Klohn Crippen Berger

Teck Coal Limited

Coarse Coal Refuse Dump

2021 Annual Facility Performance Report

CANADA BEST MANAGED COMPANIES Platinum member

ISO 9001 14001 45001

M09963A25.730

March 2022

March 30, 2022

Teck Coal Limited
R.R. #1, Highway #3
Sparwood, British Columbia
V0B 2G1

Mr. Patrick Green, P.Eng.,
Tailings Engineer

Dear Mr. Green:

Coarse Coal Refuse Dump
2021 Annual Facility Performance Report

We are pleased to submit the 2021 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.

Christine Peters, P.Eng., M.Eng.
Senior Project Manager

DHG/AS/MT:jc

220330R-2021 AFPR_CCR_Dump.docx
M09963A25.730

Klohn Crippen Berger Ltd.
500 - 2955 Virtual Way ▪ Vancouver BC V5M 4X6 ▪ Canada
t 604.669.3800 ▪ f 604.669.3835 ▪ www.klohn.com

Teck Coal Limited

Coarse Coal Refuse Dump

2021 Annual Facility Performance Report

EXECUTIVE SUMMARY

This report presents the 2021 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 2020 to October 2021.

The 2021 AFPR site visit of the CCR Dump, was completed on September 16, 2021 by Mr. Dan Hughes-Games, P.Eng., and Mr. Michael Tin, E.I.T., of Klohn Crippen Berger (KCB). The TSF Qualified Person (defined as the Responsible Tailings Facility Engineer (RTFE) by the Global Industry Standard on Tailings Management)) at the time of the inspection was Mr. Patrick Green, P.Eng., who was also on site during the site visit. The Engineer of Record (EoR) for the CCR Dump is Mr. Andy Small, P. Eng., of KCB, who was involved in the preparation of this report. The CCR Dump appeared to be in good physical condition with no signs of structural distress based on observations during the 2021 AFPR.

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 haul trucks and dozers.

Summary of Key Hazards

The key external hazards for the CCR Dump are seismic and meteorological hazards, including erosion of the toe of the dump due to flooding in the Elk River. 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 also 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 2021

No significant physical changes have occurred at the CCR Dump during 2021, 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 2021. The overall global slope has been maintained in accordance with the design. No signs of significant cracking, wet spots, or deformations were observed during the 2021 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 and the current update will be finalized in Q2 2022.

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 for the Mine. 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 and work with KCB to see if any additional contributions to the existing ERP within the overall Mine Emergency Response Plan is required.

Summary of Recommendations

There are no Priority[1] 1 or 2 recommendations outstanding for the CCR Dump. There are no new recommendations arising from the 2021 AFPR. Previous recommendations are described in Section 9.

[1] Recommendation priority guidelines specified in the HSRC Guidance Document (BCMEM, 2016).

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 (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 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 complete the 2021 Annual Facility Performance Report (AFPR) for the Coarse Coal Refuse (CCR) Dump. This report presents the results of the 2021 AFPR, including a review of available monitoring data from November 2020 to October 2021.

The site visit for the CCR Dump was conducted on September 16, 2021, by Mr. Dan Hughes-Games, P.Eng., and Mr. Michael Tin, E.I.T. 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 in 2021 related to the safety of the structure;
- Section 4: review of 2021 AFPR observations;
- Section 5: review of monitoring records;
- Section 6: summary of 2021 climate aspects;
- Section 7: summary of water management aspects;
- Section 8: review of documentation and relevant failure modes to support the structure safety assessment; and
- 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. is the EoR for the EVO tailings storage facilities (TSFs), including the CCR Dump. He visited the site once in 2021 and was involved in the preparation of this report.

Mr. Patrick Green, P.Eng., of EVO, was the TSF Qualified Person at the site (beginning in June 2021), as defined by the Health, Safety and Reclamation Code for Mines in British Columbia (HSRC) (EMLI 2021). Teck refers to the role as the Responsible Tailings Facility Engineer (RTFE), terminology consistent with the Global Industry Standard on Tailings Management (GISTM).

2 BACKGROUND

2.1 General

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

- CCR Dump, which is considered a "Tailings Storage Facility" under the HSRC (EMLI 2021);
- Lagoon Tailings Area (Lagoons A, B, C, and D);
- West Fork Tailings Facility (WFTF); and
- Wash Plant.

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 approximately 400 m 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 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 on Figure 2.1.

CCR Dump Geometry

The CCR dump geometry varies, with the local 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.

Interceptor Ditch

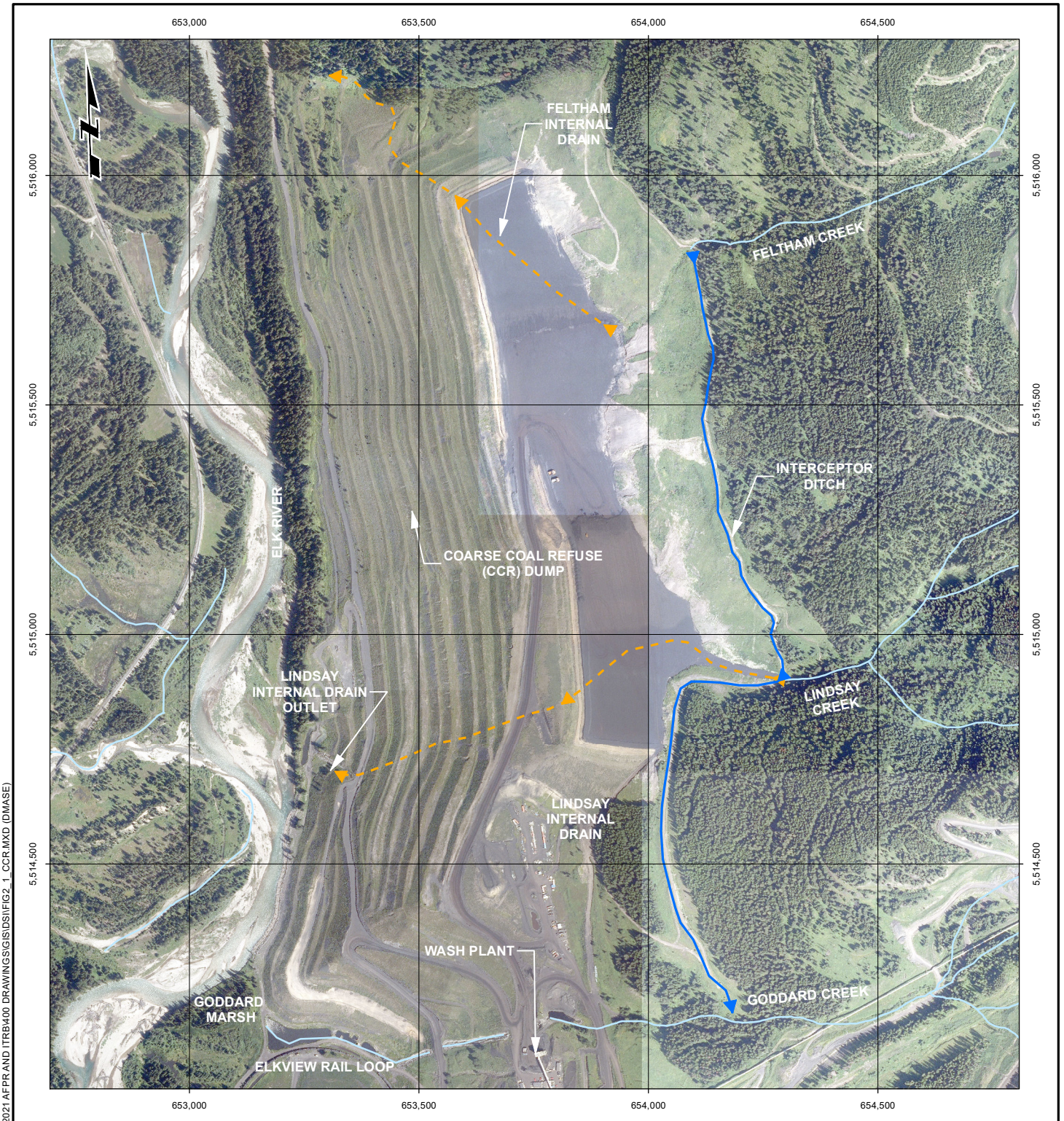
The Interceptor Ditch was constructed on the eastern perimeter of the CCR Dump. Its purpose is to collect upslope runoff from the natural hillside and divert the flow south into Goddard Creek.

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
- CREEK
- INTERNAL DRAIN

NOTES

1. DATUM, PROJECTION: NAD83, UTM ZONE 11 (WKID 26911)
2. IMAGERY FROM TECK ELKVIEW OPERATIONS (COLLECTED IN 2019).

NOT FOR CONSTRUCTION

SCALE 0 250 m

CLIENT: Teck

Klohn Crippen Berger

PROJECT: TECK ELKVIEW OPERATIONS
2021 ANNUAL FACILITY PERFORMANCE REPORT

TITLE: COARSE COAL REFUSE DUMP
PLAN LAYOUT

SCALE	PROJECT No.	FIG. No.
1:12,000	M09963A25	2.1

ANSI A

SAVE DATE: 2022-02-07(15:47 PM)
FILE PATH: \\INT.KLOHN.COM\PROJDATA\MV\CRM\09963A25-TCL-EVO 2021 AFPR AND ITRB\400 DRAWINGS\GIS\DS\FIG2_1_CCR.MXD (DMASE)

2.3 Consequence of Failure Framework

Teck has advised that they are aligned with the most conservative interpretation of the GISTM which, in turn, is consistent with their safety culture. Commensurately, Teck has advised that consequence classification is not a part of their tailings management governance going forward and has asked that it not be reported in this AFPR. Instead, they intend to adopt the extreme consequence case design loading for any facility with a credible flow failure mode. For facilities without a credible failure mode in terms of a life safety issue, Teck indicates they will reduce credible risks to As Low As Reasonably Practicable (ALARP). This consequence case applies for both earthquake and flood scenarios for all tailings facilities, consistent with the GISTM.

3 ACTIVITIES IN 2021 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 2020 to October 2021:

- The CCR Dump crest elevation ranged from approximately El. 1,337.7 m to El. 1,340.0 m at the end of December 2021, and the facility stores approximately 56,300,000 m^3.
- Typically, the CCR Dump has been raised at an average rate of 6 m per year (based on annual LiDAR), constructed in 1.5 m thick lifts of MCR material. The CCR Dump was raised approximately 1.5 m to 4 m during the 2020 to 2021 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 2020 to 2021 reporting period. Areas prone to erosion are hydroseeded with the inclusion of a tackifier.
- A site-wide LiDAR survey was completed by EVO in October 2021, and an additional survey of the CCR Dump was completed December 14, 2021.
- Loose CCR material was stockpiled on top of the CCR Dump from mid-June to November of 2021 as a surge pile to produce material for a geochemical trial program for another part of the site. The crest area was surveyed prior to dumping the loose material. The trial program was completed in December 2021, the stockpile was removed, and operations returned to normal.

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. EVO also 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 2021 CCR Dump Construction Summary Report, issued separately.

4 SITE OBSERVATIONS / RESULTS OF SITE VISIT

The visual review conducted by Mr. Hughes-Games and Mr. Tin 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. No signs of structural distress were observed during the inspections of the crest, downstream slope, and toe area. Structural distress that would be of concern includes tension cracks, settlement, sloughs, slumps, or excessive erosion.

Site visit checklist forms and selected photographs of the facilities are presented in Appendix I and II, and summary of notable observations are included in Table 4.1. Only observations that are of specific interest are included. This avoids the need to be stating items such as “slopes appear in good condition.” Table 4.1 also indicates whether the observations are new, and if there is an associated facility safety concern that should be addressed.

Table 4.1 Summary of Notable Observations

No.	Notable Observations	Change from 2020 AFPR?	Facility Safety Concern?	Photo Reference
CCR-1	Orange-stained seepage was observed at some CCR Dump interbench ditches.	No	No	I-7
CCR-2	Localized seepage areas were observed on the natural hillside above the current CCR Dump crest elevation.	No	No	I-8
CCR-3	Minor erosion was observed on some sections of the interbench slopes.	No	No	I-9, I-12
CCR-4	The Lindsay drain outlet was wet, but not flowing at the time of the inspection. The drain outlet appeared to be in good condition.	No	No	I-10, I-11
CCR-5	Surficial cracks at the crest surface of the CCR Dump were observed. This is a common occurrence as the placed MCR settles over time.	No	No	I-14

5 MONITORING AND INSTRUMENTATION REVIEW

Monitoring instrumentation measurements are collected by the EVO Tailings Team, with the data evaluated against the Quantifiable Performance Objectives (QPOs) for the CCR Dump. A first pass review of monitoring and instrumentation data for the CCR Dump was completed by the EVO Tailings Team. The data review would be escalated to the EoR where there is an exceedance of an instrument trigger level for any of the monitoring instruments, although there were no QPO exceedances during the reporting period.

The current monitoring program is considered sufficient to assess the performance of the current facility against QPOs. 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.

5.1 Piezometric Data Review

Piezometer data for the reporting period and indicates measurements are consistent with historical data. The instrumentation shows that in a general sense, the CCR Dump drains into or along the foundation contact as expected, and implies a downward gradient in the CCR material. There were no trigger levels exceedances during the reporting period (as defined in the OMS Manual), and this is consistent with the expected performance of the CCR Dump. Based on the above there are no structural concerns for the CCR Dump and the structure is achieving the defined QPOs at this time.

EVO's reconciliation of operating instruments 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). 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. A summary of results is presented in Appendix IV.

5.2 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: installation was unsuccessful and readings are considered to be unreliable due to technical issues with the installation.

Inclinometers CCR-North and CCR-South were transitioned to an automated Shape Accelerometer Array system in June of 2019. The inclinometers were most recently measured in July of 2021. All 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.

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

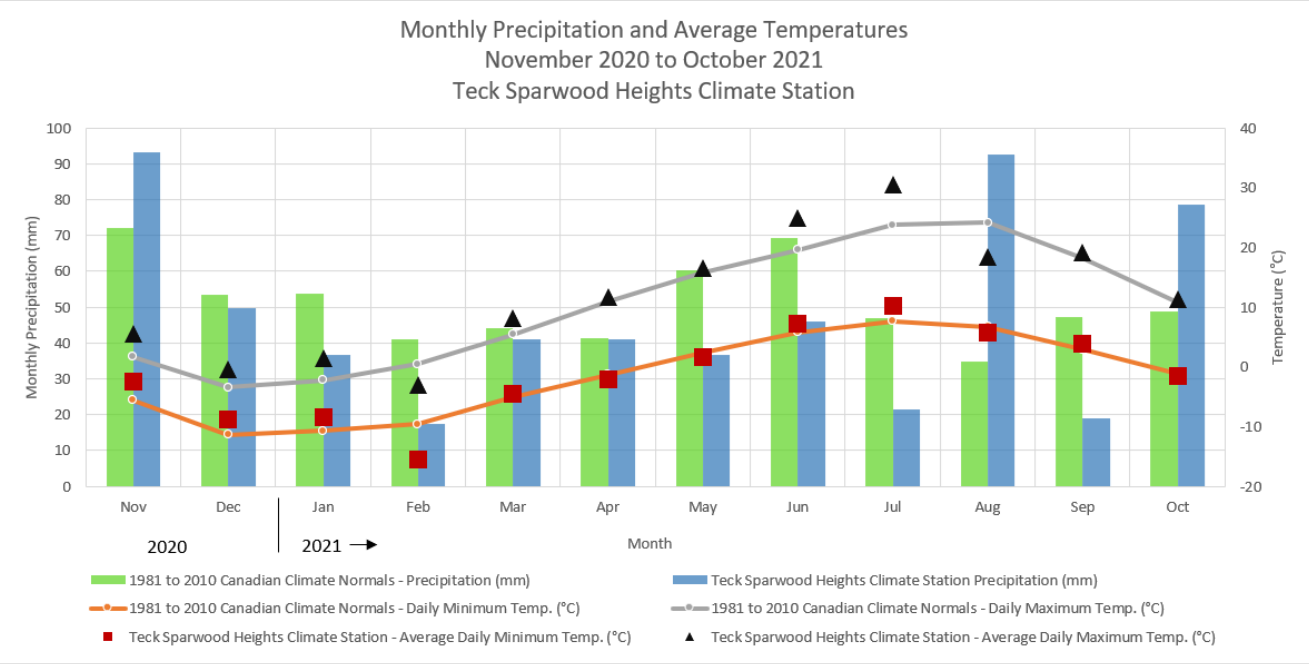
There are also three sets of survey monuments are installed along the toe of the CCR Dump between section D-D and E-E. But, due to previous erroneous measurements and issues with survey accuracy, EVO discontinued reading the survey monuments and no measurements were taken during the reporting period.

