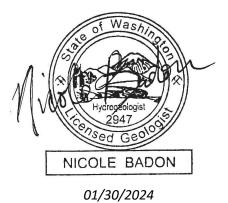
2023 Annual Groundwater Monitoring Report for the Limited Purpose Landfill at the TransAlta Centralia Mine, near Centralia, Washington

Prepared for TransAlta Centralia Mining LLC

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Acronyms and Abbreviations

°C	degrees Celsius
CCR	coal combustion residuals
CCR SAP	Groundwater Monitoring Sampling and Analysis Plan for the Limited Purpose Landfill at the TransAlta Centralia Mine
CFR	Code of Federal Regulations
DQR	Double Quantification Rule
EPA	U.S. Environmental Protection Agency
HNO ₃	nitric acid
LPLF	Limited Purpose Landfill
mg/L	milligram per liter
SSI	statistically significant increase
SWFPR	sitewide false positive rate
ТСМ	TransAlta Centralia Mine
UPL	Upper Prediction Limit
WAC	Washington Administrative Code

This section summarizes the 2023 annual report's purpose and objectives, the document organization, and provides the site description and the status of the monitoring program.

1.1 Purpose and Objectives

This document is the 2023 annual report for the Limited Purpose Landfill at the TransAlta Centralia Mine (TCM), as required per *CCR Groundwater Monitoring and Corrective Action* of 40 Code of Federal Regulations (CFR), 257.90(e), *Annual Groundwater Monitoring and Corrective Action Report*. Per the CCR Rule, the minimum requirements for each annual report submittal must include the following (as itemized per 40 CFR 257.90(e) [items 1 through 5]):

- 1. A map showing the Coal Combustion Residuals (CCR) unit (landfill) and the designated CCR groundwater monitoring network, including upgradient and downgradient wells with well identification numbers.
- 2. The identification of monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description, and the reasons those actions were taken.
- 3. A summary of the groundwater samples that were collected for analysis for each upgradient (or background) and downgradient well, the dates the samples were collected, and whether the sample was required by the detection or assessment monitoring program.
- 4. A narrative discussion of transition between monitoring programs (the date and circumstances of transitioning from detection phase to assessment monitoring), if applicable
- 5. Other information required per 40 CFR 257.90 through 257.94, interpreted to include the following:
 - A map showing groundwater elevations, inferred groundwater elevation contours, and inferred groundwater flow direction from the sampling events conducted during the year.
 - A groundwater elevation hydrograph, including data over the period of record.
 - Groundwater flow rates for the semiannual events conducted during the preceding year.
 - Results from data quality review and data validation
 - A summary of the statistical method and the respective background (compliance) limits for Detection Monitoring (Appendix III) constituents
 - A summary of any Appendix III constituents that are identified as a statistically significant increase (SSI) greater than background levels.

In addition to this technical information, the annual report must also include narrative of the following items:

- Documentation of the status of the monitoring program (that is, detection or assessment phase)
- Key actions completed for the preceding calendar year including alternative source demonstrations
- A description of problems encountered, and actions taken to resolve the problems (if needed)
- Key activities anticipated for the upcoming year

The annual reports are due by January 31 and summarize monitoring results from the preceding year. The CCR Rule requires specific reports and notifications throughout the monitoring process, with up to three forms of submittals:

- The site's operating record (40 CFR 257.105)
- Notifications to the State Director (40 CFR 257.106)
- The publicly accessible internet site (40 CFR 257.107)

1.2 Document Organization

The document is organized into the following sections:

- Section 1. Introduction. Presents the document purpose and objectives, site description, and status of monitoring program.
- Section 2. Monitoring Program Description. Summarizes the groundwater monitoring system design (well network) and the sampling program for the Limited Purpose Landfill.
- Section 3. Groundwater Monitoring Results. Summarizes the groundwater monitoring information related to background data collection and the initial compliance event and provides a map showing groundwater elevations and inferred flow direction, estimates of groundwater seepage velocity, and a summary of groundwater quality results for the initial compliance event.
- Section 4. Statistical Evaluation. Summarizes the statistical method and the compliance limits and compares the initial compliance results to the compliance limits to determine whether there is an SSI greater than background conditions for the Appendix III constituents.
- Section 5. Alternative Source Demonstration. Summarizes statistically significant exceedances, the detection monitoring results, retesting, confirmation, and documentation of an alternative source demonstration for the confirmed values.
- Section 6. Summary. Summarizes the key points of the initial annual report per the CCR regulatory requirements.
- Section 7. References. Lists the documents referenced to develop this report.

1.3 Site Description

TCM manages the Limited Purpose Landfill, which is approximately 7 miles east of Centralia, Washington (Figure 1). The Limited Purpose Landfill is north of Pit 7 in the Centralia Mine. The site is in the southern half of Section 33, Township 15N, Range 1W; Latitude 46°44′23″ North, Longitude 122°49′55″. The site address is 913 Big Hanaford Road, and the Property Tax Parcel (Account) Number is 023387001000. The permitted area encompassing the Limited Purpose Landfill is 57 acres, and the actual footprint of the waste disposal area is 18 acres (Figure 2). The Limited Purpose Landfill consists of the waste disposal area, and the surface impoundments immediately south of the waste disposal area to manage leachate generated at the disposal cell.

TransAlta Centralia Generation LLC operates a coal-burning power plant that is located adjacent to TCM and generates residual ash waste; the residual ash waste is disposed of into the Limited Purpose Landfill. The construction of Stage 1 began during the summer of 2009, and the Lewis County Environmental Health Department authorized TCM to begin waste disposal operations effective October 31, 2009. On December 21, 2009, the Lewis County Environmental Health Department amended the facility permit to approve the disposal of residual ash waste in Stage 1 Area A3a, in addition to Areas A1 and A2, which had been approved for disposal in the original permit. The Stage 2 Area of the Limited Purpose Landfill

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was constructed in three phases from 2011 through 2014 and was subsequently approved for the receipt of ash waste material.

1.4 Status of the Groundwater Monitoring Program

The groundwater monitoring program is currently in the detection phase, as described under 40 CFR 257.94, *Detection Monitoring Program*.

In 2019, the background levels for the Appendix III constituents listed for detection monitoring were updated. The resultant UPLs represent a longer period of monitoring providing an additional 5 monitoring events. Due to the complex behavior of groundwater and need for sufficiently large sample sizes, the EPA Unified Guidance recommends that background levels should be evaluated and possibly updated every four to eight measurements.

Groundwater monitoring was conducted May 17, 2023 and October 12, 2023 for biannual monitoring. Resampling was conducted after the May 17, 2023 event on June 20, 2023 for an exceedance for boron in wells LPLF-2R and LPLF-8, TDS in LPLF-2R, and chloride and calcium in LPLF-7R. Resampling was conducted after the October 12, 2023 sampling event on November 29, 2023 for boron in wells LPLF-2R and LPLF-8, TDS in LPLF-2R, and chloride in LPLF-7R. The resampling results were used in an alternative source demonstration, as documented in Section 5 of this report. Based on the demonstrations, the SSI are determined as a result of natural variation in groundwater concentrations from the resaturated spoils beneath the facility.

SECTION 2 Monitoring Program Description

This section summarizes the CCR groundwater monitoring program for the Limited Purpose Landfill.

2.1 Monitoring Program

Groundwater is monitored in accordance with the CCR SAP (CH2M, 2016). Details regarding the site hydrogeology, the stratigraphic sequence, the uppermost aquifer, and the lower aquitard/confining unit are presented in the groundwater monitoring system design document (CH2M, 2017a) posted to the publicly available website and are not reiterated herein. Details regarding the monitoring network, sampling, and field/laboratory quality control are described in the following sections.

2.2 Monitoring Network

Effective April 17, 2015, the CCR regulations (specifically, 40 CFR 257.91, *Groundwater Monitoring Systems*) require a facility to install a detection groundwater monitoring system at appropriate locations and depths to yield groundwater samples from the uppermost aquifer and monitoring of all potential contamination pathways. At least one upgradient well must accurately represent the quality of background groundwater unaffected by potential leakage from the CCR unit. The regulations also state that at least three downgradient wells must accurately represent the quality of groundwater passing the waste boundary for the detection of potential groundwater contamination in the uppermost aquifer.

Table 1 summarizes the groundwater monitoring well network and construction details for the Limited Purpose Landfill. Figure 2 shows the designated CCR groundwater monitoring network, which consists of five wells screened in the uppermost aquifer and located around the perimeter of the ash disposal area. Monitoring wells LPLF-1 and LPLF-5 are effectively upgradient of the landfill and used to characterize background conditions unaffected by the landfill, and wells LPLF-2R, LPLF-7R, and LPLF-8 are downgradient and designated as compliance wells. As noted in Section 1.4, documentation of the CCR *Groundwater Monitoring Systems* design was submitted to the publicly available website in October 2017, as described in the *Coal Combustion Residual Groundwater Monitoring System Certification for the Limited Purpose Landfill at the Centralia Mine near Centralia, Washington* (CH2M, 2017a).

2.3 Groundwater Level Measurement

Static groundwater level measurements are collected during each monitoring event to calculate groundwater elevations, estimate groundwater flow direction, and calculate the groundwater seepage velocity. Groundwater elevations are calculated by subtracting the field measured static depth to water from the surveyed top-of-casing elevations relative to the local vertical datum (NAD 27, Washington State Plane, North 3601, Feet Intl). Field-measured groundwater levels are recorded on field forms (provided in Appendix A) and the groundwater level data are presented in Section 3.

2.4 Groundwater Sampling

Each well is equipped with dedicated tubing to facilitate low-flow sampling methods, except for LPLF-1, which is bailed to collect the sample. A peristaltic pump is used to support sampling methods required for low-flow (minimal drawdown) groundwater sampling procedures as described under *Groundwater Sampling Guidelines for Superfund and RCRA Project Managers* (EPA, 2002). In accordance with the low-flow method, purging continues until field parameters have stabilized to acceptable tolerances as outlined in the CCR SAP (CH2M, 2016b). Field parameters are measured using factory-calibrated multiparameter probe. Appendix A includes copies of field sampling forms for sampling events conducted in 2023.

Groundwater samples were collected in laboratory-provided sample containers. Below are the test methods, reporting limits, and preservatives to collect groundwater samples for the Appendix III constituents for detection monitoring.

