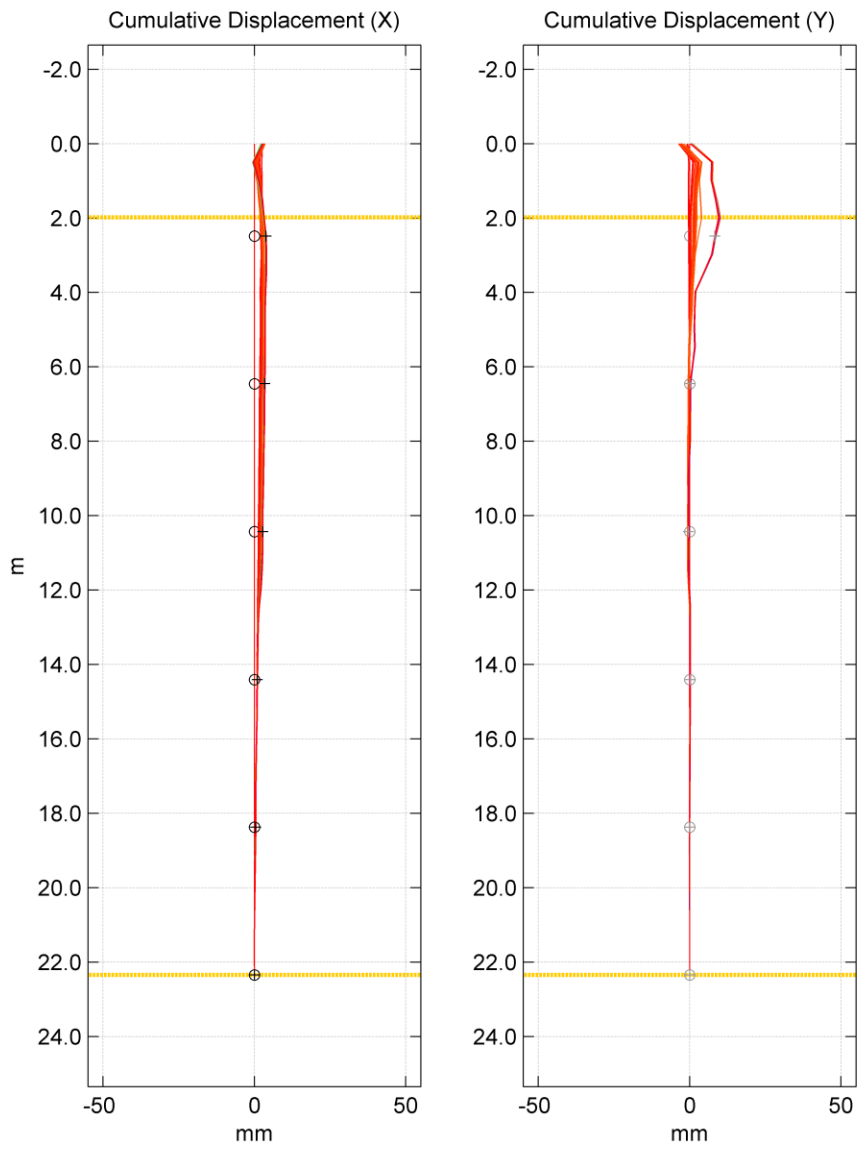


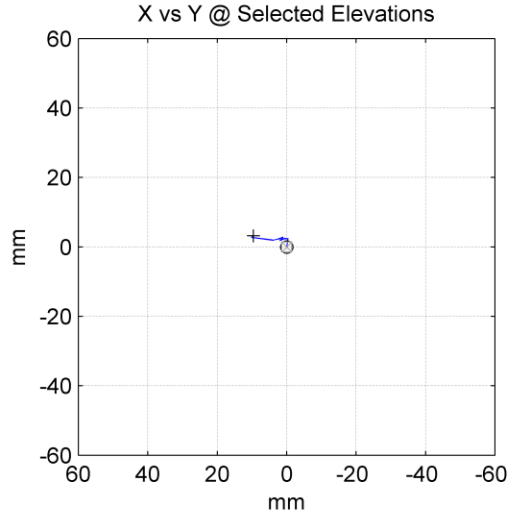


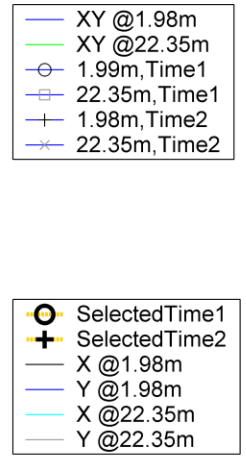