6 CLIMATE

Figure 6.1 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 the November 2020 to end of October 2021 period was approximately 574 mm, compared to the average at Sparwood of 614 mm (based on Environment Canada Sparwood climate normal from 1981 to 2010).

Precipitation during November 2020, and August and October of 2021 was higher than the 1981-2010 Canadian climate normal for Sparwood. Otherwise, the precipitation for the 2020 to 2021 period has generally been lower 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 6.1 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).

7 WATER MANAGEMENT

7.1 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 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 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 where a series of corrugated metal pipe culverts discharges flow downslope to a rock armoured energy dissipation area and 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 are not apparent from a surface review.

7.2 Seepage

Seepage was observed at several lower interbench slopes at the north end of the CCR Dump in the locations consistent with those observed during the 2020 AFPR site visit (KCB 2021). Some ditch drains on CCR benches were observed to contain seepage with an orange colouration. The observed seepage is consistent with historic observations and is not a facility safety concern.

7.3 Discharge Quantities and Quality

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

8 CCR DUMP SAFETY ASSESSMENT

The CCR Dump and the associated drainage structures appeared to be in good physical condition without obvious signs of structural distress based on observations during the 2021 AFPR site visit. 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

A risk assessment was completed for the CCR Dump in February 2021, which included a review of failure modes, preventative and mitigative controls, and the likelihood and consequences of risk events occurring.

8.1.1 Definition of Failure Modes

In undertaking a review of the failure modes, it is appropriate to first define what is meant by a failure mode. A failure mode commences with an initiating event (trigger) that is the 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 (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.

Hence, a failure mode refers to the combination of a triggering event, the failure mechanism, and the actual release of significant amounts of material.

8.1.2 Internal Erosion and Piping

Internal erosion and piping is a failure mode almost universally reserved for fluid retention structures with potentially filter incompatible materials in the embankment and/or foundation/abutments and 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 summarized. Groundwater monitoring instruments historically indicate a downward gradient to the glacial till foundation level. Porewater pressures at the foundation level are typically between 0 m and 5 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 depth of dumped materials.

Monitoring the embankment slopes, toes, and drains for seepage and erosion is part of the scheduled surveillance during routine inspections. No indications of piping or internal erosion of the CCR Dump were expected and none were observed during routine surveillance or during the 2021 AFPR site visit.

8.1.3 Slope Instability

During the 2021 AFPR site visit it was noted that some previous bench slopes were constructed with a width of approximately 4 m, which was a practice to avoid creating an overall face too flat compared to design intent. This was confirmed as the global slope of the CCR Dump has been maintained at approximately 2.3H:1V and therefore achieves the overall design geometry.

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.

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.

Erosion protection at the toe of the CCR Dump appears to be in good condition although vegetation is yet to be established across the full width of the erosion protection area. The riprap does not extend across the full length of the exposed CCR Dump toe, but does appear to protect previously vulnerable areas.

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 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 Manual (OMS) for the CCR Dump was last updated in January 2021 and the current update will be finalized in Q2 2022.

There is no specific Emergency Response Plan (ERP) for the CCR Dump but there is an overall Mine Emergency Response Plan for the Mine. 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 and work with KCB to see if any additional contributions to the existing ERP within the overall Mine Emergency Response Plan is required.

9 SUMMARY OF RECOMMENDATIONS

A summary of previous recommendations and 2021 AFPR recommendations are provided in the following sections. Recommendations are prioritized based on the scheme recommended in MEM (2016), as shown in Table 8.1. 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.

The action items in Table 8.2 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.
- 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 2021), best practices, and/or applicable regulatory requirements.
- Potential Deficiency: A facility performance condition that requires further evaluation to determine if the condition is a deficiency.
- Opportunity for Improvement: Improvements to achieve good practices or reduce potential risk.

Table 8.1 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.

9.1 Summary of Previous Recommendations

Outstanding recommendations related to previous AFPRs are presented in Table 8.2. The table also indicates if each recommendation is still appropriate and what actions have been taken. Recommendations from previous reviews that have been addressed have not been included.

Table 8.2 Summary of Previous Recommendations

Action ID	Deficiency or Non-Conformance	Applicable Regulation or OMS Manual Reference	Recommended Action	Priority	Status / Recommended Deadline
2014-06	Potential Deficiency. Design capacities for the Interceptor Ditch, Lindsay Drain and Feltham Drain are uncertain or not documented.	N/A	Review the design capacities for the Interceptor Ditch, Lindsay Drain and Feltham Drain.	3	In progress, started in Q3 2020. To be completed in 2022 (2 years before dump crest reaches the Interceptor Ditch).
2019-01	**Non-Conformance. The CCR Dump does not have a current risk assessment.**	**Teck TWRS Guidelines**	**Complete a detailed risk assessment.**	**3**	**A risk assessment was completed in February 2021. Recommendation Closed.**
2019-06	**Opportunity for improvement. The CCR Dump Stability using the 1/975 AEP seismic event is unknown.**	**N/A**	**Check the CCR Dump Stability using the 1/975 AEP seismic event to inform risk management going forward.**	**4**	**The CCR Dump assessed to meet the requirements of the HSRC, and this recommendation is not required. Recommendation Closed.**
2020-01	**Non-Conformance. CCR Dump Periodic Safety Review**	**Teck TWRS Guidelines**	**Revised Recommendation: A review of the current state of knowledge should be completed.**	**3**	**A review of the CCR Dump historical reports was completed in 2021. Recommendation Closed.**
2020-02	**Non-Conformance. Construction Summary Reports.**	**HSRC (Cl. 10.5.1)**	**Construction Summary Reports should be completed on an annual basis to comply with the HSRC.**	**3**	**Complete. Recommendation Closed.**

Notes: Recommendation priority guidelines specified in the HSRC Guidance Document (BCMEM, 2016) and assigned by KCB. Refer Table 8.1 for description of priorities.

9.2 2021 AFPR Recommendations

There were no new recommendations arising from the 2021 AFPR.

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

Andy Small, P.Eng.
Senior Geotechnical Engineer

REFERENCES

AGRA Earth & Environmental (AGRA). 1998. “Phase 2 of Geotechnical Feasibility Study for Mixed Coal Refuse (MCR) Dumps”. Issued July 1998.

AMEC Foster Wheeler. (AMEC). 2004. “Proposed CCR/MCR Dump Expansion”. Issued January 2004.

AMEC Foster Wheeler. (AMEC). 2007. “Proposed CCR/MCR Dump Expansion”. Issued January 2007.

AMEC Foster Wheeler. (AMEC). 2017. “Coarse Coal Refuse / Mixed Coal Refuse Dump – 2017 Site Inspection”. Issued March 2018.

British Columbia Mine Waste Rock Pile Research Committee (BCMWRPRC). 1991. “Mined Rock and Overburden Piles – Investigation and Design Manual – Interim Guidelines”. May.

British Columbia Ministry of Energy and Mines. (MEM). 2016. “Guidance Document: Health, Safety and Reclamation Code for Mines in British Columbia”. Version 1.0. Updated July.

British Columbia Ministry of Energy, Mines and Low Carbon Innovation (EMLI). 2021. Health, Safety, and Reclamation Code (HSRC) for Mines in British Columbia (the Codes). Revised April 2021.

British Columbia Ministry of Forests, Land and Natural Resource Operations. (FLNRO). 2016. “British Columbia Dam Safety Regulation”. February 29.

Canadian Dam Association. (CDA). 2007. “Technical Bulletin: Geotechnical Considerations for Dam Safety”.

Canadian Dam Association. (CDA). 2013. “Dam Safety Guidelines 2007 (Revised 2013)”.

Canadian Dam Association. (CDA). 2016. “Technical Bulletin: Dam Safety Reviews”.

Canadian Dam Association. (CDA). 2019. “Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams”.

Hawley, M., & Cunning, J., (2017). “Guidelines for Mine Waste Dump and Stockpile Design”. Clayton, Victoria, CSIRO.

Government of British Columbia (Gov. BC). 2015. *Dam Safety Technical Resources*. Accessed January 31, 2022. https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/drought-flooding-dikes-dams/dam-safety/technical-resources

Klohn Crippen Berger Ltd. (KCB). 2021. “2020 Annual Summary of Facility Performance – Coarse Coal Refuse Dump”. Issued March 31, 2021.

Mining Association of Canada. (MAC). 2021. “Developing an Operation, Maintenance, and Surveillance Manual for Tailings and Water Management Facilities”. Version 2.1.

SNC-Lavalin. 2015. “Final Report – Geotechnical Design - Proposed Coal Refuse Disposal Expansion”. Issued July 30, 2015.

Teck Elkview Operations (Teck). 2019. “Guideline for Tailings and Water Retaining Structures”. Issued January, 2019.

Wood. 2020. “Coarse Coal Refuse / Mixed Coal Refuse Dump – 2018 Annual Tailings Facility Site Inspection”. Issued March 25, 2020.

APPENDIX I

Site Visit Photographs

Appendix I
Site Visit Photographs
(Taken on September 16, 2021 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

- ELKVIEW PHOTO LOCATIONS
- DITCH
- CREEK
- INTERNAL DRAIN

NOTES

1. DATUM, PROJECTION: NAD83, UTM ZONE 11 (WKID 26911)
2. IMAGERY FROM EVO (COLLECTED IN 2019).

NOT FOR CONSTRUCTION

SCALE 0 250 m

CLIENT: Teck

Klohn Crippen Berger

PROJECT: TECK ELKVIEW OPERATIONS
2021 ANNUAL FACILITY PERFORMANCE REPORT

TITLE: COARSE COAL REFUSE DUMP
PHOTOGRAPH LOCATIONS
PLAN LAYOUT

SCALE	PROJECT No.	FIG. No.
1:12,000	M09963A25	I-1

ANSI A

SAVE DATE: 2022-02-04 (17:08 PM)
FILE PATH: Z:\MV\CR\M09963A25-TCL-EVO 2021 AFPR AND ITRB\400 DRAWINGS\GIS\DSI\FIGI-1_DSI_CCR.MXD (DMASE)

Photo I-1 CCR Dump upper benches typical condition. (Looking South – Taken 16 September 2021)

Photo I-2 CCR Dump bench typical condition. (Looking North – Taken 16 September 2021)

Photo I-3 CCR Dump crest and loose CCR material for geochemical trial program. (Looking South – Taken 16 September 2021)

Photo I-4 CCR Dump crest typical conditions. (Looking SW – Taken 16 September 2021

Photo I-5 **CCR Dump diversion ditch and Lindsay Drain extension. (Looking west – Taken 16 September 2021)**

Photo I-6 **CCR Dump lower bench typical conditions. (Looking North – Taken 16 September 2021)**

Photo I-7 CCR Dump seepage at bench ditches. (Looking NE – Taken 16 September 2021)

Photo I-8 CCR Dump natural hillside wet spot. (Looking South – Taken 16 September 2021)

Photo I-9 CCR Dump bench erosion. (Looking West – Taken 16 September 2021)

Photo I-10 CCR Dump Lindsay Drain culvert outlet. (Looking West – Taken 16 September 2021)

Photo I-11 CCR Dump Lindsay Drain outlet. (Looking east – Taken 16 September 2021)

Photo I-12 CCR Dump Bench Erosion. (Looking SW – Taken 16 September 2021)

Photo I-13 CCR Dump benches typical condition. (Looking North – Taken 16 September 2021)

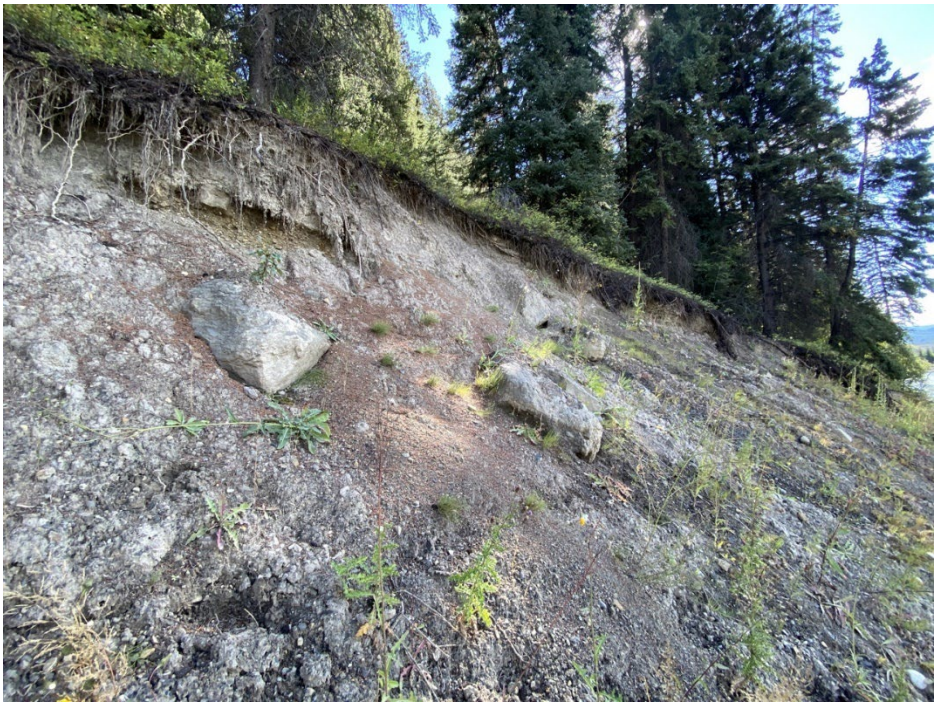
Photo I-14 Surficial cracks at the CCR dump. (Looking SW – Taken 16 September 2021)

Photo I-15 CCR Dump toe riprap adjacent to the Elk River (Looking North – Taken 16 September 2021)

Photo I-16 CCR Dump toe riprap adjacent to the Elk River (Looking South – Taken 16 September 2021)

Photo I-17 CCR Dump toe foundation conditions adjacent to the Elk River. River erosion has exposed bedrock at the base of the slope (not visible in photo). (Looking East – Taken 16 September 2021)

Photo I-18 CCR Dump toe foundation conditions adjacent to the Elk River. (Looking SE – Taken 16 September 2021)



APPENDIX II

Site Visit Checklist

Annual Facility Performance Report Site Visit Checklist

Klohn Crippen Berger

Site	Teck Elkview Operations		
Structure	Coarse Coal Refuse Dump		
Reviewed by	Dan Hughes-Games P.Eng / Michael Tin E.I.T	Crest El.	1,337.7 m
Accompanied by	Trevor Munn P.Geo	Spillway Invert El.	None.
Date of Observations	September 16, 2021	Reservoir Level	None.
Walk Over Review	Crest/Benches/Toe	Available Freeboard	None.
Weather Conditions	Sunny / Mostly Clear		

ID	Observed Features	Yes	No	N/A	Comments
1.0	***Crest***				
1.1	Evidence of Shoulder/Erosion		X		
1.2	Evidence of Cracking		X		
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 has orange staining.
2.9	Other Unsual 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