Constituent	Analytical Test Method	Reporting Limit (mg/L)	Preservative
Boron	EPA 6010C	0.01	HNO ₃
Calcium	EPA 6010C	0.05	HNO ₃
Chloride	E300	2.5	Chill to 4°C
Fluoride	E300	0.5	Chill to 4°C
рН	SM 4500H B	0.1	Chill to 4°C
Sulfate	E300	10	Chill to 4°C
Total Dissolved Solids	A2540C	1	Chill to 4°C

°C = degrees Celsius

 $HNO_3 = nitric acid$

mg/L = milligram per liter

Laboratory analyses were performed by an accredited and certified testing laboratory (ALS, in Kelso, Washington).

2.5 Field and Laboratory Quality Control

As described in the CCR SAP (CH2M, 2016b), field and laboratory quality control are guided by the field quality control procedures that included sample labeling, chain-of-custody documentation, and sealing of sample containers following sample collection. Field duplicate and matrix spike (with duplicates) samples are collected during each sampling event. Temperature and method blanks are included with each shipment.

Laboratory quality control procedures included analysis of method blanks, surrogates, duplicates, and matrix spike/matrix spike duplicates. Results from the laboratory quality control are included in the analytical data packages and are included in Appendix B.

Groundwater Monitoring Results

This section summarizes the groundwater monitoring results related to the dates of sampling for the monitoring events, groundwater elevations, groundwater flow direction, the estimates of groundwater seepage velocity, and the groundwater quality results from the monitoring events.

3.1 Compliance Monitoring Events

The CCR Rule requires at least eight background groundwater monitoring events before the October 17, 2017, deadline to establish background conditions. Monitoring events after the eighth background event are considered initial detection-phase compliance monitoring to determine whether there is an SSI greater than background conditions. Below is a summary of the compliance and resampling events and the respective constituent suites for the sampling events. In 2023 an additional 2 monitoring events were included in the re-evaluation and determination of groundwater conditions.

Monitoring Event Type/Purpose	Date Completed	Appendix III, Detection Monitoring Constituents	Resampled Wells
Detection/Compliance	May 17, 2023	Yes	NA
Resampling/Confirmation	June 20, 2023	4 Constituents (boron, chloride, calcium and TDS)	LPLF-2R, LFLF-7R, LPLF-8
Detection/Compliance	October 12, 2023	Yes	NA
Resampling/Confirmation	November 29, 2023	3 Constituents (boron, chloride, and TDS)	LPLF-2R, LFLF-7R, LPLF-8

3.2 Groundwater Levels and Hydrographs

Table 2 summarizes the groundwater measurements from the 2023 groundwater monitoring program. Figure 3 shows the groundwater elevation hydrograph from the CCR network wells from the initial monitoring events conducted from November 2016 through November 2023. In general, groundwater elevations are relatively similar to historical levels. Continued monitoring will be used to assess the need to evaluate seasonal patterns, characteristics, or apparent trends in the site hydrograph.

3.3 Groundwater Flow Direction

Figures 4 and 5 show the elevation contours and inferred flow direction for the groundwater conditions at the site for May and October 2023, respectively. The groundwater in the uppermost aquifer beneath the Limited Purpose Landfill generally flows to the southwest. Well, LPLF-5 was dry during the October 12, 2023 sampling event (the elevation of the lowest measured groundwater level in LPLF-5 was used for contouring). A flow direction to the southwest is consistent with historical groundwater monitoring results.

3.4 Groundwater Flow Velocity Estimates

The estimated groundwater seepage velocity is 5 feet per year, which is based on the following equation and hydraulic assumptions and groundwater elevations in the uppermost aquifer:

$$v = \frac{K_a i}{n_e}$$
 Equation from Fetter, 1994

where:

ν	=	groundwater velocity (seepage velocity)
K _a	=	average horizontal hydraulic conductivity
i	=	horizontal hydraulic gradient
n _e	=	effective porosity

- An average hydraulic conductivity estimate of 0.11 to 0.17 feet per day (equivalent to 3.88 x 10⁻⁵ to 5.82x 10⁻⁵ centimeters per second), which is based on slug test analyses and as summarized in the *Coal Combustion Residual Groundwater Monitoring System Certification for the Limited Purpose Landfill at the Centralia Mine Site near Centralia, Washington* (CH2M, 2017a).
- Hydraulic gradient was consistently 0.02 to 0.03 feet per foot, as measured from Figures 4 and 5. This value is considered a typical but lower value based on previous monitoring performed under the pre-existing WAC program since 2007
- Effective porosity of 0.15 (assumed value generally representative of mine spoils)

3.5 Groundwater Quality Results

Table 3 presents the groundwater quality results for the Appendix III constituents from the 2023 groundwater monitoring and resampling events. Groundwater data from the monitoring events are compared to the background conditions per the selected statistical method to determine whether the initial compliance values exceed background concentrations, as presented in Section 4. Resampling was conducted to confirm parameters that represented statistically significant exceedances for those wells and parameters identified.

3.6 Data Quality Assessment

The groundwater quality data were reviewed to assess the representativeness and usability of data before performing statistical evaluations as presented in Section 4. The method for performing the data quality review is documented in the CCR SAP (CH2M, 2016b) and follows procedures in the U.S. Environmental Protection Agency (EPA) *National Functional Guidelines for Inorganic Superfund Methods Data Review* (EPA, 2016).

Table 4 is a summary of the data validation that was conducted for each sampling and analysis event. The summary includes review of laboratory analysis, receipt, qualifiers, laboratory method blanks, replicant sample results, and matrix spike recovery. Additionally, a field duplicate was collected for each detection monitoring event and relative percentage difference calculated for the duplicate sample. Laboratory and field duplicate values were within the data validation limits.

The data quality assessment is that analysis was consistent with the CCR SAP for the site. Based on this review, the field and laboratory methods followed the procedures specified in the CCR SAP, the completeness target/goal of 100 percent was achieved, none of the data were rejected, and data were found to satisfy the data quality objectives to be included for statistical evaluation as presented in Section 4.

Statistical Evaluation

This section summarizes the CCR regulatory requirements for statistical evaluation under the detection phase, as well as the selected statistical method, and compares the 2023 monitoring data to determine if monitoring values exceed compliance limits.

4.1 Statistical Evaluation Regulatory Requirements

The CCR Rule specifically lists four methods acceptable for statistical analysis (40 CFR 257.93[f]):

- 1. Parametric or nonparametric analysis of variance
- 2. Tolerance intervals
- 3. Prediction intervals (limits)
- 4. Control charts

Another statistical test method also may be considered if it meets the performance standards listed in 40 CFR 297.93(g). Per the CCR Rule, the selected statistical method was posted to the publicly available website by the October 17, 2017, deadline.

4.2 Statistical Evaluation Methods and Compliance Limits

Based on the site-specific groundwater conditions and results from an exploratory evaluation on the background data, the selected statistical method for evaluating groundwater detection monitoring data is a prediction interval (limit) method, which is a statistical method option, per 40 CFR 257.93(f)(3). The prediction interval method will be used separately for each well-constituent pair and was selected because the Appendix III constituents exhibited significant spatial variability, making an upgradient versus downgradient, also known as interwell, comparison infeasible. The method for six of the seven Appendix III constituents (including boron, calcium, chloride, pH, sulfate, and TDS) is an intra-well Prediction Limit; the seventh constituent, fluoride, is handled separately via the Double Quantification Rule (DQR). Per EPA *Unified Guidance* (2009), the DQR is applicable to constituents that exhibit 100 percent no-detect characteristics, and fluoride is 100 percent nondetect during the background period. The DQR method, which is applicable to fluoride only, assumes that a SSI is confirmed if both the original and retest values are confirmed to be detected values. Supplemental details and rationale for method selection are presented in *Coal Combustion Residual Statistical Method for the Limited Purpose Landfill at the Centralia Mine near Centralia, Washington* (CH2M, 2017b), which has been posted to the CCR public website prior to the October 17, 2017, deadline.

EPA's Unified Guidance (2009) recommends that prediction limits be combined with retesting for maintaining a low sitewide false positive rate (SWFPR) while providing high statistical power. The exploratory analysis confirmed a "1-of-2" retesting strategy is acceptable and will be used to verify an apparent SSI (that is, an initial SSI for Appendix III constituents). Retesting is an integral part of the statistical methodology for controlling the SWFPR when multiple monitoring locations and parameters are being evaluated. Assuming the "1-of-2" retesting approach, an apparent SSI cannot be confirmed or denied until the results of the resampling event have been obtained.

Following the prediction interval method, the compliance limits were calculated on the CCR Appendix III constituents for the three downgradient compliance wells (LPLF-2R, LPLF-8, and LPLF-7R). The calculation of intra-well prediction limits is used for six of the seven CCR constituents, including boron, calcium, chloride, pH, sulfate, and TDS; fluoride is evaluated separately via the DQR as a result of the 100 percent nondetects during background period. Assuming that sample background data are normally

distributed, or assuming that they can be transformed to fit a normal distribution, then the parametric upper prediction limit (UPL) is based on equation (1) as follows:

$$UPL = \overline{x} + Ks \tag{1}$$

where:

 \overline{x} is the sample mean,

s is the sample standard deviation, and

K is a multiplier factor that is chosen based on the evaluation schedule (nE), number of constituents (nc), number of wells (nw), number of background observations (n), overall SWFPR, and the specific retesting scheme selected.

For constituents such as pH, which require both lower and upper prediction limits, equation (2) is used:

$$LPL, UPL = \overline{x} \pm Ks \tag{2}$$

Table 5 presents the background (compliance) limits for each Appendix-III constituent derived from the equations above. For selected constituents exhibiting trends during background period, the background data were detrended before determining the background levels. As shown in Table 5, the constituents in which trends will be accounted for include boron, calcium, and TDS at well LPLF-2R; chloride, sulfate, and TDS at well LPLF-7R; and calcium, sulfate, and TDS at well LPLF-8. For the cases listed as 'no' for trend removal, the UPLs and lower prediction levels are the fixed compliance values to directly compare against future detection monitoring data to determine a SSI above compliance, and will be the levels to use until background is updated in the future. However, for cases listed as 'yes' for trend removal, the UPL is a calculated value dependent on time of sampling using equation (3) as follows:

Note that the trendline equations and variables for intercept, slope, time, and residual values are shown in Table 5; these UPLs are listed as 'calculated' as they are dependent upon the time when the compliance data were obtained. The time (in days) is assumed as the number of days starting from the initial background event (which was collected on November 14, 2016) to when the compliance data in question were collected (example May 17, 2023, which is 2375 days following the initial event on November 14, 2016). For TDS at well LPLF-2R, transformation was performed using the Tukey power transformation to convert it into a normal distribution before applying the simple regression to determine an appropriate relationship for trend removal.