22.35 : 1.98 m, (vtx = 0 : 41)

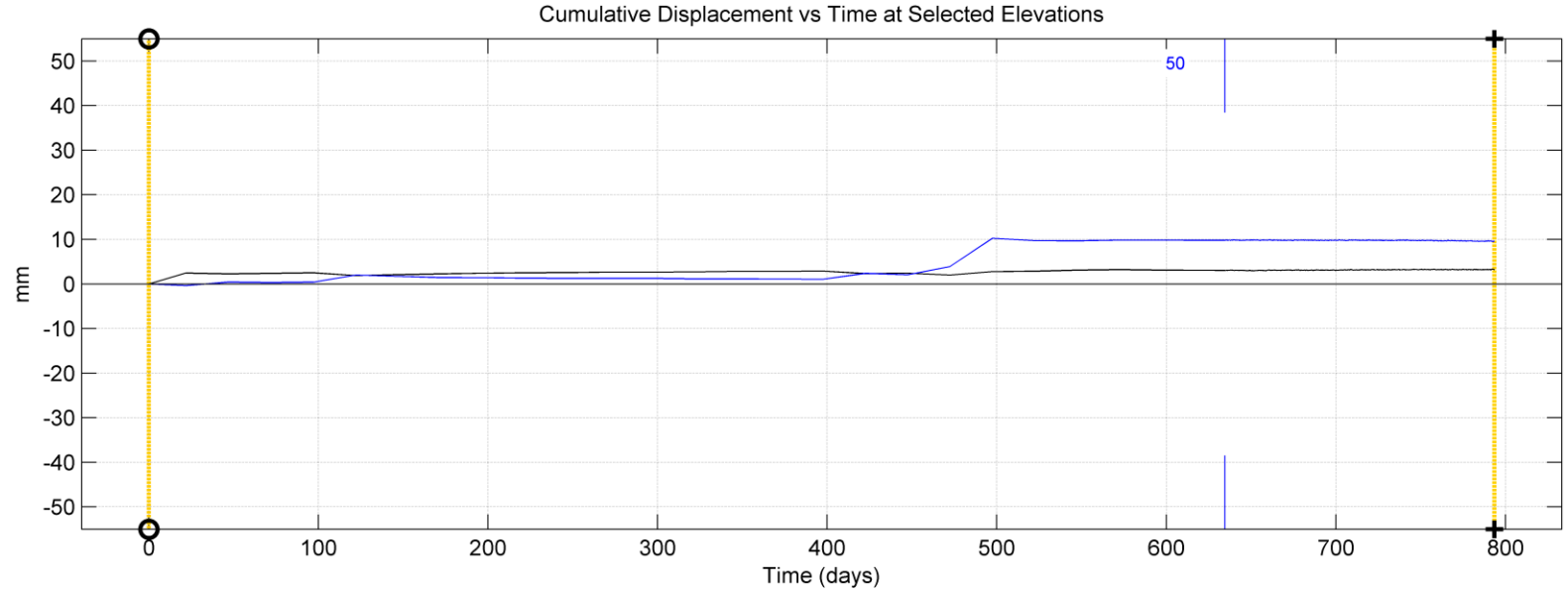
23-Oct-2019 11:55:45 : 25-Dec-2021 [793.50 days]

ver3.05 [CCR_N]