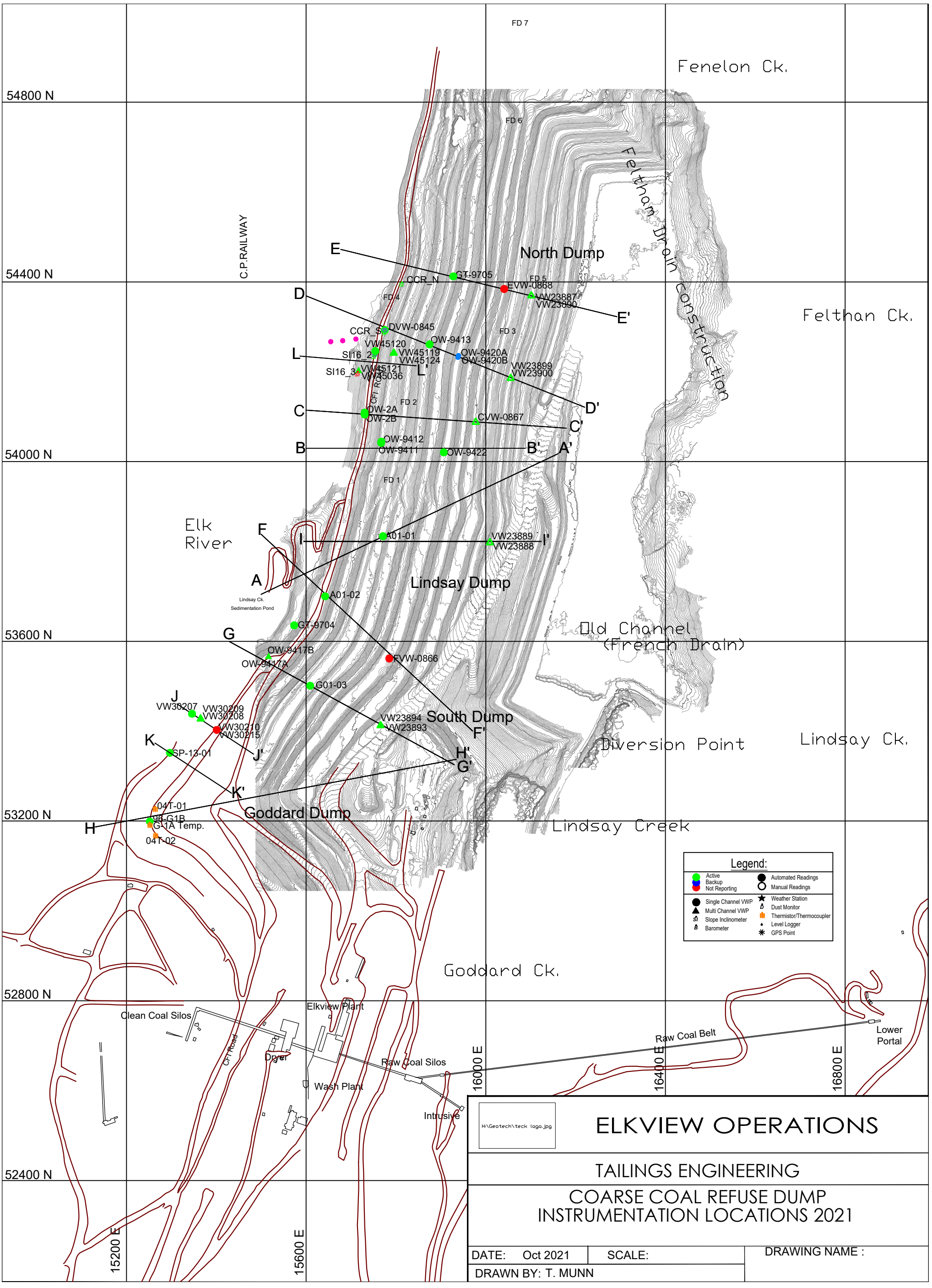
Klohn Crippen Berger

Site	Teck Elkview Operations		
Structure	Coarse Coal Refuse Dump		
Reviewed by	Dan Hughes-Games P.Eng / Michael Tin E.I.T	Crest El.	1,337.7 m
Accompanied by	Trevor Munn P.Geo	Spillway Invert El.	None.
Date of Observations	September 16, 2021	Reservoir Level	None.
Walk Over Review	Crest/Benches/Toe	Available Freeboard	None.
Weather Conditions	Sunny / Mostly Clear		

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
FD 4
D
D'
DVW-0845
CCR_S
OW-9413
FD 3
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
J'
VW23894
VW23893
South Dump
F'
K
SP-13-01
K'
H'
G'
Diversion Point
Lindsay Ck.
04T-01
06-G1B
G-1A Temp.
04T-02
53200 N
H
Goddard Dump
Lindsay Creek
Goddard Ck.
52800 N
Clean Coal Silos
Elkview Plant
CPT 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 2021
DATE: Oct 2021
SCALE:
DRAWING NAME :
DRAWN BY: T. MUNN

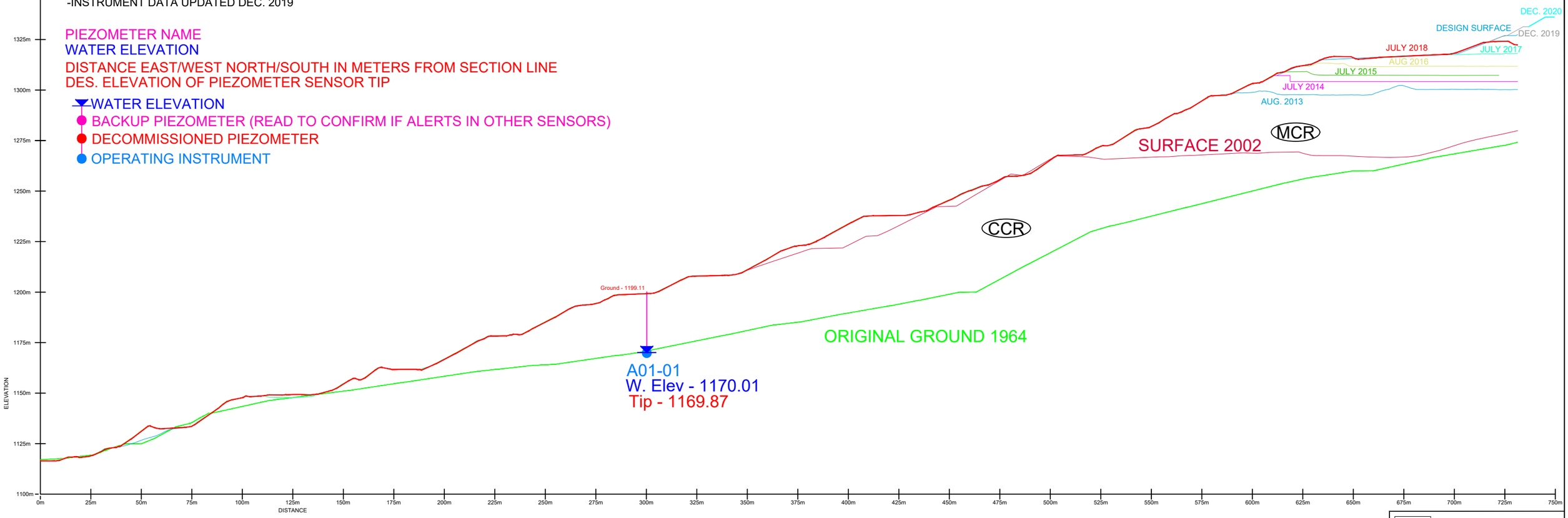
CCR CROSS-SECTION A-A'

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

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



Teck Elkview Operations

Geotechnical Engineering

CCR CROSS-SECTION A-A'
2020

DATE: Dec. 2020	SCALE:	DWG. NO.:
DWN BY: A. Yeomans	REV BY: M. Barton	

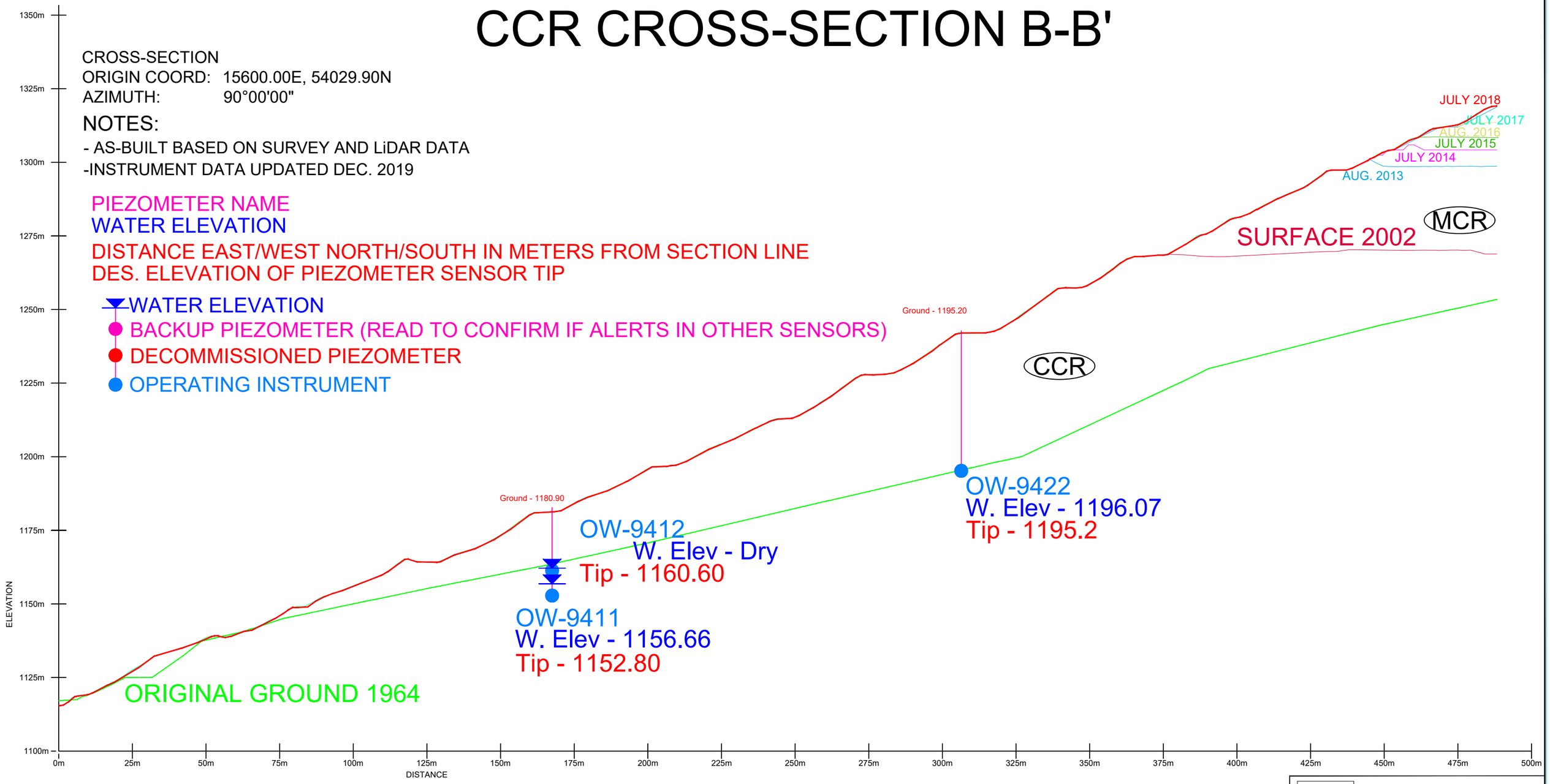
CCR CROSS-SECTION B-B'

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

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



Teck Elkview Operations

Geotechnical Engineering

CCR CROSS-SECTION B-B'
2020

DATE: Dec. 2020	SCALE:	DWG. NO. :
DWN BY: A. Yeomans	REV BY: M. Barton	

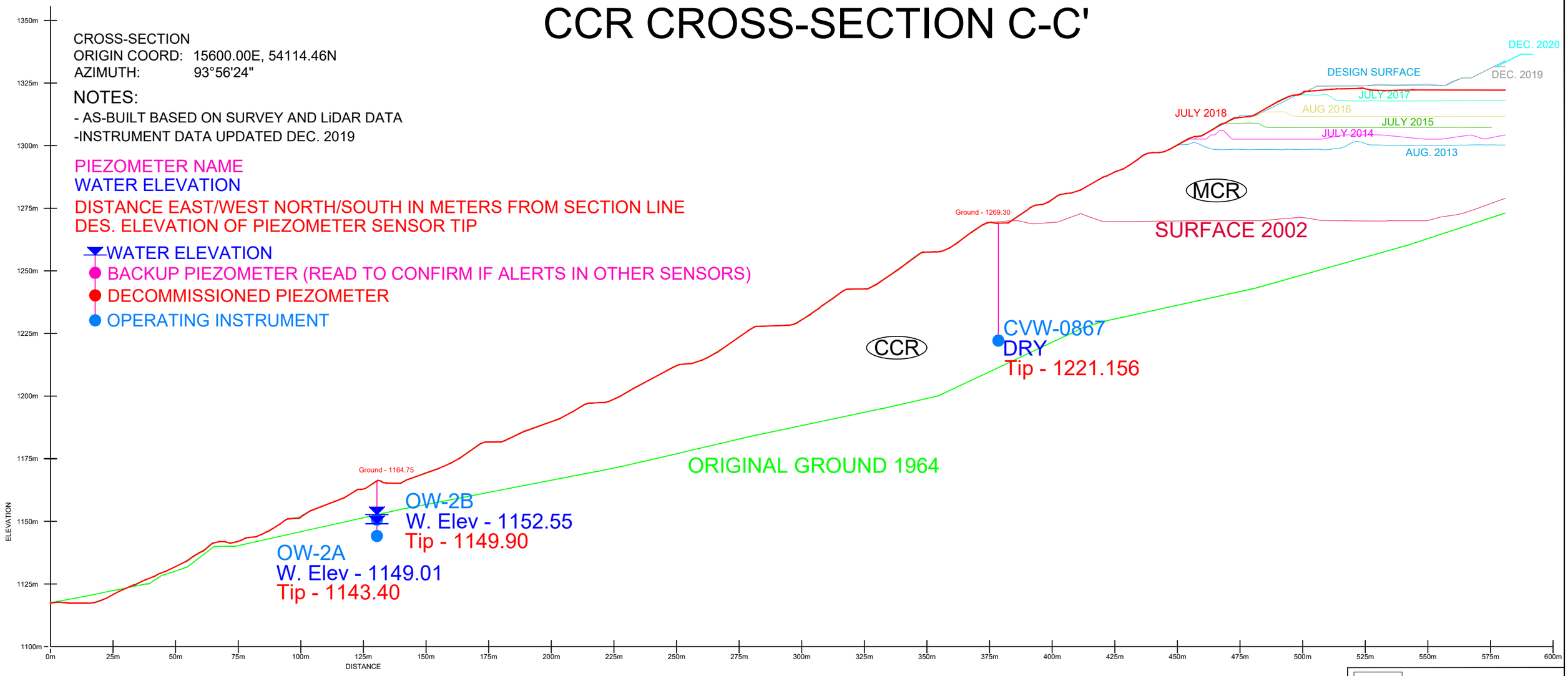
CCR CROSS-SECTION C-C'