4.3 Statistical Evaluation Results

Table 6 summarizes the monitoring results determined to be confirmed SSI after retesting and therefore identified for further evaluation. The 2023 groundwater monitoring results were less than or within the respective compliance limits, except for the following eight cases, boron in LPLF-2R (spring and fall) and LPLF-8 (spring and fall), chloride and calcium in LPLF-7R (spring), and total dissolved solids (TDS) in LPLF-2R (spring and fall).

Resampling and confirmation testing were conducted within 90 days after validation of monitoring results and evaluated for potential detection or applicability of an alternative source demonstration. Resampling confirmed the values for boron in LPLF-2R and LPLF-8, chloride and calcium in LPLF-7R (spring only) and TDS in LPLF-2R. Therefore, resulting in a total of eight SSIs.

The remaining detections were determined that an alternative source demonstration was appropriate for the eight results. Section 5 discusses the alternative source demonstration and applicability to these confirmed SSI results. It is anticipated that these results will be included in a review of site conditions and groundwater quality variability under changing groundwater elevations.

Alternative Source Demonstration

This section presents an alternative source demonstration in response to the confirmed SSIs in accordance with 40 CFR Part 257.94(e)(2).

5.1 CCR Rule Regulatory Applicability

In accordance with 40 CFR Part 257.94(e)(2), the site owner has the option to demonstrate that a source other than the regulated unit (ash waste in the LPLF) caused the SSI exceeding background levels before automatically shifting into the assessment phase requirements. The CCR regulations cite examples of alternative sources causing SSIs (for example, error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality).

The CCR regulations require alternative source demonstrations to be completed within 90 days following determination of a valid SSI. The retesting results for the Spring and Fall events were validated for the eight SSI and conditions were reviewed within the 90-day period to complete the alternative source demonstration (or the need to shift into assessment monitoring if a successful demonstration is not made). Both demonstrations are included in this section of the 2023 annual report for documentation purposes.

5.2 Alternative Source Demonstration

This section presents the technical basis and documentation to support that natural variation in groundwater quality is the reason for the SSIs observed in monitoring wells LPLF-2R, LPLF-7R and LPLF-8 as shown in Table 6 at the LPLF site. Additional evaluation was conducted looking at the time series for each of these wells and parameters and a statistical trend evaluation to aid in the demonstration evaluation.

5.2.1 Site History

The hydrogeological setting of the LPLF is unique in that present-day subsurface conditions were constructed such that surface overburden soils (mine spoils) were excavated during active mining operations in 2006 to expose coal seams within the relatively fine-grained Skookumchuck formation. As part of reclamation efforts following coal mining activities, the mine spoils were backfilled into a pit that includes the present-day footprint of the LPLF. Recharge via precipitation created a shallow zone of saturation within the mine spoils immediately overlying the fine-grained Skookumchuck formation, which is the target groundwater monitoring zone as described in the *Coal Combustion Residual Groundwater Monitoring System Certification for the Limited Purpose Landfill at the Centralia Mine Site near Centralia, Washington* (CH2M, 2017b). The mine spoils are generally characterized as light tan to brown silty loam to silty clay with sand lenses; the underlying Skookumchuck is characterized as a sequence of siltstones, claystones, coal seams, and occasional carbonaceous shales. The stratigraphic sequence beneath the center of the LPLF consists of approximately 80 feet of mine spoils, underlain by relatively thick sequence of fine-grained Skookumchuck, estimated at over 500 feet thick in the area.

The mine spoils were generated by removal of coal seam interburdens and placed back into the mined pit. The interburden comprised silt and claystones with stringers of sub-economical coal. The backfill placement resulted in a highly heterogeneous spoil of pulverized silt and claystone with discrete and localized coal and pyritic debris mixed laterally and vertically. These gravel to cobble sized materials can be acid forming and generate localized suppressed pH in the otherwise alkaline silt and clay spoils, and secondary mobilization of calcium, sulfate and other constituents, subsequently increasing TDS in groundwater. The primary mechanisms required for suppressed pH and changes in groundwater

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chemistry are presence of acid forming material, water, and oxygen. Fluctuations in groundwater can influence these as fluctuations allow great oxygen access to moist, acid forming materials.

The presence of acid-forming materials in the spoils can result in elevated TDS and associated dissolved constituents in groundwater with localized increases closer to the material. As groundwater fluctuates, this can either submerge previously unsaturated material or expose saturated material to aerobic conditions in the unsaturated zone. The vertical heterogeneity of these materials results in groundwater conditions that can be highly variable for constituents susceptible to mobilization under suppressed pH conditions within localized areas, within a specific monitoring location.

Prior to the CCR regulations that were enacted in April 2015, TCM characterized the hydrogeological conditions for the LPLF as documented in Section 2 of TransAlta Centralia Mining LLC, Limited Purpose Landfill Solid Waste Permit Application, dated October 2008 (CH2M, 2008). To satisfy Chapter 173-350-500 (Limited Purpose Landfill) Washington Administrative Code (WAC) regulations, TCM initiated background monitoring prior to waste placement from 2007 to present, as described in the Washington State Department of Ecology (Ecology) and Lewis County Environmental Health District-approved Groundwater Monitoring Plan for TransAlta Centralia Mining LLC Limited Purpose Landfill, Amendment 1, July 2011 (CH2M, 2011a). Since 2010, TCM has prepared quarterly and annual groundwater monitoring – Data Analysis, Notification, and Reporting. To date, the WAC program remains under detection-phase monitoring status. The existing WAC data collected from 2007 to 2009 pre-date waste placement into the LPLF and were used to document the heterogenous nature of background conditions.

5.2.2 Background Monitoring Results

The background monitoring period may not have fully captured the actual natural variation that might be expected to occur in the spoils and under natural groundwater recharge and fluctuations, especially under conditions where groundwater elevations are lower or higher than have been previously observed. Background monitoring events conducted over several years or multiple hydrological cycles would better characterize the natural variability in groundwater and yield more data to strengthen statistical power of detection monitoring analyses. These conditions are the basis for the updated background evaluation conducted in 2019 and used in this evaluation (Jacobs, 2019).

Reviewing the site hydrographs in Figure 3 for both wells LPLF-2R and LPLF-8, groundwater elevations have decreased since the initial installation and monitoring. In LPLF-2R boron has increased to a slightly lower and consistent concentration just above the UPL calculated using the initial, 8 months of background sampling. For TDS, it shows the value decreasing, but decreasing at a lower slope that was initially calculated for TDS in well LPLF-2R (both values are calculated values, using a decreasing slope for calculation of UPL values). These results support that the exceedances for boron and TDS in LPLF-2R is a result of continued change in saturated spoils geochemistry, and not associated with release from the landfill, and primarily with stabilization of the groundwater constituents while the calculated UPL uses an ongoing downward trend.

The exceedance for boron in well LPLF-8 is based on the UPL of 0.99 mg/L. The exceedance was 1.19 mg/L and 1.04 for spring and fall respectively. LPLF-8 has always been historically much higher than the other downgradient wells, suggesting that there is an alternative source within the backfilled spoils for the boron in groundwater detected at this location. Boron concentration have increased, and using the full set of data, shows a statistically significant trend at 95 percent confidence level.

Given that LPLF-8 has always exhibited higher concentrations of boron than other downgradient wells, while higher these concentrations are still relatively low, that the change is within about 0.2 mg/L of change, and that groundwater at this location continues to fluctuate and is at historically low levels,

demonstrates that the continued change in boron is due to the nature of the saturated backfill spoils as the alternative source for these results.

The natural groundwater environment can vary from changes in annual precipitation (recharge) and related geochemical changes associated with residence time within the aquifer materials. The exceedance of calcium and chloride for well LPLF-7R in the spring, but not fall sampling event, support that the exceedances is a result of continued change in saturated spoils geochemistry, and not associated with release from the landfill. As noted in the statistical method certification (CH2M, 2017a) and in accordance with Unified Guidance (EPA, 2009), it is recommended to update background conditions following four to eight sampling events because of the complex behavior of groundwater and the need for sufficiently large sample sizes. Using this principle with semiannual sampling as prescribed under the CCR program, the background values should be reviewed and updated using statistical analysis every 2 to 4 years, assuming no confirmed statistically significant increase is identified. In addition, if hydrogeologic conditions change, then background should be updated to match the latest conditions. Based on this analysis, excluding the initial 8 months of sampling should be considered in future background UPL calculations.

5.3 Alternative Source Demonstration Results

Key findings as provided in this alternative source demonstration are summarized as follows:

- 2023 Monitoring and Retesting was conducted in compliance with the CCR program and resulted in confirmed SSI values based on the current CCR program statistical method.
- These values were evaluated and qualified as unrelated to the LPLF waste materials and related to natural variation in groundwater quality within the saturated backfilled spoils.
- These findings are consistent with similar demonstration for the CCR program in previous groundwater monitoring results at the site.
- The CCR program remains under the detection-phase monitoring status per 40 CFR 257.94, *Detection Monitoring Program.*

Summary

Key findings developed and/or confirmed from the 2023 annual groundwater report are summarized as follows:

- The groundwater elevations measured during the compliance monitoring events were used to develop a site hydrograph, potentiometric surface, inferred groundwater flow direction, and calculated groundwater flow velocity for the spring and fall monitoring events in 2023.
- Groundwater flow directions, gradients, and flow velocities were consistent with historical measurements.
- Groundwater monitoring results for compliance constituents met the compliance limits except for four parameters, boron in monitoring well LPLF- 8, boron and TDS in monitoring well LPLF-2R, and calcium and chloride in monitoring well LPLF-7R.
- The confirmed SSI's were evaluated and demonstrated to be a source other than the regulated unit (ash landfill) and remains in detection phase monitoring.
- Based on groundwater site conditions, the additional groundwater monitoring results will be reviewed and evaluated for the compliance limits using the selected statistical methodology.

References

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Tables

		Coordinate	s in NAD27 ¹	Top of Casing	Reference Point Top of Ground	Well Scree	n Elevation ²	Sand Pack	Elevation ²	Well		
Well	Installation Date	Northing	Easting	Elevation ²	Elevation ²	Тор	Bottom	Тор	Bottom	Depth ³	Aquifer Unit	Hydraulic Designation
LPLF-1	October 2007	520,881.45	1,420,272.06	347.80	344.58	305.58	285.58	309.58	282.58	59	Mine Spoils	Up or Cross-Gradient
LPLF-5	August 2008	521,931.70	1,419,921.73	359.90	357.88	349.88	344.88	351.38	343.38	13	Mine Spoils	Upgradient
LPLF-8	August 2008	521,235.37	1,419,233.53	298.75	296.93	279.93	274.93	282.93	273.93	22	Mine Spoils	Downgradient
LPLF-2R	July 2016	521,561.20	1,419,130.52	296.04	293.86	10.0	263.9	275.86	262.36	31	Mine Spoils	Downgradient
LPLF-7R	July 2016	521,180.82	1,419,531.95	299.00	297.04	279.7	269.7	282.04	269.04	28	Mine Spoils	Downgradient

 Table 1. Groundwater Monitoring Well Network

 2023 Annual Groundwater Monitoring Report for Limited Purpose Landfill - TransAlta Centralia Mine LLC

General Notes:

1. Well LPLF-1 is low yield and sampled via bailer.

Column Header Footnotes:

¹Washington State Plane Coordinates (NAD27).