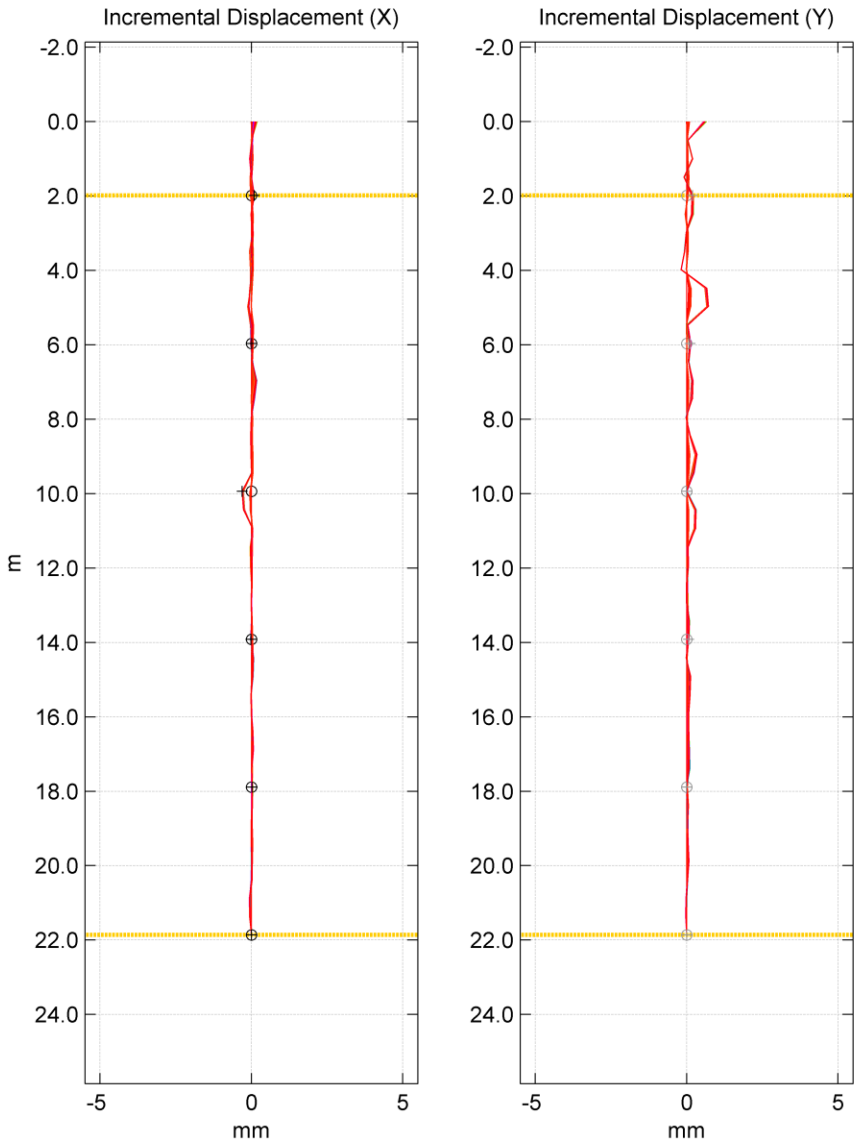


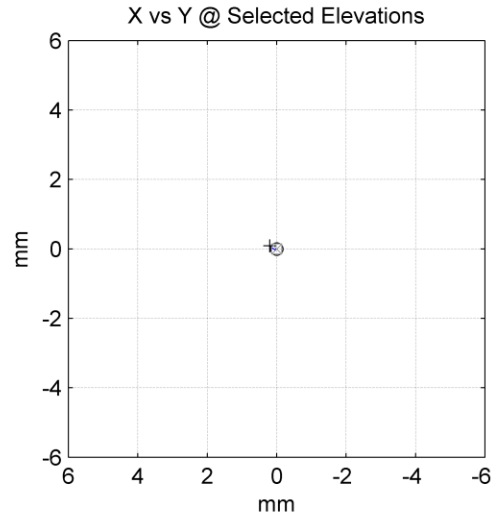


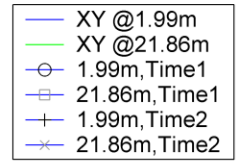
22.35 : 1.98 m, (vtx = 0 : 41)