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

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



Teck Elkview Operations

Geotechnical Engineering

CCR CROSS-SECTION C-C'
2020

DATE: Dec. 2020	SCALE:	DWG. NO.:
DWN BY: A. Yeomans	REV BY: M. Barton	

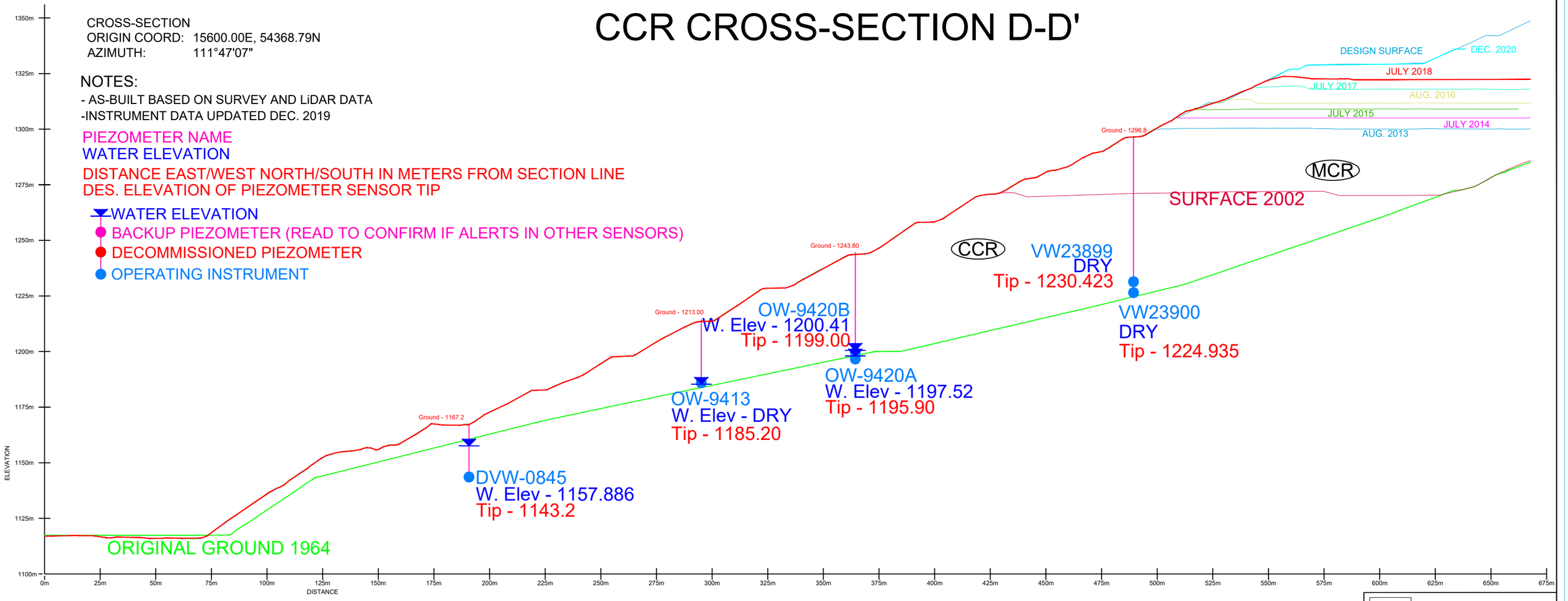
CCR CROSS-SECTION D-D'

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

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



Teck Elkview Operations

Geotechnical Engineering

CCR CROSS-SECTION D-D'
2020

DATE: Dec. 2020	SCALE:	DWG. NO. :
DWN BY:A. Yeomans	REV BY: M. Barton	

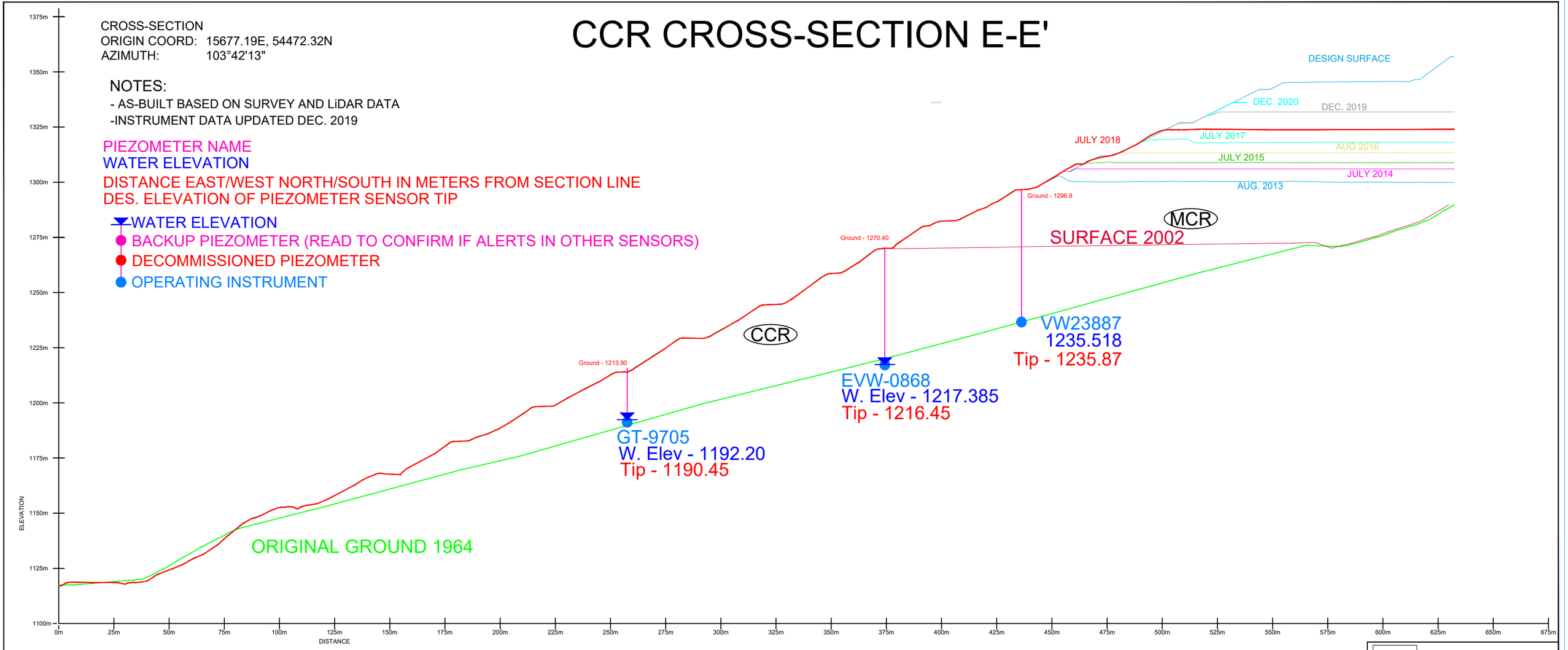
CCR CROSS-SECTION E-E'

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

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



Teck Elkview Operations

Geotechnical Engineering

CCR CROSS-SECTION E-E'
2020

DATE: Dec. 2020	SCALE:	DWG. NO. :
DWN BY: A.Yeomans	REV BY: M. Barton	

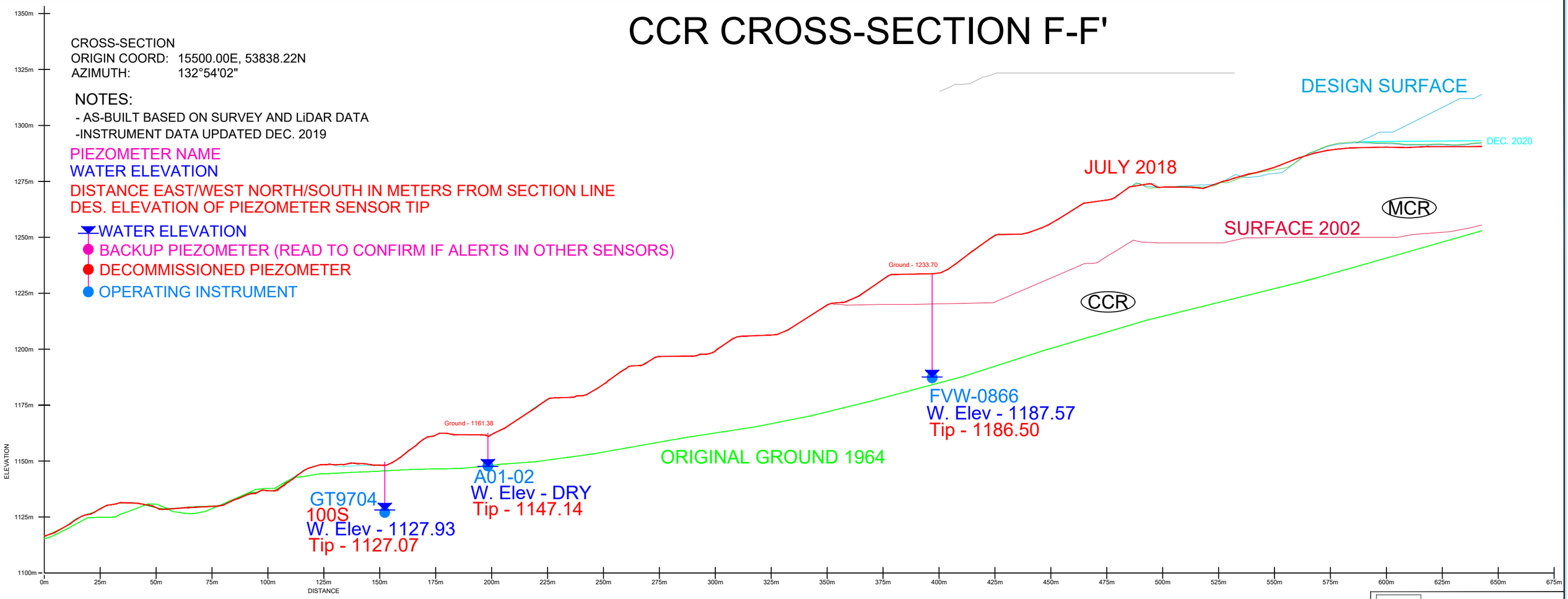
CCR CROSS-SECTION F-F'

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

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



Teck Elkview Operations

Geotechnical Engineering
CCR CROSS-SECTION F-F'
2020

DATE: Dec. 2020	SCALE:	DWG. NO. :
DWN BY: A. Yeomans	REV BY: M. Barton	

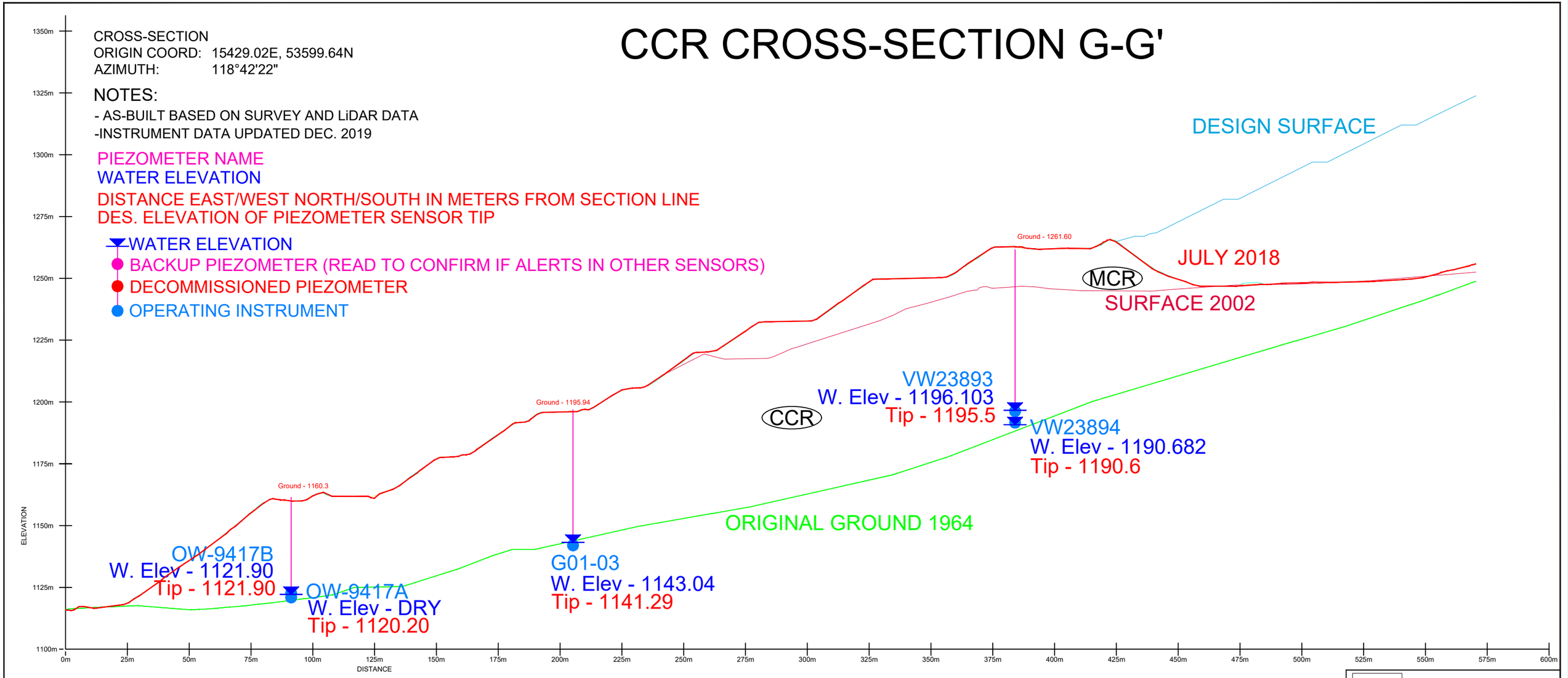
CCR CROSS-SECTION G-G'

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

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



Teck Elkview Operations

Geotechnical Engineering

CCR CROSS-SECTION G-G'
2020

DATE: Dec. 2020	SCALE:	DWG. NO. :
DWN BY: A. Yeomans	REV BY: M. Barton	

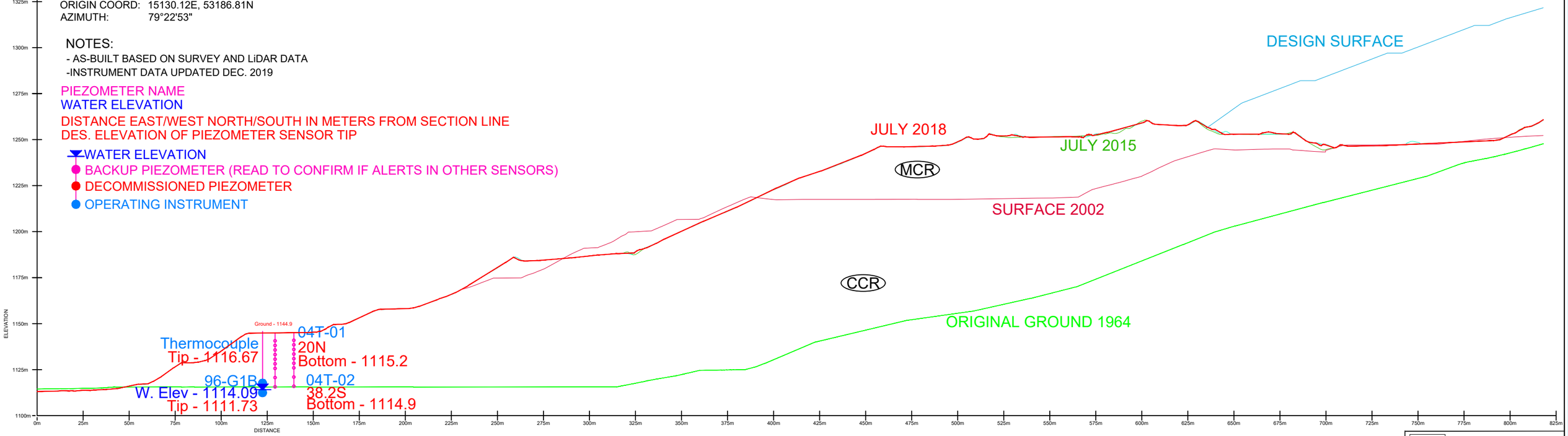
CCR CROSS-SECTION H-H'