²All elevations in feet above mean sea level (NGVD29).

³Well depth is feet below ground surface (rounded to nearest foot).

Table 2. Groundwater Elevations and Field Parameters

2023 Annual Groundwater Monitoring Report for Limited Purpose Landfill - TransAlta Centralia Mine LLC

20207.000		Reference		lieu Purpose Luni	ajin rrans			Oxidation					
		Point	Depth to	Groundwater			Dissolved	Reduction	Specific				
	Date	Elevation	Water	Elevation	Temp		Oxygen	Potential	Conductivity	Turbidity			
Well	Sampled	(ft)	(ft btc)	(ft)	(°C)	рН	(mg/L)	(mV)	(uS/cm)	(NTU)	Hydraulic Designation	Hydrostratigraphic Unit	Comments
LPLF-1	5/17/23	347.80	54.91	292.89	13.2	6.4	2.47	231	2,837		Up or Cross Gradient	Backfill/Mine Spoils	Cloudy
LPLF-1	10/12/23	347.80	59.03	288.77	12.0	6.1	3.65		3,958		Up or Cross Gradient	Backfill/Mine Spoils	Cloudy/Orangish
LPLF-5	5/17/23	359.90	13.61	346.29	13.1	6.9	3.53	119	1,666		Upgradient	Backfill/Mine Spoils	Clear
LPLF-5	10/12/23	359.90									Upgradient	Backfill/Mine Spoils	Dry/no water in well. Not sampled.
LPLF-8	5/17/23	298.75	8.88	289.87	12.1	5.9	1.64	55	3,386		Downgradient	Backfill/Mine Spoils	Clear
LPLF-8	6/20/23	298.75	10.66	288.09	13.1	5.4	1.84	39	3,377		Downgradient	Backfill/Mine Spoils	Clear
LPLF-8	10/12/23	298.75	13.77	284.98	13.4	5.5	2.54		4,154		Downgradient	Backfill/Mine Spoils	Clearish
LPLF-8	11/29/23	298.75	12.15	286.60	10.8	5.6	3.17		4,100		Downgradient	Backfill/Mine Spoils	Clear
LPLF-2R	5/17/23	296.04	2.42	293.62	15.3	6.4	1.31	57	3,233		Downgradient	Backfill/Mine Spoils	
LPLF-2R	6/20/23	296.04	3.57	292.47	13.1	6.0	1.47	46	3,153		Downgradient	Backfill/Mine Spoils	Clear
LPLF-2R	10/12/23	296.04	5.66	290.38	13.8	6.0	2.14		4,097		Downgradient	Backfill/Mine Spoils	
LPLF-2R	11/29/23	296.04	4.30	291.74	10.9	6.0	2.70		4,102		Downgradient	Backfill/Mine Spoils	Clear
LPLF-7R	5/17/23	299.00	19.02	279.98	12.6	6.4	1.63	102	3,027		Downgradient	Backfill/Mine Spoils	Clear
LPLF-7R	6/20/23	299.00	19.45	279.55	13.6	5.9	1.69	170.4	2,981		Downgradient	Backfill/Mine Spoils	Clear
LPLF-7R	10/12/23	299.00	21.02	277.98	13.3	6.0	2.45		3,586		Downgradient	Backfill/Mine Spoils	Clear
LPLF-7R	11/29/23	299.00	20.66	278.34	10.0	5.9	3.46		33,551		Downgradient	Backfill/Mine Spoils	Clear
						1		Water Le	vels Only				
LPLF-2	5/4/22	302.26	9.22	293.04							Cross-Gradient	Backfill/Mine Spoils	
LPLF-2	10/12/23	302.26	14.22	288.04							Cross-Gradient	Backfill/Mine Spoils	
LPLF-3	5/4/22	295.64	4.92	290.72							Cross-Gradient	Backfill/Mine Spoils	
LPLF-3	10/12/23	295.64	9.62	286.02							Cross-Gradient	Backfill/Mine Spoils	
LPLF-4	5/4/22	303.12	2.84	300.28							Cross-Gradient	Backfill/Mine Spoils	
LPLF-4	10/12/23	303.12	8.25	294.87							Cross-Gradient	Backfill/Mine Spoils	

Notes:

" -- " = Not applicable, not available, and/or not measured.

Reference point elevation is top of PVC casing; all elevations are in feet above mean sea level (NAVD88).

Field parameter readings represent final stabilized readings obtained during low-flow purge immediately prior to collection of water-quality sample.

ft = feet ft btc = feet below top of casing C = degrees celcius mg/L = milligrams per liter mV = millivolts

uS/cm = microsiemens per centimeter

NTU = Nephelometric Turbidity Units

Table 3. Groundwater Analytical Summary

2023 Annual Groundwater Monitoring Report for the Limited Purpose Landfill - TransAlta Centralia Mine LLC

Spring Sampling Event

Well			LPLF-1	LPLF-2R	LPLF-5	LPLF-7R	LPLF-8	LPLF-7R FD	LPLF-2R	LPLF-7R	LPLF-8
Sample ID			051723-CCR-LPLF1	051723-CCR-LPLF2R	051723-CCR-LPLF5	051723-CCR-LPLF7R	051723-CCR-LPLF8	051723-CCR-LPLF7R FD	062023-CCR-LPLF2R	062023-CCR-LPLF7R	062023-CCR-LPLF8
Sample Date			5/17/2023	5/17/2023	5/17/2023	5/17/2023	5/17/2023	5/17/2023	6/20/2023	6/20/2023	6/20/2023
Hydraulic Designation			Up or Cross Gradient	Downgradient	Up Gradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient
Analyte	Method	Units									
Boron	SW6010C	mg/L	0.602	0.365	0.101	0.341	1.19	0.33	0.365	-	1.2
Calcium	SW6010C	mg/L	234	441	342	281	417	279	439	283	421
Chloride	E300	mg/L	2.92	7.57	3.07	11.1	6.93	11.0	-	10.8	-
Fluoride	E300	mg/L	2 U	2 U	2 U	2 U	2 U	2 U	-	-	-
Sulfate	E300	mg/L	1,390	1,460	758	1,520	2,270	1,520	-	-	-
Total Dissolved Solids	A2540C	mg/L	2,660	3,190	1640	2,900	3,720	2,900	3,230	-	-

Well			LPLF-1	LPLF-2R	LPLF-7R	LPLF-8	LPLF-7R (FD)	LPLF 2R	LPLF 7R	LPLF 2R
Sample ID			101223-CCR-LPLF1	101223-CCR-LPLF2R	101223-CCR-LPLF7R	101022-CCR-LPLF8	101223-CCR-LPLF7R FD	112923-CCR-LPLF2R	112923-CCR-LPLF7R	112923-CCR-LPLF8
Sample Date			10/12/2023	10/12/2023	10/12/2023	10/12/2023	10/12/2023	11/29/2023	11/29/2023	11/29/2023
Hydraulic Designation			Up or Cross Gradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient
Analyte	Method	Units								
Boron	SW6010C	mg/L	0.593	0.347	0.326	1.04	0.331	0.364	-	1.21
Calcium	SW6010C	mg/L	228	464	262	406	264	-	-	-
Chloride	E300	mg/L	3.28	7.54	9.99	6.89	9.96	-	9.9	-
Fluoride	E300	mg/L	0.1 J	0.1 U	0.1 U	0.1 U	0.1 U	-	-	-
Sulfate	E300	mg/L	1,490	1,560	1,430	2,230	1,430	-	-	-
Total Dissolved Solids	A2540C	mg/L	2,990	3,430	2,810	3,760	2,830	3,480	-	-

Notes:

Field parameters represent final stabilized readings obtained during sampling immediately prior to sample collection.

Non-detect values reported as "U" with the laboratory method detection limit; "J" is estimated value as determined from data validation. F is for field measurement.

(H) for outside holding time for sample

(MS) for matrix spike recovery outside range (FD) Field Duplicate outside relative percentage difference

Acronyms:

Data qualifiers: U = non-detect value, J = estimated value.

C = degrees celcius

mg/L = milligrams per liter

mV = millivolts

uS/cm = microsiemens per centimeter

NTU = Nephelometric Turbidity Units

Table 4 Data Validation Summary

2023 Annual Groundwater Monitoring Report for the Limited Purpose Landfill - TransAlta Centralia Mine LLC

Validation Summary 5/17/2023

Sample COC noted FD for LPLF-8, however the FD was for LPLF-7R No qualifiers noted in the analysis results Method blank was non-detect Replicate samples within RPD limits

Matrix Spike recovery values were within recovery limits

Field Duplicate for LPLF-7R, FD RPD within limits

		5/17/2023		
Parameter	FD RPD Limit	LPLF-7R	LPLF-7R FD	FD RPD
TDS	20	2900	2900	0.0%
Chloride	20	11.1	11.0	-0.9%
Sulfate	20	1520	1520	0.0%
Boron	20	0.341	0.33	-3.3%
Calcium	20	281	279	-0.7%

Validation Summary 6/20/2024

Sample receipt noted the samples and temperature blank were received above the method specified temperature range; however, that samples were received on ice and on the same day as collected No data qualifiers noted in the analysis results Method blanks were non-detect Matrix Spike recovery within the % recovery limits Laboratory replicate sample within RPD

Validation Summary 10/12/2023

Sample receipt noted that pH-preserved bottles received for CCR-LPLF-2R were not received at the appropriate pH, additional preservative added at lab

J qualifier noted in the analysis result for fluoride at LPLF-1, with very low values near the MDL

Method blank was non-detect

Replicate samples within RPD limits

Matrix Spike recovery values were within recovery limits

Field Duplicate for LPLF-8, FD RPD within limits

Field Duplicate for L	PLF-8, FD RPD Within infill	.5		
		10/12/2023		
Parameter	FD RPD Limit	LPLF-8	FD	FD RPD
TDS	20	2810	2830	0.7%
Chloride	20	9.99	9.96	-0.3%
Sulfate	20	1430	1430	0.0%
Boron	20	0.326	0.331	1.5%
Calcium	20	262	264	0.8%