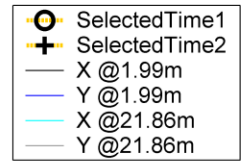
23-Oct-2019 11:55:45 : 25-Dec-2021 [793.50 days]

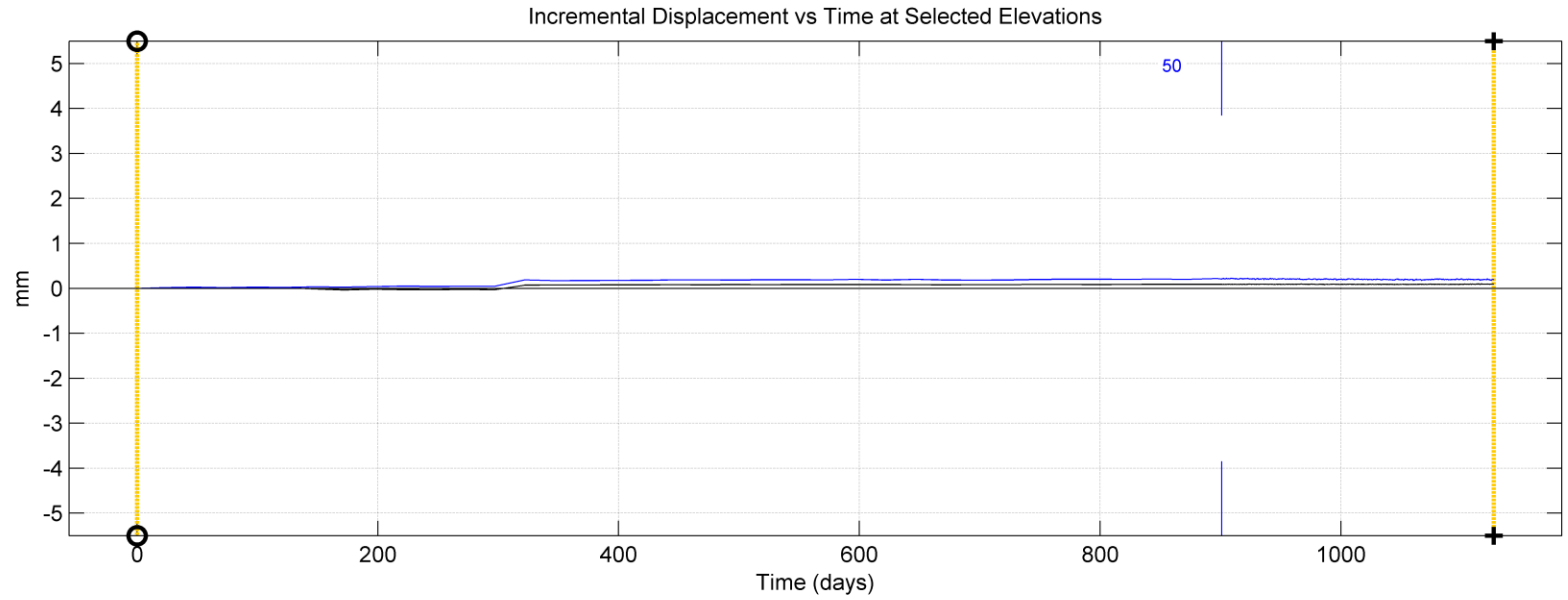
ver3.05 [CCR_S]