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



Teck Elkview Operations

Geotechnical Engineering

CCR CROSS-SECTION H-H'
2019

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

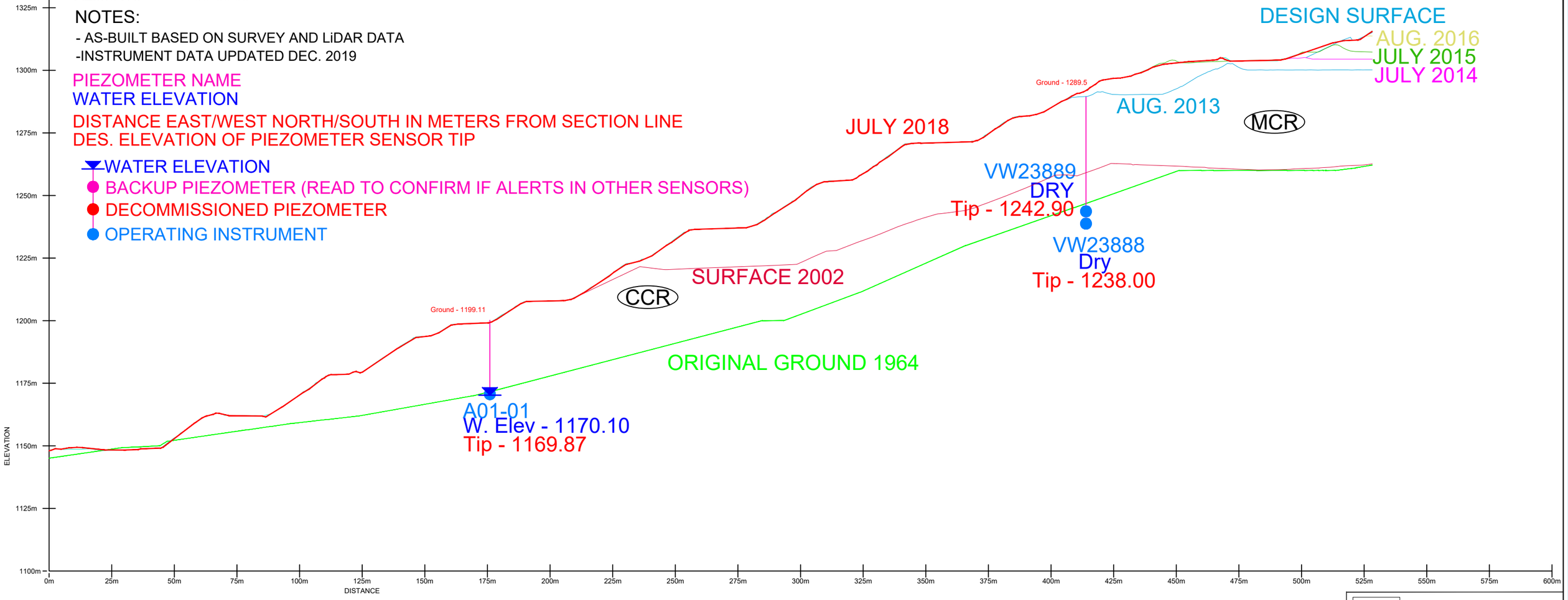
CCR CROSS-SECTION I-I'

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

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



Teck Elkview Operations

Geotechnical Engineering

CCR CROSS-SECTION I-I
2020

DATE: Dec. 2020	SCALE:	DWG. NO. :
DWN BY: A. Yeomans	REV BY: M. Barton	

CCR CROSS-SECTION J-J'

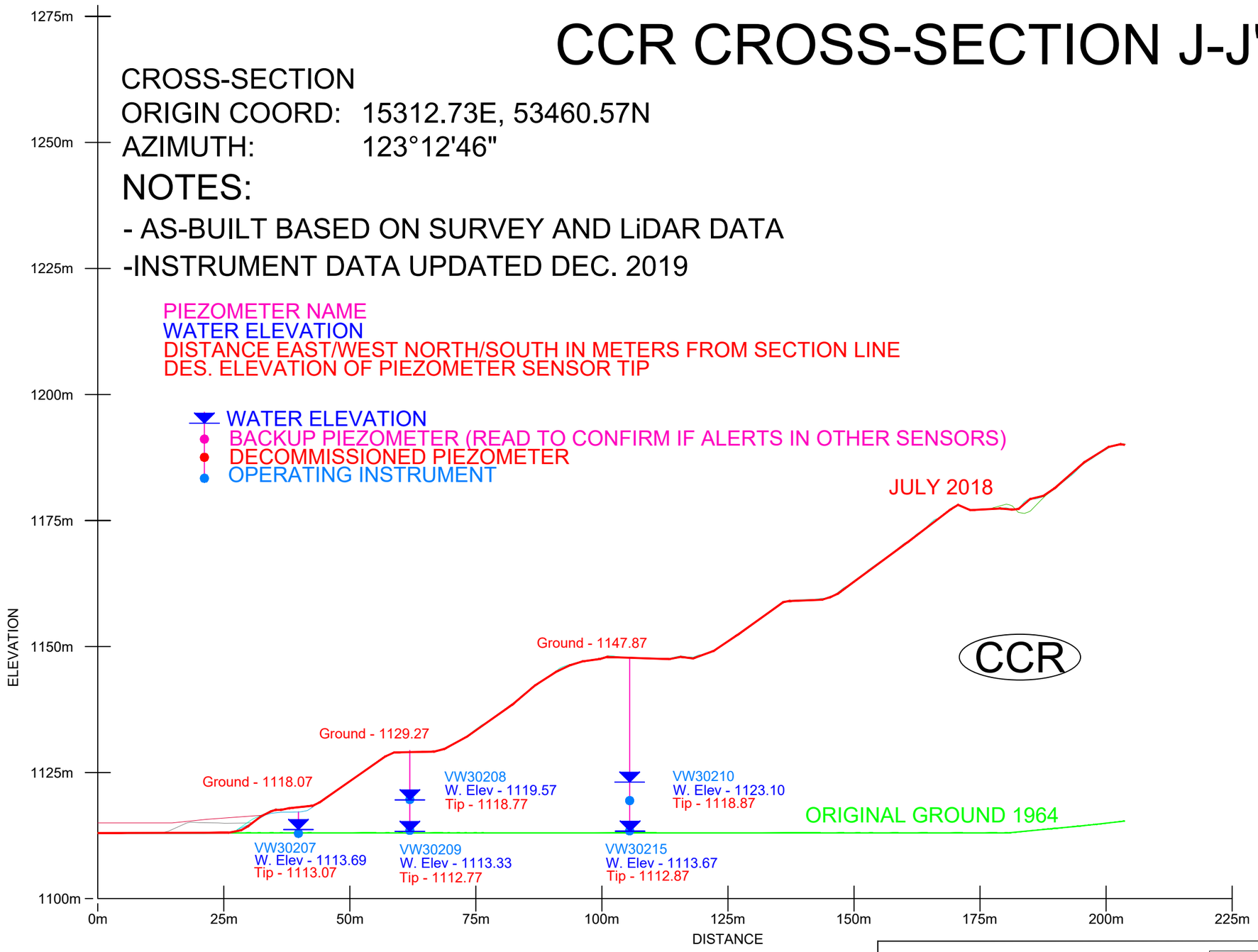
CROSS-SECTION
ORIGIN COORD: 15312.73E, 53460.57N
AZIMUTH: 123°12'46"

NOTES:

- AS-BUILT BASED ON SURVEY AND LiDAR DATA
-INSTRUMENT DATA UPDATED 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 Opera Teck

Geotechnical Engineering

CCR CROSS-SECTION J-J
2019

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

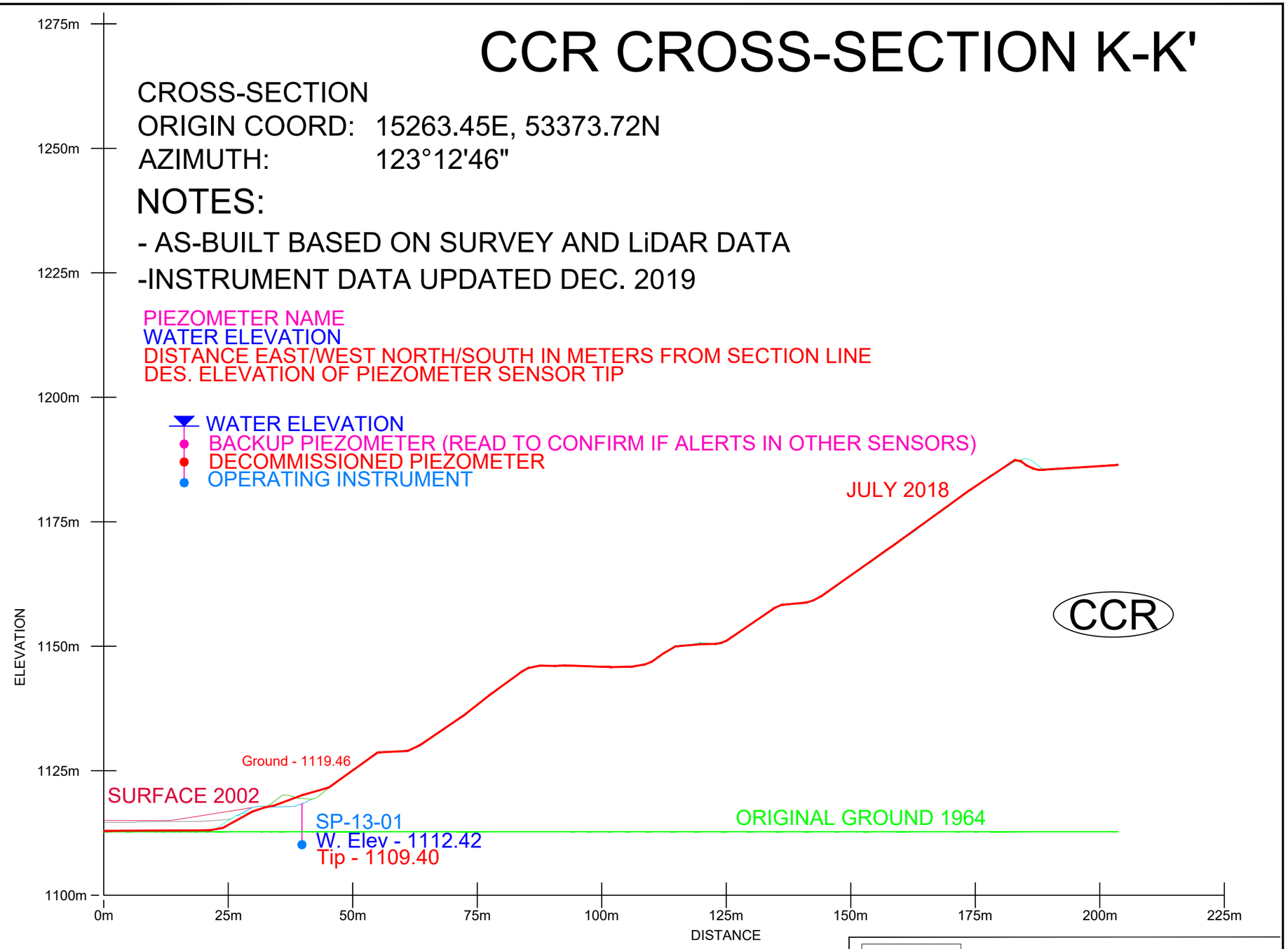
CCR CROSS-SECTION K-K'

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

NOTES:

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

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



Teck Elkview Operations

Geotechnical Engineering

CCR CROSS-SECTION K-K
2019

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

CCR CROSS-SECTION L-L'

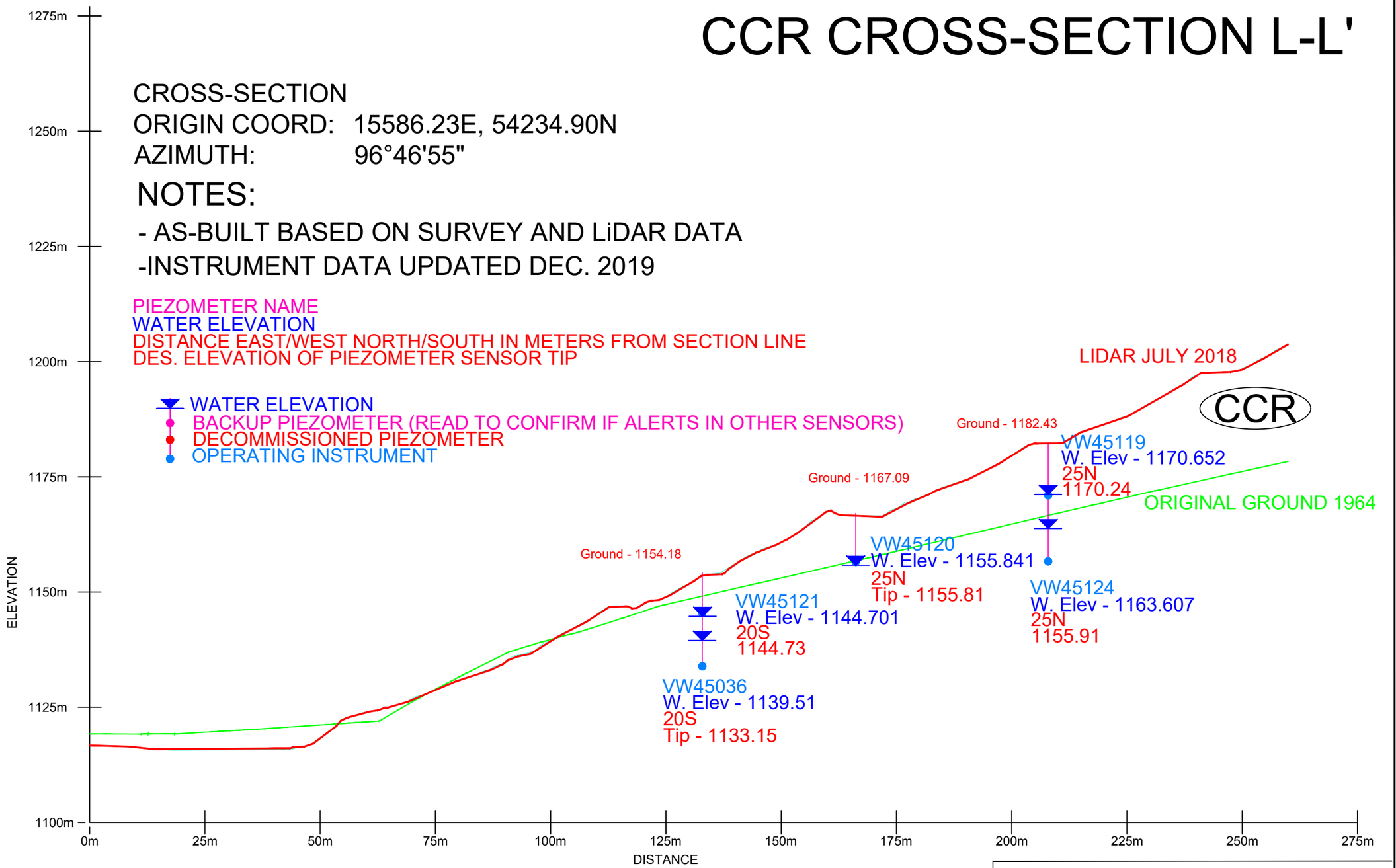
CROSS-SECTION
ORIGIN COORD: 15586.23E, 54234.90N
AZIMUTH: 96°46'55"

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



Teck Elkview Operations

Geotechnical Engineering

CCR CROSS-SECTION L-L
2020

DATE: Dec. 2020	SCALE:	DWG. NO. :
DWN BY: A. Yeomans	REV BY: M. Barton	

APPENDIX IV

Monitoring Instrument Data and Plots (provided by EVO)

Piezometer Plots
Inclinometer Plots

Appendix IV
2021 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 2021 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)	2021 Observations
VWP 23887	E-E	CCR	1235.90	1231.40	1235.84	N/A	N/A	No change from 2020.
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 2021. Value from 2020 shown.
Standpipe GT-9705 (VWP 67165)	E-E	CCR	1190.45	1188.00	1192.20	1193.00	1198.00	Potential instrument malfunction or calibration required. 2020 reading shown.
VWP 23899	D-D	CCR	1230.70	1225.80	N/A	N/A	N/A	Not read in 2021.
VWP 23900	D-D	CCR	1224.94	1225.80	N/A	N/A	N/A	Not read in 2021.
Standpipe OW-9420A	D-D	Glacial Till	1195.90	1198.00	1197.52	1203.00	1208.00	Instrument not read in 2021. Value from 2020 shown.
Standpipe OW-9420B	D-D	CCR	1199.00	1198.00	1200.44	1203.00	1208.00	Instrument not read in 2021. Value from 2020 shown.
Standpipe OW-9413 (VWP 67211)	D-D	CCR	1185.20	1185.00	1185.39	1190.00	1195.00	Steady trend. 0.05 m increase from 2020.
VWP DVW-0845	D-D	Glacial Till	1143.20	1161.7	1157.72	N/A	N/A	Instrument not read in 2021. Value from 2020 shown.