Validation Summary 11/29/2023

No discrepancies noted in sample receipt or analysis

No data qualifiers noted in the analysis results

Method blanks were non-detect except chloride (0.006 J mg/L) in method blank K231388-MB4

Lab control sample recovery values were within recovery limits

Matrix Spike recovery values were within recovery limits

Table 5 Statistical Method for TransAlta Limited Purpose Landfill

			·	Trending Calculated UPL	(if needed) = { Interc	ept + [Slope* Time(days)] + Residual }		Lower Prediction Levels	Upper Prediction Levels		Calc	ulated Upper P (compliance		5
Well	Constituent	t Units	Method	Trend Removal	Intercept	Slope	Residual	K-Value	(LPL)	(UPL)		5/17/2023	6/20/2023	10/12/2023	11/29/2023
PLF-2R	Boron	mg/L	Parametric UPL	Yes	0.35	-2.21E-05	0.0297	2.4		Calculated		0.327	0.326	0.324	0.323
PLF-2R	Calcium	mg/L	Parametric UPL	Yes				2.4		545					
PLF-2R	Chloride	mg/L	Parametric UPL	No				2.4		9.59					
PLF-2R	Fluoride	mg/L	DQR	No						DQR					
PLF-2R	рН	pH units	Parametric UPL	No				2.79	5.98	7.07					
PLF-2R	Sulfate	mg/L	Parametric UPL	No				2.4		2163					
PLF-2R	TDS	mg/L	Non-Parametric UPL	Yes	3631	-0.359	201	2.4		Calculated		2980	2967	2927	2909
PLF-7R	Boron	mg/L	Parametric UPL	No				2.4		0.421					
PLF-7R	Calcium	mg/L	Parametric UPL	No				2.4		263					
PLF-7R	Chloride	mg/L	Parametric UPL	No				2.4		9.99					
PLF-7R	Fluoride	mg/L	DQR	No						DQR					
PLF-7R	рН	pH units	Parametric UPL	No				2.79	6.09	6.99					
PLF-7R	Sulfate	mg/L	Parametric UPL	Yes	944	0.758	509	2.4		Calculated		3252	3278	3364	3401
PLF-7R	TDS	mg/L	Parametric UPL	Yes	1890	0.892	607	2.4		Calculated		4614	4645	4746	4789
PLF-8	Boron	mg/L	Parametric UPL	No				2.4		0.99					
PLF-8	Calcium	mg/L	Parametric UPL	Yes				2.4		441					
PLF-8	Chloride	mg/L	Parametric UPL	No				2.4		7.84					
PLF-8	Fluoride	mg/L	DQR	No						DQR					
PLF-8	рН	pH units	Parametric UPL	No				2.79	5.66	6.36					
PLF-8	Sulfate	mg/L	Parametric UPL	Yes	2124	1.14	357	2.4		Calculated		5189	5228	5358	5413
PLF-8	TDS	mg/L	Parametric UPL	Yes	3429	0.49	445	2.4		Calculated		5039	5056	5112	5135
											start date	d	ays since start		
IME (days	s) is the period	from Nov. 1	L4, 2016 to time of com	pliance event.							11/14/2016	2375	2409	2523	2571

Table 6 Summary of Compliance Value Exceedance

2023 Annual Groundwater Monitoring Report for the Limited Purpose Landfill - TransAlta Centralia Mine LLC

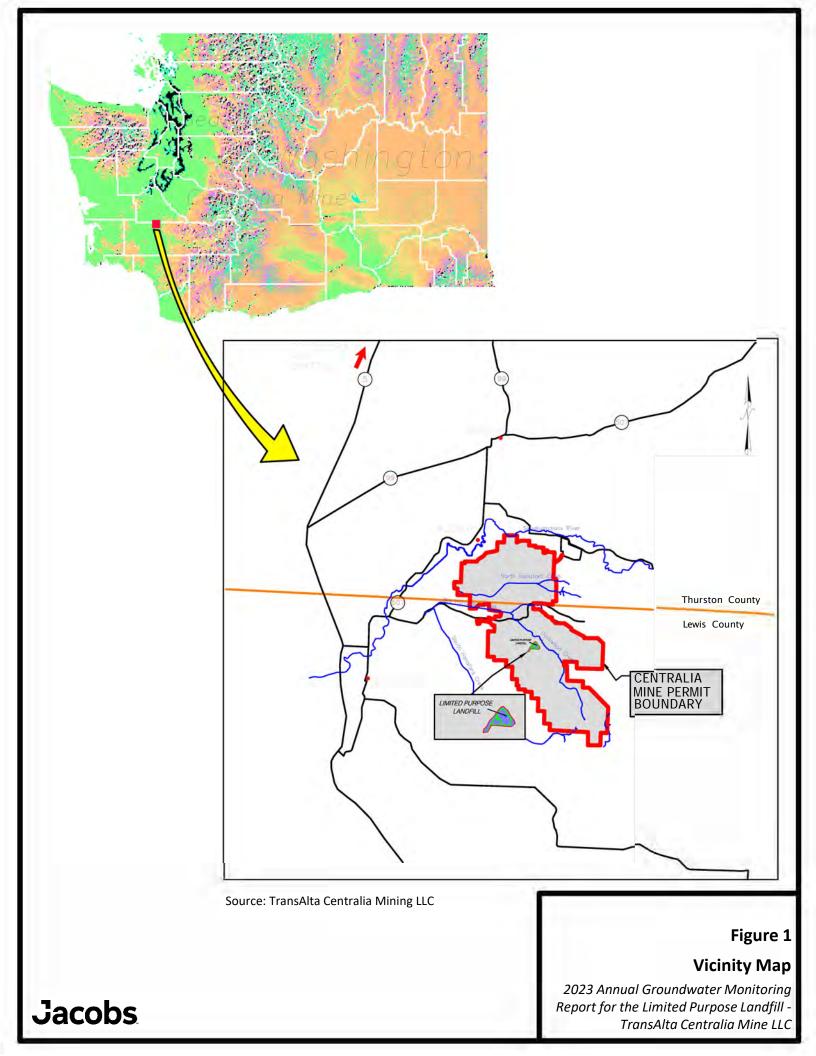
Well	Sample Date Parameter	Upper Limit (mg/L)	Sample Result (mg/L)	Resample Date	Upper Limit (mg/L)	ReTest Result (mg/L)	Percent Over UL for Compliance Event	Percent Over UL for the Retesting Event	Percent Change between Compliance and Retesting Event
LPLF-2R	5/17/2023 Boron	0.327	0.37	6/20/2023	0.33	0.365	12%	12.0%	0.0%
LPLF-2R	5/17/2023 TDS	2,980	3,190	6/20/2023	3,108	3,230	7%	3.9%	1.3%
LPLF-7R	5/17/2023 Calcium	263	281	6/20/2023	263	283	7%	7.6%	0.7%
LPLF-7R	5/17/2023 Chloride	9.99	11.10	6/20/2023	9.99	10.80	11%	8.1%	-2.7%
LPLF-8	5/17/2023 Boron	0.99	1.19	6/20/2023	0.99	1.20	20%	21.2%	0.8%
LPLF-2R	10/12/2023 Boron	0.324	0.347	11/29/2023	0.323	0.36	7%	12.8%	4.9%
LPLF-2R	10/12/2023 TDS	2,927	3430	11/29/2023	2,909	3,480	17%	19.6%	1.5%
LPLF-7R	10/12/2023 Chloride	9.99	9.99	11/29/2023	9.99	9.90	0%	-0.9%	-0.9%
LPLF-8	10/12/2023 Boron	0.99	1.04	11/29/2023	0.99	1.21	5%	22.2%	16.3%

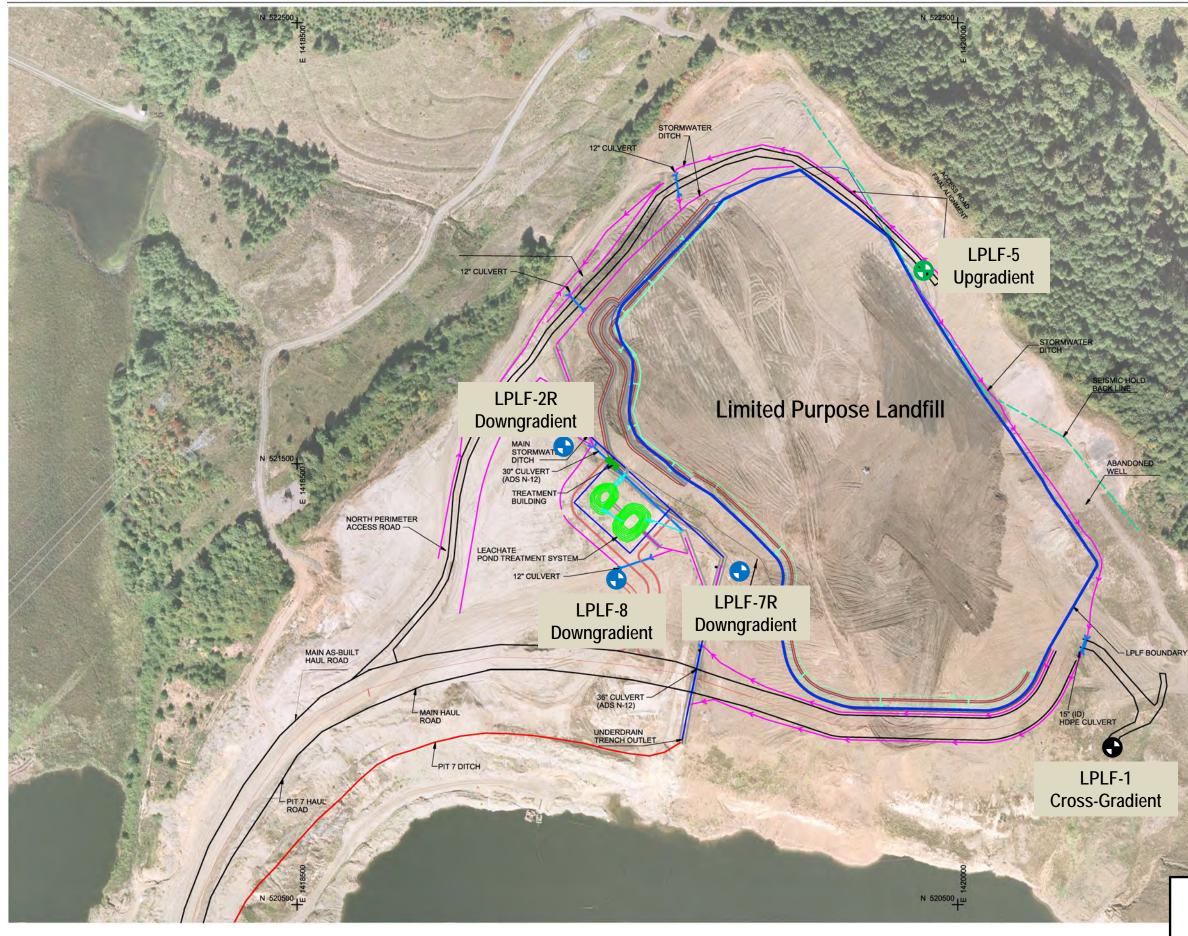
Notes:

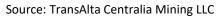
Bold parameters indicate calculated limits

Eight results (highlighted yellow) were confirmed as statistically-significant exceedances for evaluation.