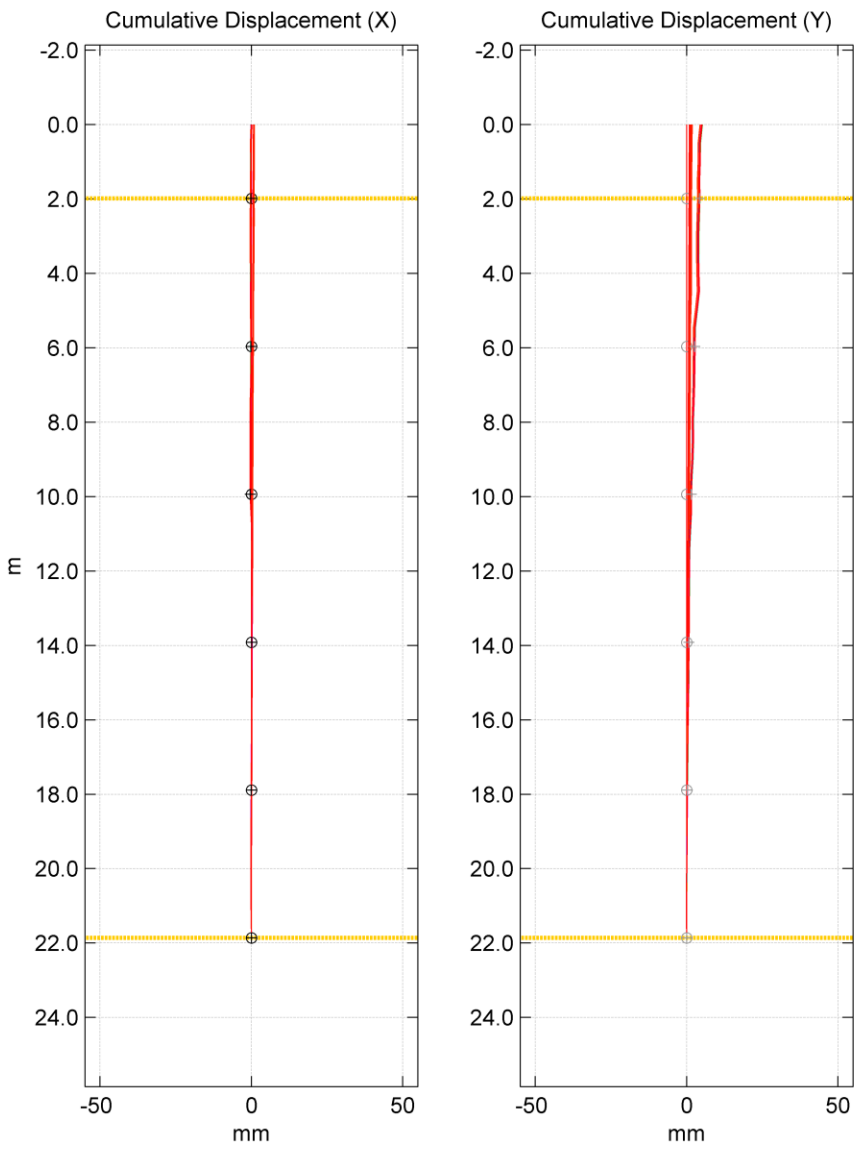


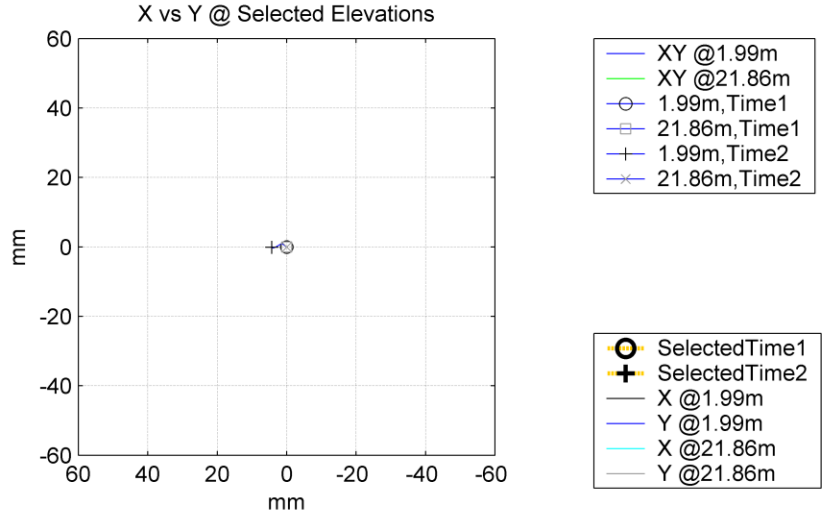


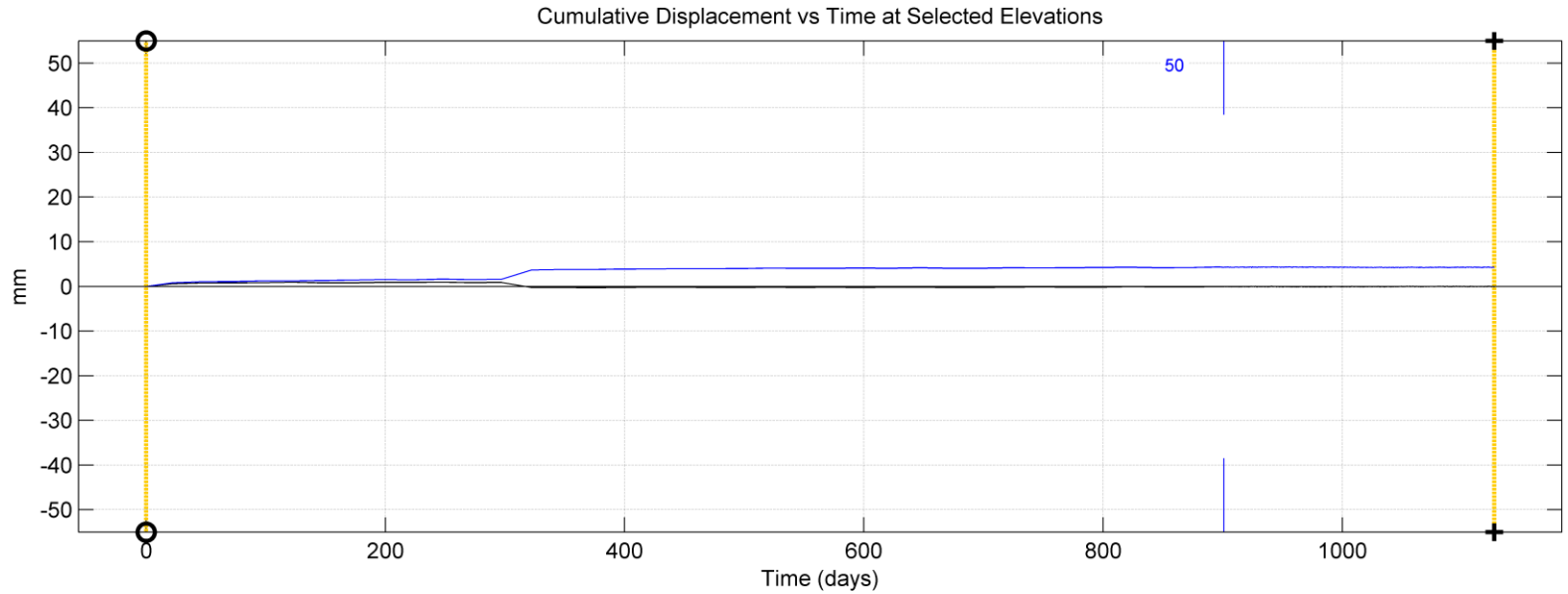
21.86 : 1.99 m, (vtx = 0 : 40)

23-Oct-2019 12:00:00 : 23-Nov-2022 12:00:00 [1127.00 days]

ver3.05 [CCR_S]







21.86 : 1.99 m, (vtx = 0 : 40)

23-Oct-2019 12:00:00(T1) : 23-Nov-2022 12:00:00(T2) [1127.00 days]