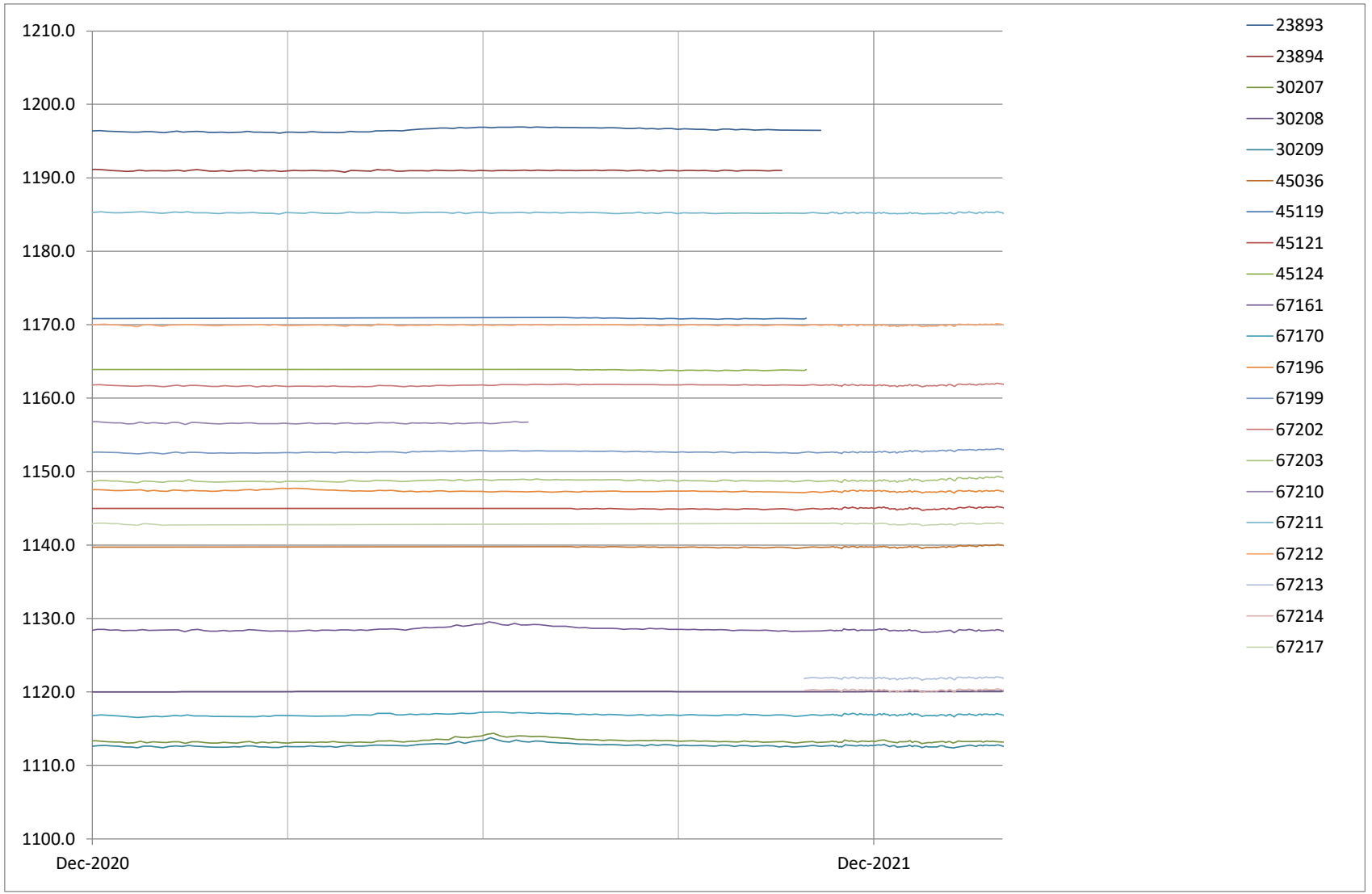
Piezometer ID	Stability Section	Zone of Installation	VWP Tip or Screen Center Elevation (El.m)	Till Contact Elevation (El.m)	Maximum Measured Water Table Elevation[(1)] (El.m)	Yellow TARP Trigger Level Elevation (El.m)	Red TARP Trigger Level Elevation (El.m)	2021 Observations
VWP 45119	L-L	CCR	1170.24	~1165	1170.96	N/A	N/A	Steady trend. 0.31 m increase from 2020.
VWP 45124	L-L	Glacial Till	1155.91	~1165	1163.82	N/A	N/A	Steady trend. 0.19 m increase from 2020.
VWP 45120	L-L	CCR	1155.88	~1155	1165.03	N/A	N/A	Single reading in 2020. 0.10 m increase from 2020.
VWP 45121	L-L	Glacial Till	1144.73	~1150	1145.16	N/A	N/A	Single reading in 2020. 0.16 m increase from 2020.
VWP 45036	L-L	Glacial Till	1133.15	~1150	1139.81	N/A	N/A	Single reading in 2020. 0.17 m increase from 2020.
VWP CVW-0867	C-C	CCR	1221.40	1219.40	N/A	N/A	N/A	Not read in 2021
Standpipe OW2A (VWP 67203)	C-C	Glacial Till	1143.40	1158.00	1149.00	1163.00	1168.00	Steady trend. 0.07 m decrease from 2020.
Standpipe OW2B (VWP 67199)	C-C	Glacial Till	1149.90	1158.00	1152.87	1163.00	1168.00	Steady trend. 0.17 m increase from 2020.
Standpipe OW-9422	B-B	CCR	1195.20	1195.00	1196.07	1200.00	1205.00	Instrument not read in 2021. Value from 2020 shown.
Standpipe OW-9411 (VWP 67210)	B-B	CCR	1152.80	1160.00	1157.09	1165.00	1170.00	Steady trend. 0.31 m increase from 2020.
Standpipe OW-9412 (VWP 67202)	B-B	CCR	1160.60	1160.00	1161.89	1165.00	1170.00	Steady trend. 0.13 m decrease from 2020.

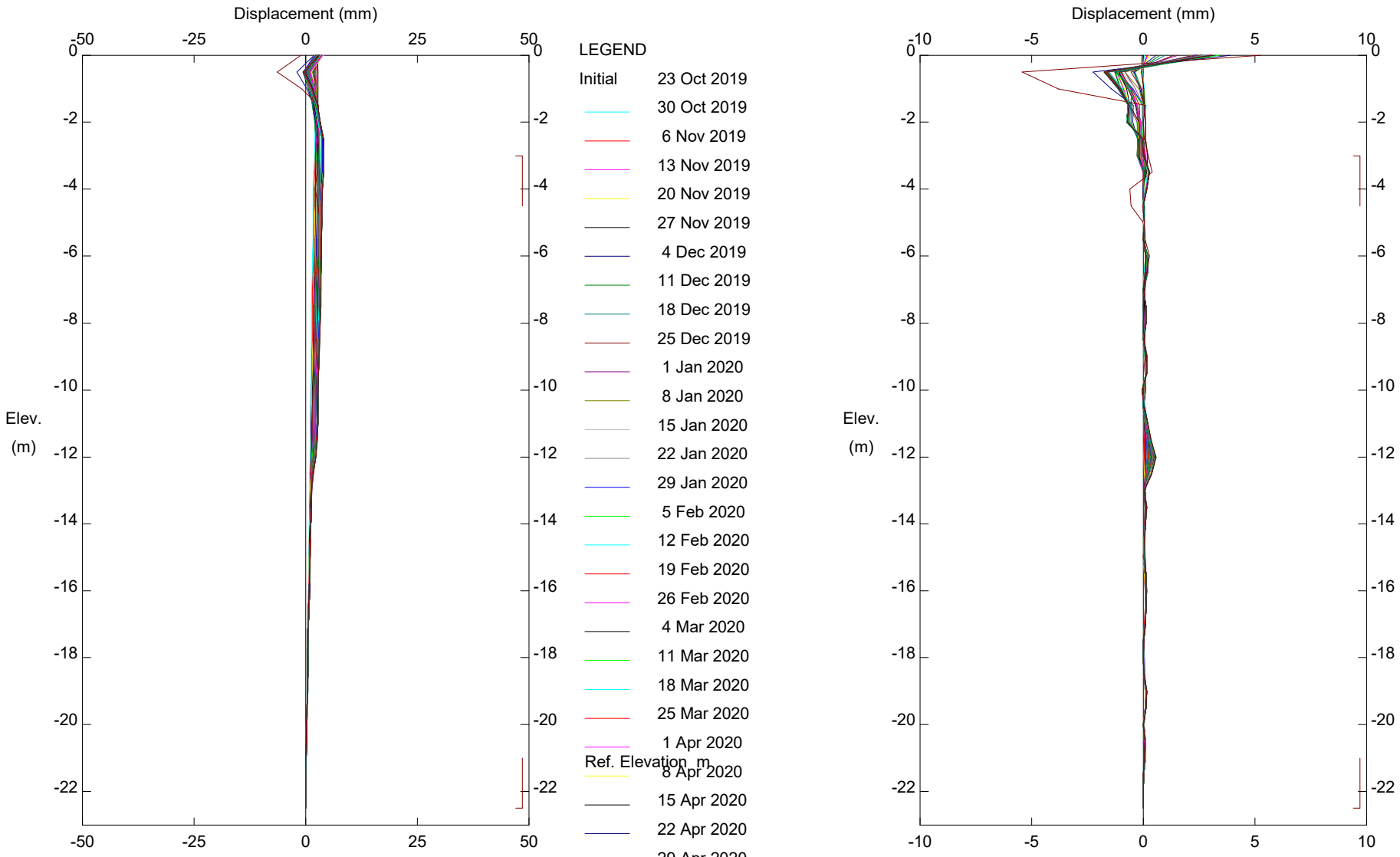
Piezometer ID	Stability Section	Zone of Installation	VWP Tip or Screen Center Elevation (El.m)	Till Contact Elevation (El.m)	Maximum Measured Water Table Elevation[(1)] (El.m)	Yellow TARP Trigger Level Elevation (El.m)	Red TARP Trigger Level Elevation (El.m)	2021 Observations
Standpipe A01-01 (VWP 67212)	A-A, I-I	Glacial Till	1169.87	1170.00	1170.06	1175.00	1180.00	Steady trend. 0.05 m increase from 2020.
VWP 23888	I-I	Glacial Till	1238.00	~1246	N/A	N/A	N/A	Not read in 2020.
VWP 23889	I-I	Glacial Till	1242.90	~1246	Dry	N/A	N/A	Steady trend.
VWP FVW-0866	F-F	CCR	1186.50	1184.50	N/A	N/A	N/A	Instrument not read in 2021.
Standpipe A01-02	F-F	Glacial Till	1147.14	1147.50	1147.65	1152.50	1157.14	Instrument not read in 2021. Value from 2020 shown.
Standpipe GT-9704 (VWP 67163)	Lindsay	CCR	1127.07	1127.00	1127.93	1132.00	1137.00	Potential instrument malfunction or calibration required. 2020 reading shown.
VWP 23893	G-G	CCR	1195.5	1190.60	1196.93	N/A	N/A	Steady trend. 0.84 m increase from 2020.
VWP 23894	G-G	CCR	1190.60	1190.60	1191.14	N/A	N/A	Steady trend. 0.46 m increase from 2020.
Standpipe G01-03 (VWP 67217)	G-G	Glacial Till	1141.29	1141.50	1143.06	1146.50	1151.50	Steady trend. 0.26 m decrease from 2020.
Standpipe 94-17A (VWP 67214)	G-G	CCR	1120.2	1121.00	Dry	1126.00	1131.00	Steady trend.
Standpipe 94-17B (VWP 67213)	G-G	Glacial Till	1121.9	1121.00	Dry	1126.00	1131.00	Steady trend.
VWP 30210 (VW-13-01A)	J-J	CCR	1118.87	~1113	1122.58	N/A	N/A	Instrument not read in 2021. Value from 2020 shown.

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)	2021 Observations
VWP 30215 (VW-13-01B)	J-J	Glacial Till	1112.87	~1113	1114.06	N/A	N/A	Instrument not read in 2021. Value from 2020 shown.
VWP 30208 (VW-13-02A)	J-J	CCR	1118.77	~1113	1120.09	N/A	N/A	0.36 m increase from 2020.
VWP 30209 (VW-13-02B)	J-J	Glacial Till	1112.77	~1113	1113.76	N/A	N/A	0.93 m increase from 2020. Readings fluctuate with Elk River level.
VWP 30207 (VW-13-03)	J-J	CCR	1113.07	~1113	1114.37	N/A	N/A	0.95 m increase from 2020. Readings fluctuate with Elk River level.
Standpipe SP-13-01	K-K	Glacial Till	1110.46	N/A	1114.98	N/A	N/A	Instrument not read in 2021. Value from 2020 shown.
Standpipe 96-G1B	H-H	Glacial Till	1111.80	1114.30	1114.10	1119.30	1124.30	Instrument not read in 2021. Value from 2020 shown.

Note: 1. Max measured water table elevation refers to the maximum recorded level for the 2020/2021 period since the previous annual facility performance reporting period (up to October 2020). This level may vary from the drawing cross-sections which shows the last recorded measurement for each instrument.

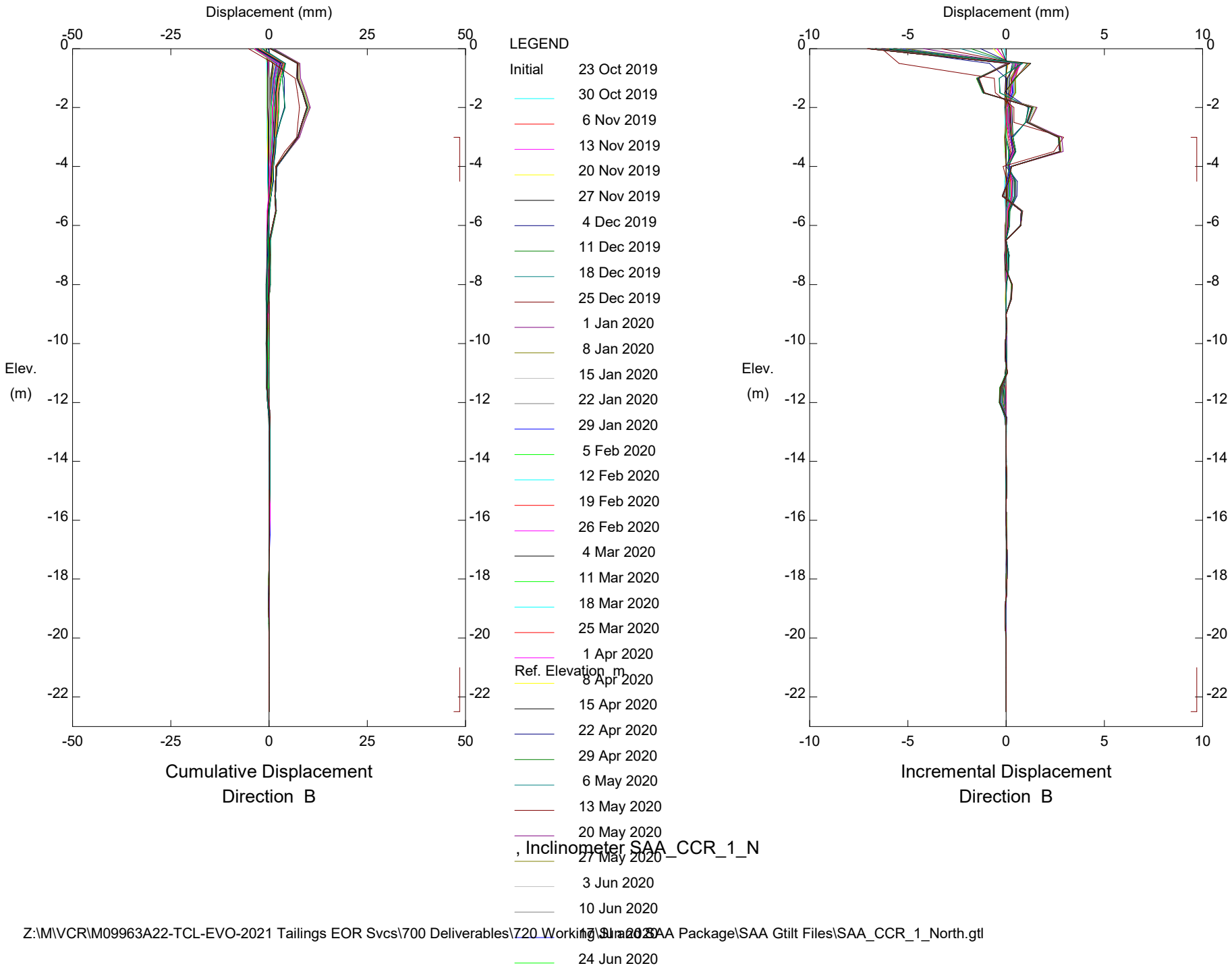
PROJECT: TECK (EVO)	CCR Dump Piezometer Plots	COMMENTS:
LOCATION: CCR Dumps		