Figures







Jacobs



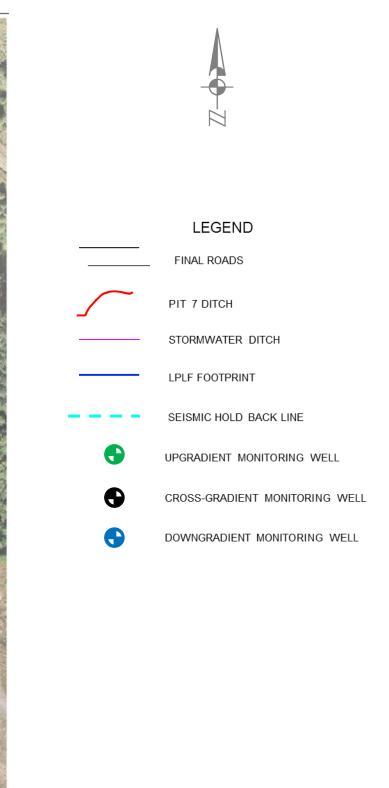
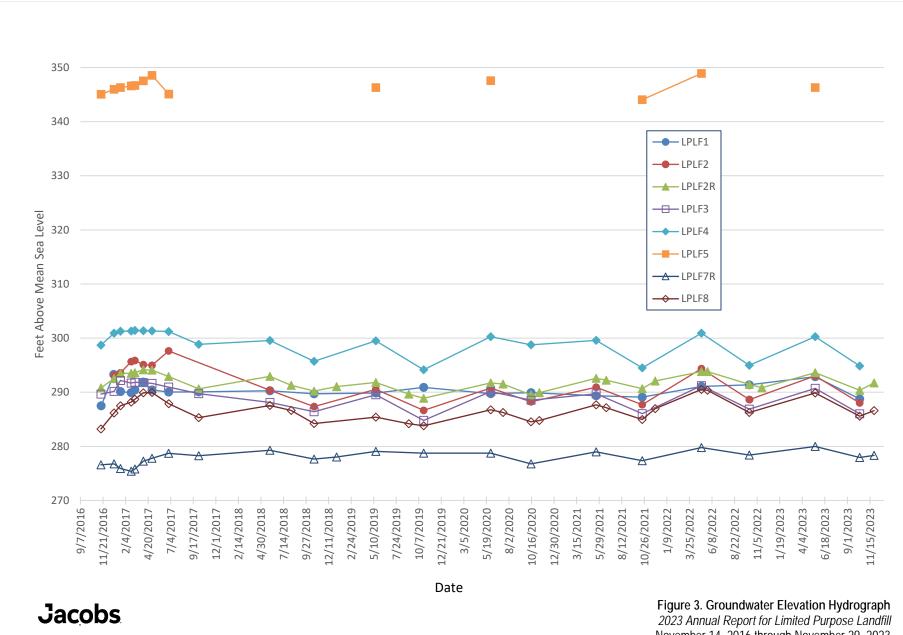
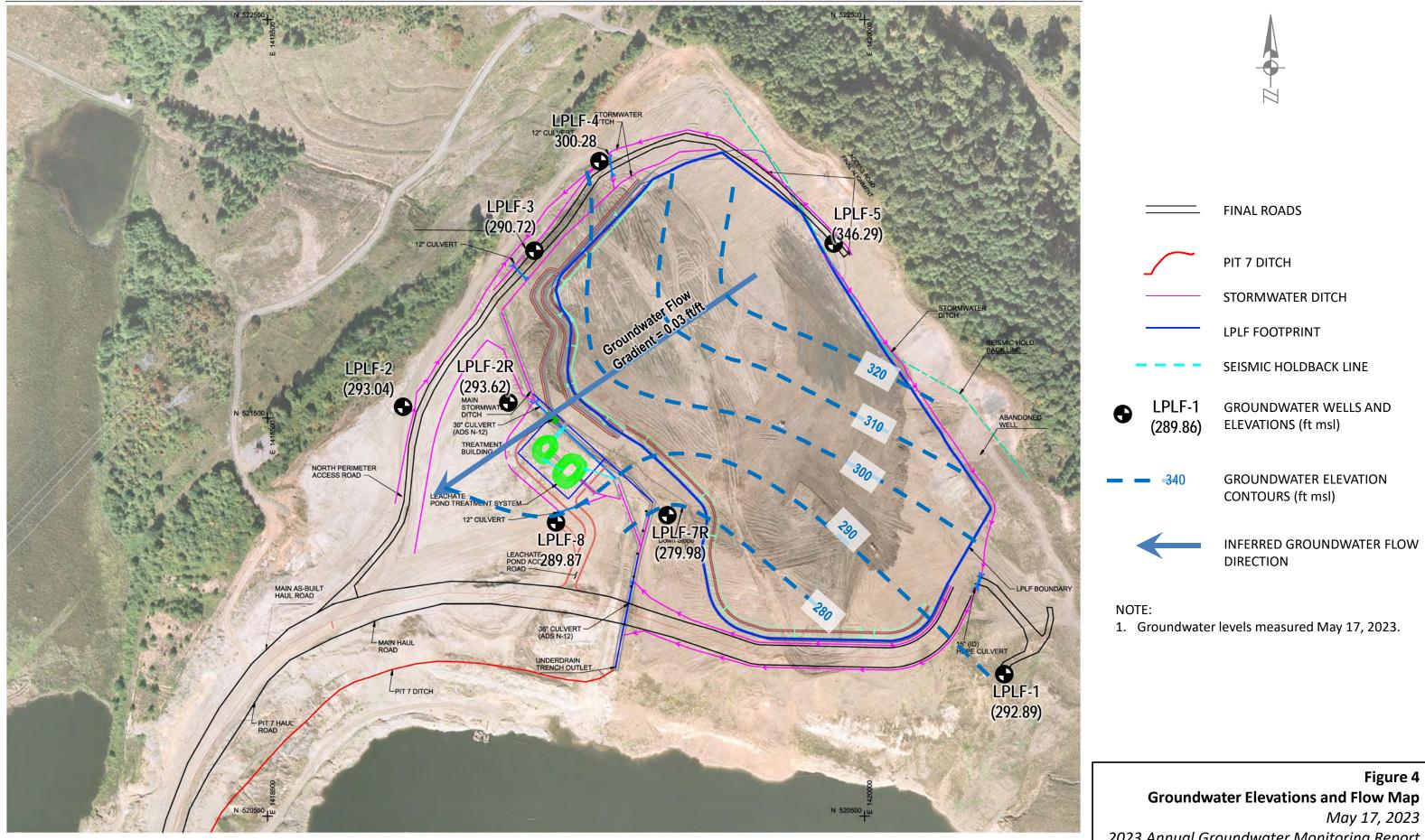


Figure 2 Site Map and Groundwater Monitoring Network 2023 Annual Groundwater Monitoring Report for the Limited Purpose Landfill - TransAlta Centralia Mine LLC



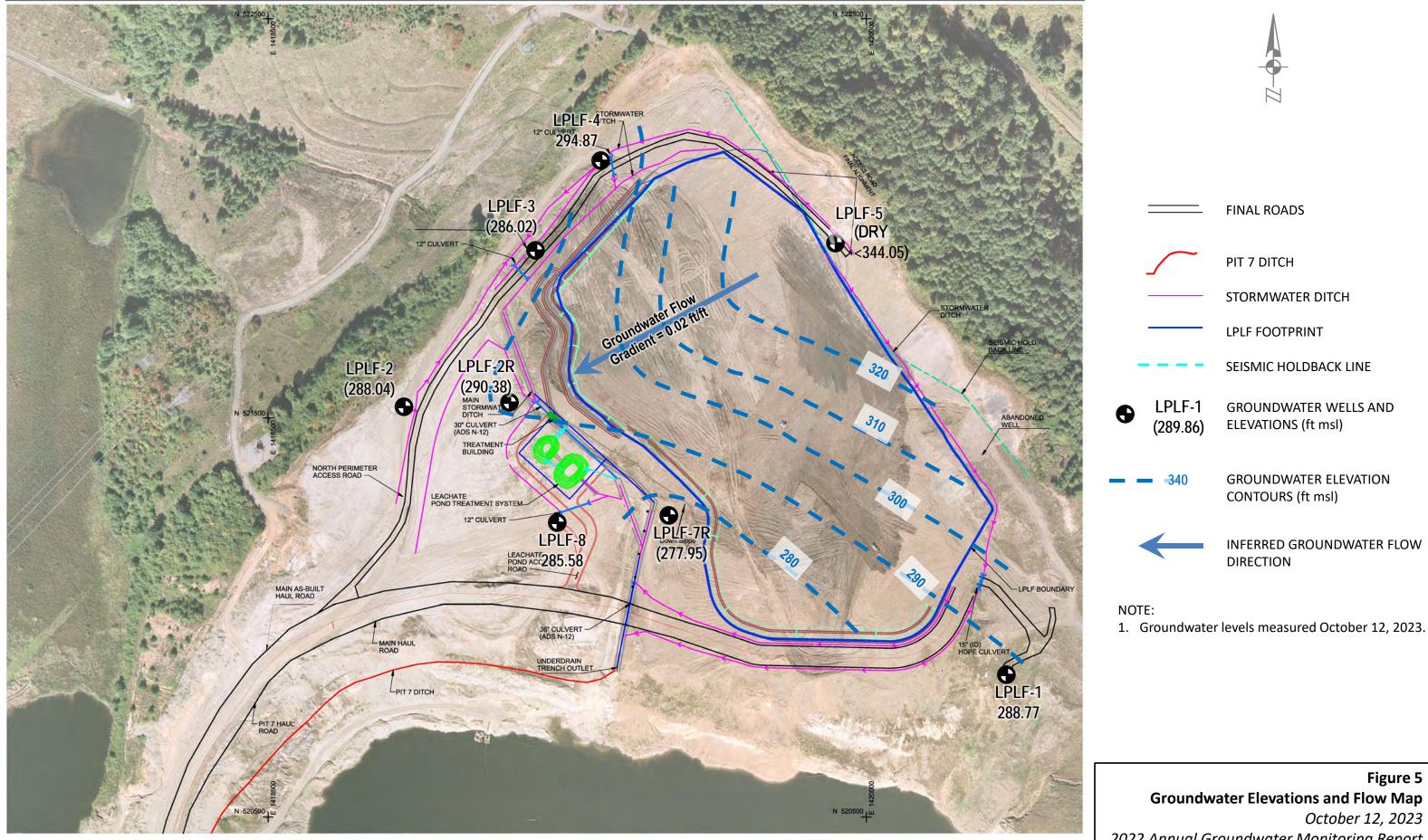
November 14, 2016 through November 29, 2023





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2023 Annual Groundwater Monitoring Report for the Limited Purpose Landfill - TransAlta Centralia Mine LLC





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2022 Annual Groundwater Monitoring Report for the Limited Purpose Landfill - TransAlta Centralia Mine LLC

Appendix A Field Forms

urge Meth		der 🗆 F	Peristaltic	Grab	Other: <u>R</u>	a.1	Initial D	W (ft btc):	54.91
unp ootai	9			-	d Parameters	s			
Time ¹	DTW ²	Purge Vol. (gal)	pН	Sp. Cond. (mS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc
	Begin Pumpin		p	1 (1 (1 ()		, , , ,
					1.1				
7:42	55.15	800	6.41	2837	2.47	13.2	231.1		cloudy
_					1				
			-						
		-							
Stabilization			± 0.1 units	± 3%	± 0.3 mg/L		± 10 mV	± 10% ⁴	
	meters in consistent a eved after 3 succession						xceed 0.33 ft for Low	-Flow method	
	lings > 10 NTUs			.5 L/min (0.03 - 0.13					
ample ID:	05/72	23-CCR	- LPLF	1	<u></u>		_ :	Sample Time:	7:42
	Appendix III (and TDS)				
	Appendix IV (dium 226, and						
C SAMPLE		eld Duplicate		MSD 🗆	EQ Rinsate B	lank	TOTAL PUR	GED (GAL)	
		na Daphouto			E & Farlouto D	i carint	TOTALTOT	(OLD (OI 12).	

	cm		Proje	ect Number:	cci	2	Well ID: LPLF 8			
Field Team:		Steve	Lege					Date:	5/17/23	
	np: Fr	scall.	100				Arrival T	ime to Well:	8:01	
	d: 🗌 Bladd	00.			Other:		Initial DT	W (ft btc):	8.88	
Pump Setting	g ⁵ : 100	nllmi	~	Notes:						
		- p		Field	Parameters	5	and the second			
Time ¹	DTW ²	Purge Vol. (ml)	рН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.	
8:06	Begin Pumpin	g								
8:11	9.71	500	6.00	3405	2.30	120	63.8		clear	
8:16	10.26	1200	5.94	3389	1.80	12.0	57.9			
8:21	10.63	1800	5.93	3386	1.64	12.1	54.5		6	
	10.8									
				-						
1										
Stabilization Criteria ³			± 0.1 units	± 3%	± 0.3 mg/L		± 10 mV	± 10% ⁴		
¹ Collect field par	ameters in consisten nieved after 3 succes	t 3-5 minute interval	s for Low-Flow meth w-Flow method: mir	nod nimum parameter s			exceed 0.33 ft for Lo	w-Flow method		
⁴ For turbidity rea	dings > 10 NTUs	⁵ Low-flow target	purge rate is 0.1 - 0.	.5 L/min (0.03 - 0.1	3 gal/min)			0 I T	8:21	
Sample ID:	051	723- (CR-L	PLF 8			-51	Sample Time	8.21	
Analysis:	Appendix IV		, chloride, fluoric adium 226, and		and TDS)					
QC SAMPLI		ield Duplicate		MSD [EQ Rinsate	Blank	TOTAL P	URGED (ml):	
QC Sample							QC	Sample Time	9:	
Comments:		_								

SITE:	TCM		2	Well ID: LPLF7R					
Field Team:		Stev						Date:	5/17/23
Weather/Ten	np: T	0394/	Cool				Arrival T		8:32
Purge Metho		der SP	eristaltic	Grab	□Other:		Initial DT	N (ft btc):	19.02
Dump Setting	g ⁵ : 10	om/m	2	Notes:					
				Field	Parameters				
Time ¹	DTW ²	Purge Vol. (ml)	pН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
8:36	Begin Pumpin	g					1		
8:41	19.69	550	6.43	3051	2.30	12.6	89.7		Clear
8:46	20.38	1050	6.43	3040	1.78	12.6	95.9		
8:51	20.58	1550	6.43	3027	1.63	12.6	101.5		J
-	20.86								
									1
							1		
Stabilization Criteria ³		-	± 0.1 units	± 3%	± 0.3 mg/L		± 10 mV	± 10% ⁴	
¹ Collect field par	ameters in consister nieved after 3 succes	nt 3-5 minute interval	s for Low-Flow meth w-Flow method; mir	nod nimum parameter s			exceed 0.33 ft for Lov DO	w-Flow method	
⁴ For turbidity rea	dings > 10 NTUs	⁵ Low-flow target	purge rate is 0.1 - 0.	.5 L/min (0.03 - 0.13	3 gal/min)			o I T!	S. 51
Sample ID:		123-00						Sample Time	8:51
Analysis:	Appendix IV	(boron, calcium (total metals, R			and TDS)				
QC SAMPLI	Other, spec	ifyield Duplicate	e 🗆 MS/	MSD 🗆	EQ Rinsate	Blank	TOTAL P	URGED (ml):
QC SAMPLI		51723.							e: 8:51
Comments:		21163	CCN 1		1.0		_		
ooninenta.	·								

SITE:	TCM		Proje	ect Number:	CCR				LPLF5
Field Team:		Jeve	Lega	3				Date:	5/17/23
Weather/Ten	np:	Jondy	/War.	m			Arrival T	ime to Well:	9:08
	d: 🗌 Blado				Other:			W (ft btc):	13.61
Pump Settin	g ⁵ : <u> </u> 0	om1/m	in	Notes:					
					d Parameters				
Time ¹	DTW ²	Purge Vol. (ml)	рН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
9:11	Begin Pumpin	g							
9:16	13.92	500	7.01	1673	4.94	12.8	116.6		clear
9:21	14.07	1000	6.95	1666	4.13	12.9	117.1		
9:26	14.18	1550	6.93	1666	3.53	13.1	118.6		4
,	14.12								
					1				
	-								
Stabilization Criteria ³	-		± 0.1 units	± 3%	± 0.3 mg/L	•	± 10 mV	± 10% ⁴	
¹ Collect field par ³ Stabilization ac ⁴ For turbidity rea	ameters in consisten nieved after 3 succes idings > 10 NTUs	ssive readings for Lo ⁵ Low-flow target	w-Flow method; min ourge rate is 0.1 - 0.	nimum parameter : .5 L/min (0.03 - 0.1	subset: pH, sp. cond				»: 9:2L
		(boron, calcium			and TDS)				
Analysis:		(total metals, R							
	Other, speci	ify							
QC SAMPL	E: 🗌 F	ield Duplicate	MS/	/MSD [] EQ Rinsate	Blank):
QC Sample	ID :						QC	Sample Time	ə:
Comments:	a <u></u>								

SITE:	TCM		Proje	ect Number:	CCR		Well ID: LPLF4			
Field Team:		Ster	e Lea	9	-			Date:	5/17/23	
Weather/Ter	np:	Lunny	Warm				Arrival T	ime to Well:	9:36	
	od: 🗌 Blad	/			Other:			W (ft btc):	2.84	
Pump Settin	g ⁵ :	NA		Notes	:					
				Fiel	d Parameters			-		
Time ¹	DTW ²	Purge Vol. (ml)	рН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.	
	Begin Pumpir	ng					1			
	1		1	1		<u></u>				
	h	ater	Lev	e1 (DNIV					
					,					
						<u> </u>				
Stabilization										
Criteria ³	-		± 0.1 units	± 3%	± 0.3 mg/L	-	± 10 mV exceed 0.33 ft for Lov	± 10% ⁴		
³ Stabilization ach ⁴ For turbidity rea	lieved after 3 succes	nt 3-5 minute interval ssive readings for Lo ⁵ Low-flow target	w-Flow method; min burge rate is 0.1 - 0.3	imum parameter	subset: pH, sp. cond.,			Pri low moulou		
Sample ID:								Sample Time		
Analysis:	Appendix IV	(boron, calcium, / (total metals, Ri	adium 226, and I	Radium 228).	and TDS)					
QC SAMPLE		ield Duplicate] EQ Rinsate E	Blank	TOTAL P	URGED (ml)		
QC Sample	ID :						QC	Sample Time		
Comments:										

SITE:	TCM		Proj	ect Number:	CCR			Well ID:	LPLF3
Field Team:		Ster.						Date:	5/17/23
Weather/Ter		Sunny					Arrival T		9:41
	od: 🗌 Blac	lder DP	/	Grab	⊡Other:				4.92
Pump Settin	g ⁵ :	NA		Notes					
		- p ·			d Parameters				
Time ¹	DTW ²	Purge Vol. (ml)	рН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
	Begin Pumpi	ng					-		
	h	ater	Lev	el	Only				
					/				
Stabilization Criteria ³		3	± 0.1 units	± 3%	± 0.3 mg/L	•	± 10 mV	± 10% ⁴	•
³ Stabilization act	ameters in consiste nieved after 3 succe dings > 10 NTUs	nt 3-5 minute interval essive readings for Lo ⁵ Low-flow target j	s for Low-Flow meth w-Flow method; mir purge rate is 0.1 - 0.	nimum parameter	subset: pH, sp. cond.,			w-Flow method Sample Time	
Analysis:	Appendix II	I (boron, calcium,	chloride, fluoric	le, pH, sulfate,	and TDS)		_		
	Appendix I	/ (total metals, R	adium 226, and	Radium 228).					
QC SAMPLI		Field Duplicate] EQ Rinsate E	Blank	TOTAL P	URGED (ml)	:
QC Sample	ID :					_	QC	Sample Time	:
Comments:									