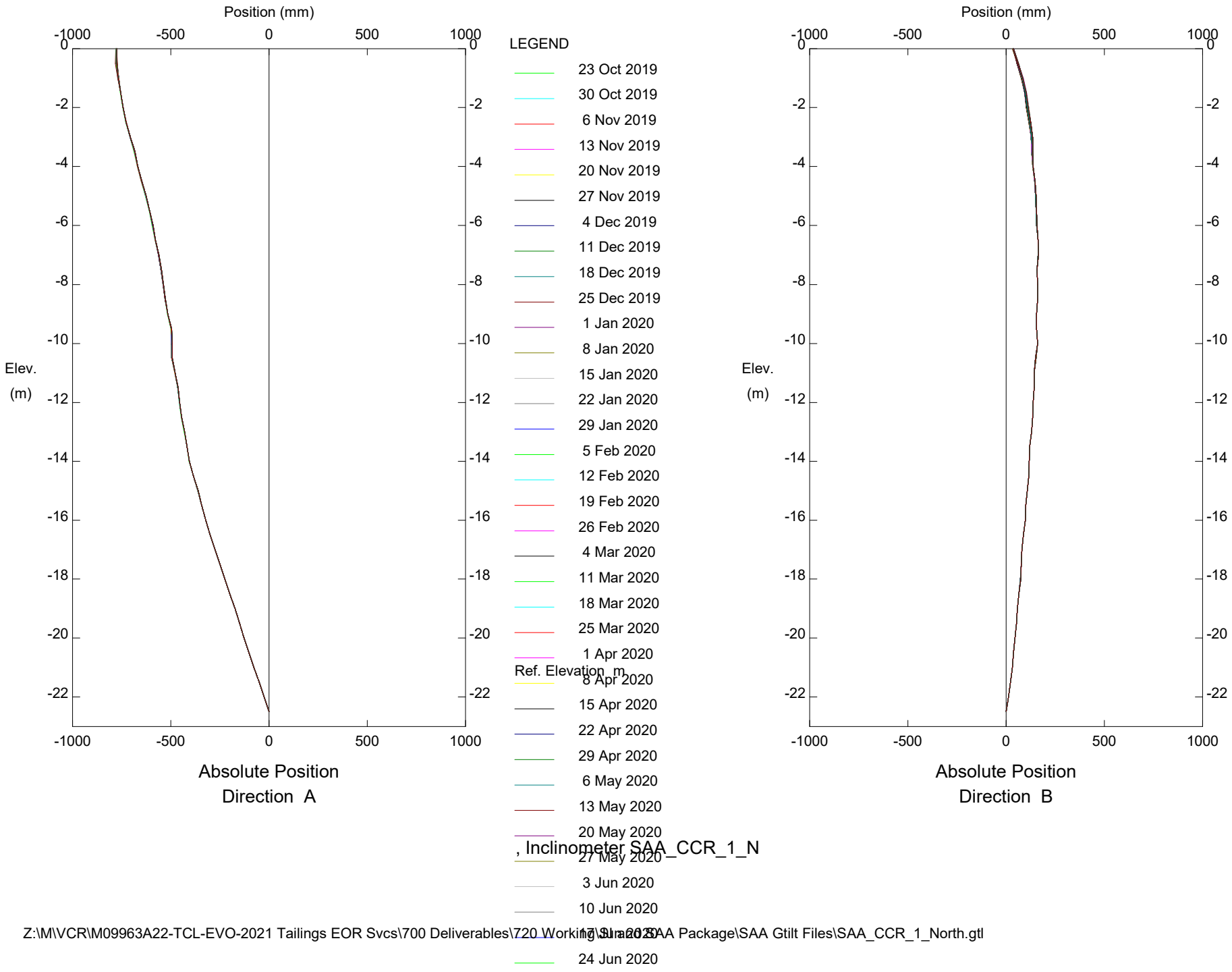


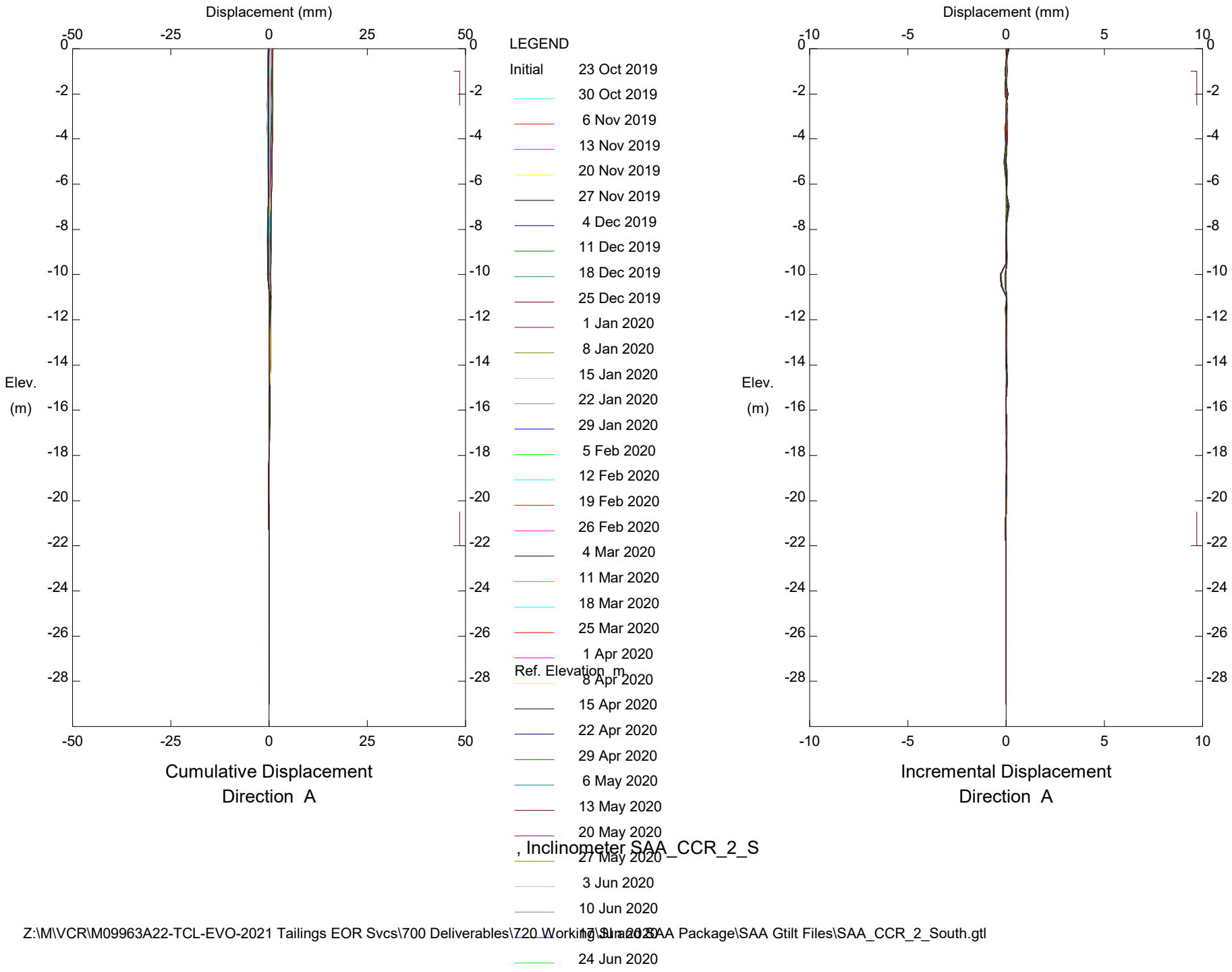


, Inclinometer SAA_CCR_1_N

Z:\M\VCR\M09963A22-TCL-EVO-2021 Tailings EOR Svcs\700 Deliverables\720 Working\Jun 2020 SAA Package\SAA Gtilt Files\SAA_CCR_1_North.gtl

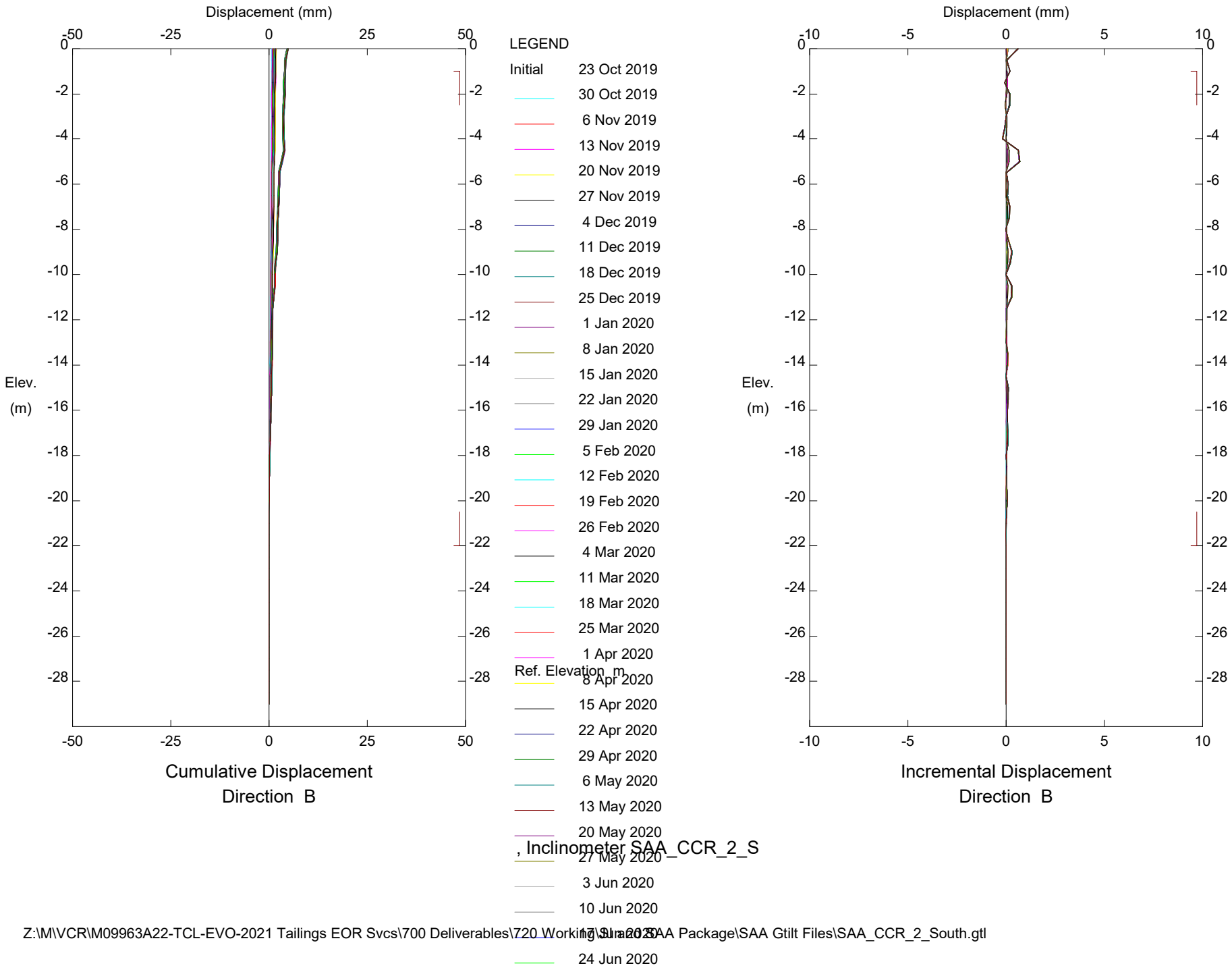

Displacement (mm)
-50
-25
0
25
50
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
Elev.
(m)
LEGEND
Initial
23 Oct 2019
30 Oct 2019
6 Nov 2019
13 Nov 2019
20 Nov 2019
27 Nov 2019
4 Dec 2019
11 Dec 2019
18 Dec 2019
25 Dec 2019
1 Jan 2020
8 Jan 2020
15 Jan 2020
22 Jan 2020
29 Jan 2020
5 Feb 2020
12 Feb 2020
19 Feb 2020
26 Feb 2020
4 Mar 2020
11 Mar 2020
18 Mar 2020
25 Mar 2020
1 Apr 2020
8 Apr 2020
15 Apr 2020
22 Apr 2020
29 Apr 2020
6 May 2020
13 May 2020
20 May 2020
27 May 2020
3 Jun 2020
10 Jun 2020
17 Jun 2020
24 Jun 2020
Ref. Elevation, m
Cumulative Displacement
Direction B
Displacement (mm)
-10
-5
0
5
10
Elev.
(m)
Incremental Displacement
Direction B
, Inclinometer SAA_CCR_1_N
Z:\M\VCR\M09963A22-TCL-EVO-2021 Tailings EOR Svcs\700 Deliverables\720 Working\Jun 2020 SAA Package\SAA Gtilt Files\SAA_CCR_1_North.gtl


Position (mm)
-1000
-500
0
500
1000
Elev.
(m)
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
LEGEND
23 Oct 2019
30 Oct 2019
6 Nov 2019
13 Nov 2019
20 Nov 2019
27 Nov 2019
4 Dec 2019
11 Dec 2019
18 Dec 2019
25 Dec 2019
1 Jan 2020
8 Jan 2020
15 Jan 2020
22 Jan 2020
29 Jan 2020
5 Feb 2020
12 Feb 2020
19 Feb 2020
26 Feb 2020
4 Mar 2020
11 Mar 2020
18 Mar 2020
25 Mar 2020
1 Apr 2020
8 Apr 2020
15 Apr 2020
22 Apr 2020
29 Apr 2020
6 May 2020
13 May 2020
20 May 2020
27 May 2020
3 Jun 2020
10 Jun 2020
17 Jun 2020
24 Jun 2020
Ref. Elevation, m
Absolute Position
Direction A
Absolute Position
Direction B
, Inclinometer SAA_CCR_1_N
Z:\M\VCR\M09963A22-TCL-EVO-2021 Tailings EOR Svcs\700 Deliverables\720 Working\Jun 2020 SAA Package\SAA Gtilt Files\SAA_CCR_1_North.gtl



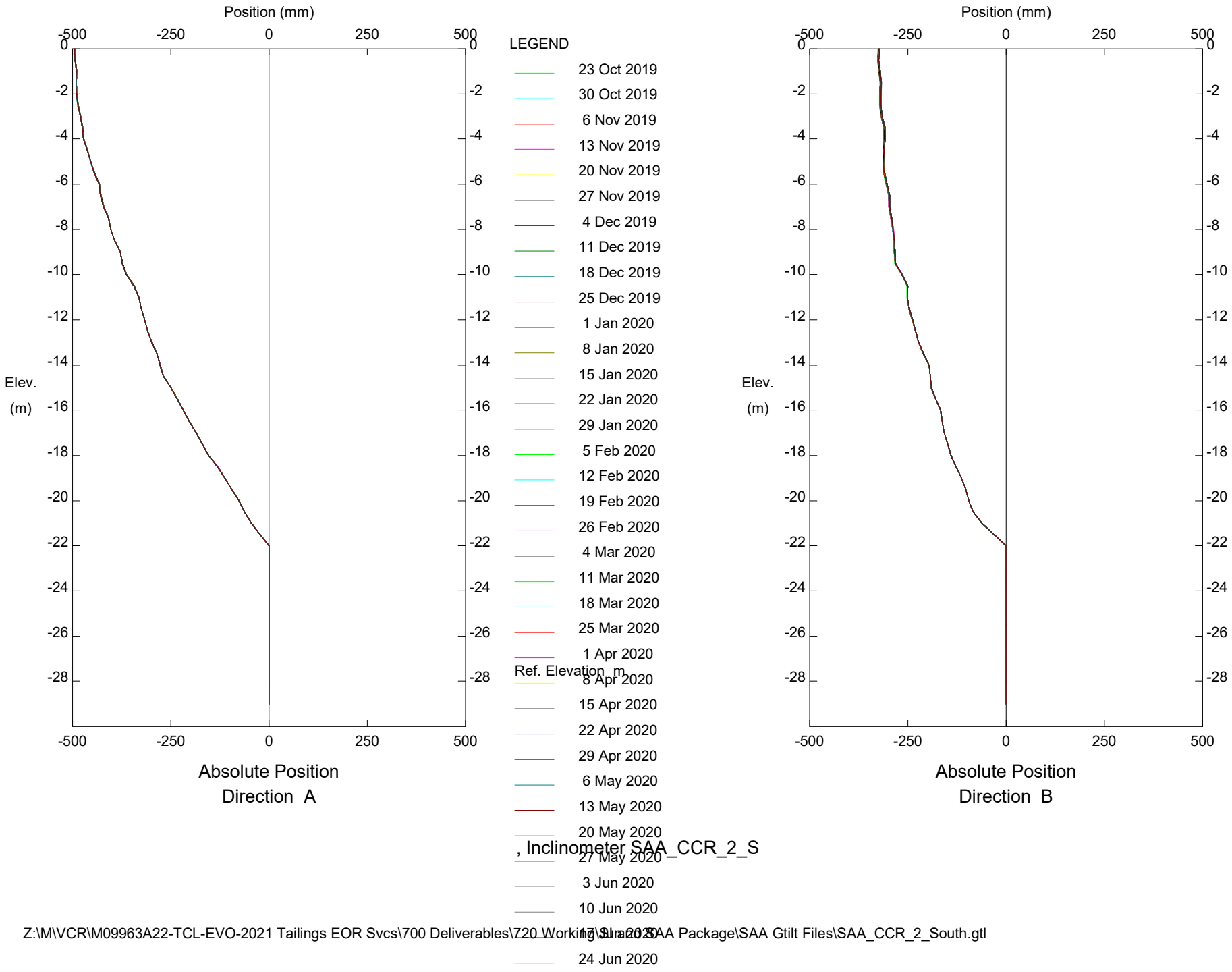
, Inclinometer SAA_CCR_2_S

Z:\M\VCR\M09963A22-TCL-EVO-2021 Tailings EOR Svcs\700 Deliverables\720 Working\Jun 2020 SAA Package\SAA Gtilt Files\SAA_CCR_2_South.gtl



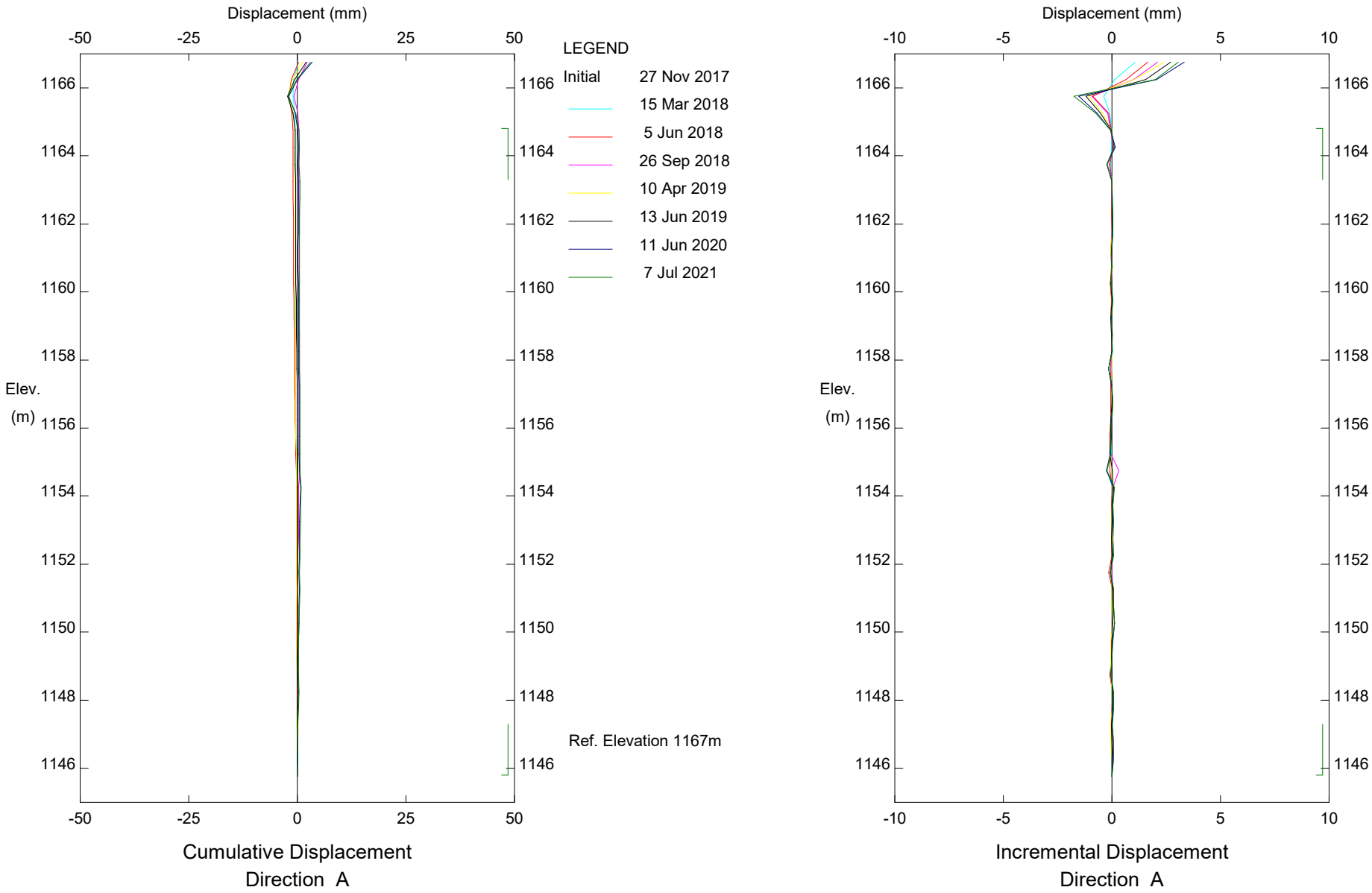
, Inclinometer SAA_CCR_2_S

Z:\M\VCR\M09963A22-TCL-EVO-2021 Tailings EOR Svcs\700 Deliverables\720 Working\Jun 2020 SAA Package\SAA Gtilt Files\SAA_CCR_2_South.gtl



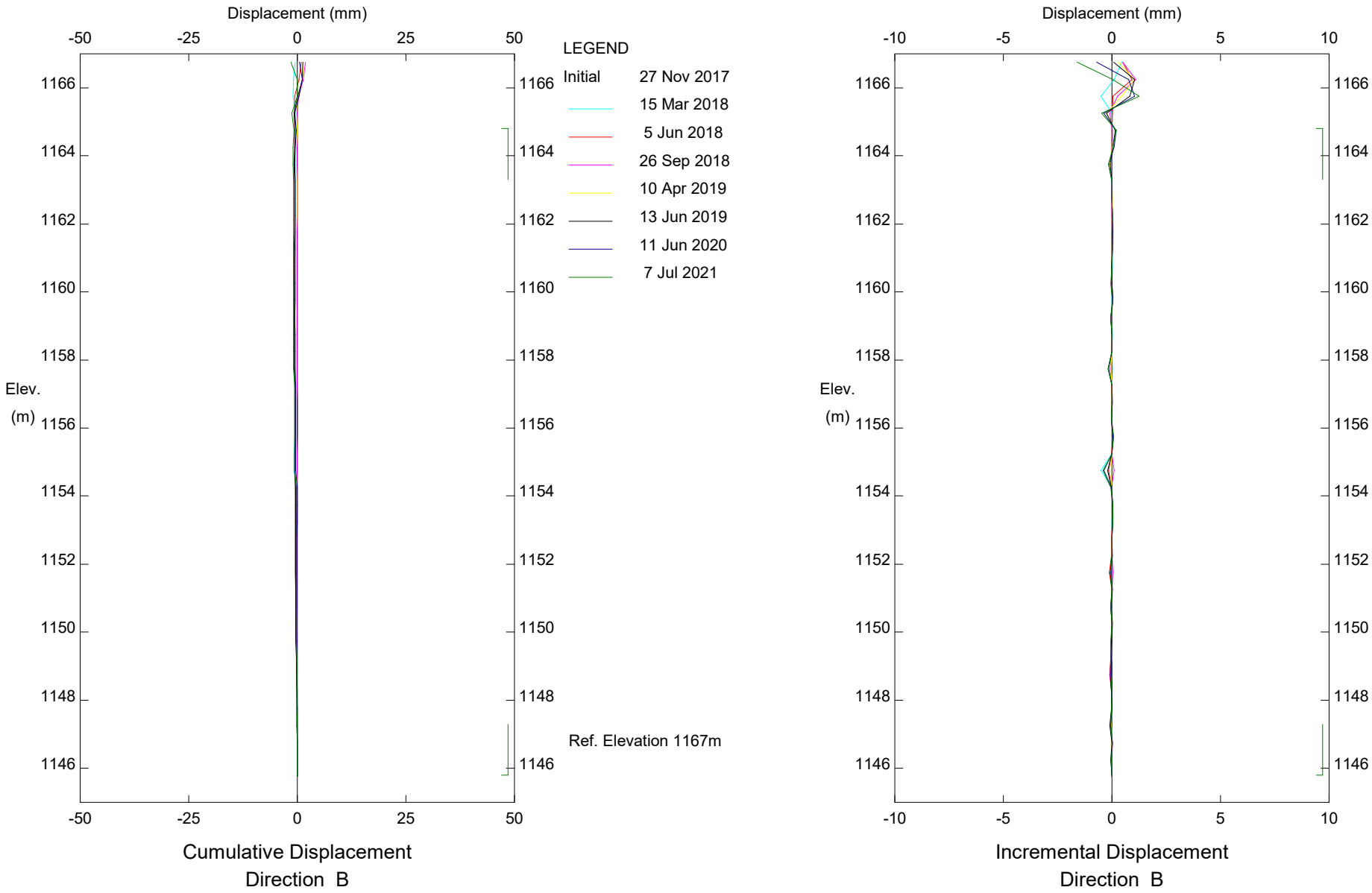
, Inclinometer SAA_CCR_2_S

Z:\M\VCR\M09963A22-TCL-EVO-2021 Tailings EOR Svcs\700 Deliverables\720 Working Drawings\SAA Package\SAA Gtilt Files\SAA_CCR_2_South.gtl



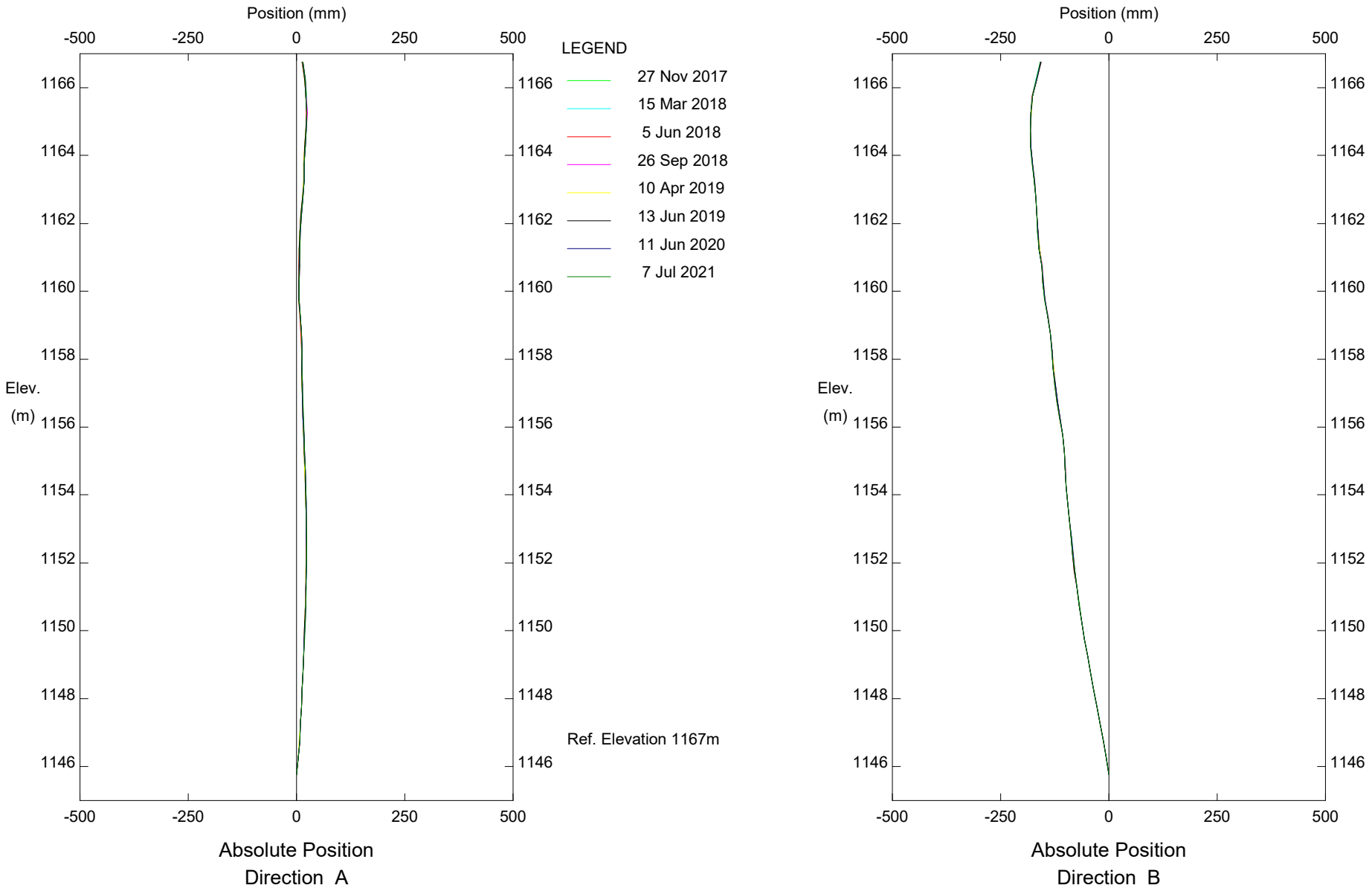
COARSE COAL REJECTS, Inclinometer CCR SI16-2

Z:\M\VCR\M09963A22-TCL-EVO-2021 Tailings EOR Svcs\700 Deliverables\720 Working\SI and SAA Package\SI Gtilt Files\CCR SI16-2.gtl



COARSE COAL REJECTS, Inclinometer CCR SI16-2

Z:\M\VCR\M09963A22-TCL-EVO-2021 Tailings EOR Svcs\700 Deliverables\720 Working\SI and SAA Package\SI Gtilt Files\CCR SI16-2.gtl



COARSE COAL REJECTS, Inclinometer CCR SI16-2

Z:\M\VCR\M09963A22-TCL-EVO-2021 Tailings EOR Svcs\700 Deliverables\720 Working\SI and SAA Package\SI Gtilt Files\CCR SI16-2.gtl