SITE:	tcm		Proje	ect Number:	CCK	2		Well ID:	LPLF2
Field Team:		Stev	1						5/17/23
Weather/Ter				5			- Arrival T		9:46
Purge Metho		/	/		Other:				9.22
Pump Settin		NIA		Notes:					
	<u> </u>	1.1.			d Parameters				
Time ¹	DTW ²	Purge Vol. (ml)	рН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
	Begin Pumpir	ng					1		
		Jate	r L	evel	On	ly			
/									
			1						
								•	
Stabilization Criteria ³			± 0.1 units	± 3%	± 0.3 mg/L		± 10 mV	± 10% ⁴	•
¹ Collect field par	hieved after 3 succes	⁵ Low-flow target p	s for Low-Flow meth w-Flow method; min purge rate is 0.1 - 0.	imum parameter s 5 L/min (0.03 - 0.1	subset: pH, sp. cond., 3 gal/min)			v-Flow method Sample Time	
Analysis:		(boron, calcium,					-		
,		(total metals, Ra		Radium 228).					
QC SAMPL		ield Duplicate		las s] EQ Rinsate E	Blank	TOTAL PU	JRGED (ml)	I
QC Sample	ID :					_	QC	Sample Time	(
Comments:									

SITE:	cm			Well ID: LPLF2R Date: 5/17/23					
Field Team:	5	Steve	Legg					Date:	5/17/23
Weather/Ter	np: S	may / k	Jut J						11:27
Purge Metho		der P	eristaltic	Grab	Other:		Initial DT	W (ft btc):	2.42
Pump Settin	g ⁵ : 100	m1/ml.	~	Notes:					
	-10-			Field	Parameters	3	-		
Time ¹	DTW ²	Purge Vol. (ml)	pН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
11:31	Begin Pumpin	g							
11:36	2.66	600	6.44	3239	2.64	15.5	71.0		
11:41	2.77	1150	6.40		1.62	15.5	62.7		
11:46	2.87	1700	640	3233	1.31	15.3	57.1		
	3.00								
							1 1.		
						11			
			1						
							•		
							-		
Stabilization Criteria ³			± 0.1 units	± 3%	± 0.3 mg/L		± 10 mV	± 10% ⁴	
¹ Collect field par ³ Stabilization acl	ameters in consisten nieved after 3 succes	sive readings for Lo	Is for Low-Flow meth ow-Flow method; min	imum parameter su	ibset: pH, sp. cond		exceed 0.33 ft for Lov DO	w-Flow method	
⁴ For turbidity rea	0		purge rate is 0.1 - 0.1 R - L P L F		gal/min)			Sample Time	: 11:46
Sample ID:					and TDP)				
Analysis:			i, chloride, fluorid Radium 226, and I		100100				
	Other, spec	ify			_				
QC SAMPLI		ield Duplicate			EQ Rinsate	Blank		URGED (ml)	
QC Sample	ID : 🔼 🔿	51723-1	CCR-LPL	FZR W	15		-		11:46
Comments:	0	51723-1	CCR-LPL	F2R r	ISD		T	me:	11:46

SITE:	cm		Proje	ect Number:	CCR		_	Well ID:	LPLF7R
Field Team:		Steve	Legg					Date:	6/20/23
Weather/Ter	np: P	ain/Co					Arrival T		8.52 9:34
Purge Metho		1-,		Grab	Other:		Initial DT	W (ft btc):	19.45
Pump Settin	a ⁵ : 1/	om/m	2	Notes:					
					Parameter	S	A	t	
Time ¹	DTW ²	Purge Vol. (ml)	рН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
9:38	Begin Pumpin	g				1	1		
9:43	20.61	500	5.83	2987	3.16	13.4	1891,5		Clear
9:48	20.49	1600	5.89	2982	2.09	13.5	180.2		clear clear
9:53	20.66	1500	5.86	2981	1.74	13.7	174.5		clear
9:58	20.83	2000	5.89	2981	1.69	13.6	170.4		clear
	20.97					-			
				de.					
1				14					
						r.			
				i.					
	0000								
	2								
	1								
					1				
Stabilization Criteria ³			± 0.1 units	± 3%	± 0.3 mg/L		± 10 mV	± 10% ⁴	
¹ Collect field par ³ Stabilization ac ⁴ For turbidity rea	ameters in consisten hieved after 3 succes idings > 10 NTUs	sive readings for Lo ⁵ Low-flow target	w-Flow method; min purge rate is 0.1 - 0.	imum parameter su 5 L/min (0.03 - 0.13	ubset: pH, sp. con				* 9:58
Sample ID:			R-LPLF				-	bample mile	1.28
Analysis:	Appendix IV	(total metals, R	, chloride, fluorid adium 226, and		and TDS)				
QC SAMPL		ifyield Duplicate		MSD 🗌	EQ Rinsate	Blank	TOTAL P	URGED (ml):
QC Sample							QC	Sample Time	9:
Comments:									

SITE:	-cm		Proj	ect Number:	CCR		5 12	Well ID:	LPLF8
Field Team:	ç	Steve	Loga					Date:	6/20/23
Weather/Ten		ondy/1					Arrival 7	ime to Well:	10:11
Purge Metho		11		Grab	Other:		Initial DT	W (ft btc):	10.66
Pump Setting		oml/mi.	1	Notes:					
					Parameters				
Time ¹	DTW ²	Purge Vol. (ml)	pН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
10:13	Begin Pumpin	g							
10:18	11.39	500	5.48	3387	2.89	13.2	48.8		dear
10:23	11.90	1000	5.44	3371	2.05	13.1	40.6		clear
10:28	12.29	1600	5.42	3377	1.84	B.1	39.3		clear
	12.34								
				()	_				
					· · · · · ·				
			1						
							-		
		1.1.1					-		
								1	
					1	le marine			
Stabilization Criteria ³			± 0.1 units	± 3%	± 0.3 mg/L	•	± 10 mV	± 10% ⁴	· · · ·
¹ Collect field para	meters in consistent	3-5 minute intervals sive readings for Lov	for Low-Flow meth	nod nimum parameter su			exceed 0.33 ft for Lov O	w-Flow method	
⁴ For turbidity read	lings > 10 NTUs	⁵ Low-flow target p	ourge rate is 0.1 - 0.	5 L/min (0.03 - 0.13	gal/min)				1.0.1
Sample ID:	0620	23-(CR-	-LPLF8					Sample Time	0:28
		(boron, calcium,			and TDS)				
		(total metals, Ra		Radium 228).					
QC SAMPLE		eld Duplicate		MSD 🗆	EQ Rinsate I	Blank	TOTAL P	URGED (ml)	
QC Sample I								Sample Time	
Comments:							7.0		

SITE:	TCM		Proje	ect Number:	CCR	2	Well ID: LPLF2R			
Field Team:	S	stevel	099			S.,		Date:	6/20/23	
Weather/Ter		lordy	100				Arrival T	ime to Well:	10:45	
Purge Metho		//	eristaltic	Grab	Other:		Initial DT	W (ft btc):	3.57	
Pump Settin	g ⁵ : 100	onl/nin		Notes:						
				Field	l Parameters		Law.	-		
Time ¹	DTW ²	Purge Vol. (ml)	рН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.	
10:49	Begin Pumpir	ng								
10:54	3.94	700	5.93	3161	2.08	13.1	48.4		clear	
10:59	4.00	1200	5.97	3153	1.62	13.2	46.9	1	clear clear clear	
11:04	4.03	1700	5.99	3153	1.47	13.1	45.9		clear	
	4.03									
					·					
					1					
			-							
Stabilization Criteria ³			± 0.1 units	± 3%	± 0.3 mg/L		± 10 mV	± 10% ⁴	•	
¹ Collect field para	meters in consisten	t 3-5 minute intervals ssive readings for Lo	s for Low-Flow meth	od imum parameter si			exceed 0.33 ft for Lov	v-Flow method		
⁴ For turbidity read	lings > 10 NTUs	⁵ Low-flow target p	ourge rate is 0.1 - 0.	5 L/min (0.03 - 0.13	gal/min)	and taronally of a				
Sample ID:	0620	23-CCR	L-LPLF2	2R				Sample Time	: 11:04	
Analysis:		(boron, calcium,			and TDS)					
		(total metals, Ra		aulum 220).						
QC SAMPLE	: 🗆 F	ield Duplicate		MSD 🗌	EQ Rinsate E	Blank	TOTAL PL	JRGED (ml)	:	
QC Sample	D:						QC	Sample Time	°	
Comments:										

SITE:	TCAN		Proj	ect Number:	CCI	Well ID: LPLFI			
Field Team:	(SL					-	Date:	10/12/23
Weather/Te		Foggy	Cool 5	°0°			Arrival T	ime to Well:	7:55
Purge Meth		- ' '		□Grab	Other: C	other	Initial DT	W (ft btc):	(59.03)
Pump Settir	ng ⁵ :	N/A		Notes:					
		_			d Parameters		ORP	Turbidity	
Time ¹	DTW ²	Purge Vol. (ml)	рН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	(mV)	(NTU)	Note color, odor, etc.
	Begin Pumpin	g					1		che he long
8:07	(59.95)	0001	6.09	3958	3.65	12.0			classy aring e
Stabilization Criteria ³			± 0.1 units	± 3%	± 0.3 mg/L		± 10 mV	± 10% ⁴	
¹ Collect field pa ³ Stabilization ac ⁴ For turbidity rea	rameters in consistent hieved after 3 succes adings > 10 NTUs	sive readings for Lo ⁵ Low-flow target	w-Flow method; mi ourge rate is 0.1 - 0	nimum parameter s .5 L/min (0.03 - 0.13	ubset: pH, sp. cond.				8:07
Analysis:	Appendix III		, chloride, fluorio adium 226, and	de, pH, sulfate, Radium 228).	and TDS)				
QC SAMPL		ield Duplicate			EQ Rinsate E	3lank):
QC Sample							_ 40		
Comments:									

~

SITE:	TCM		Proje	ct Number:	CCR		. 1	Well ID:	LPLFZR
Field Team:		SL						Date:	10/12/23
Weather/Ten	np: Fo	ggy/Cc	nel 52°				-		8:38
Purge Metho	od: 🗌 Bladd	ler 😺 P	eristaltic [Grab	Other:		Initial DT	N (ft btc):	(5.66)
Pump Setting	g ⁵ :	100ml/	win	Notes:					
				1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Parameters			Turkidity	
Time ¹	DTW ²	Purge Vol. (ml)	pН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
8:43	Begin Pumping	g		_			1 1		
8:48	6.99)	600	5.96	4086	2.80	13.8			clear
8:53	((.oz)	000	5.97	4089	2.23	14.0			clear Clear Clear
	(6.09)	1500	5.97	4097	2.14	13.8			dear
	(6.13)								
1									
					1				
						1			A.
	1					1			
Stabilization			± 0.1 units	± 3%	± 0.3 mg/L		± 10 mV	± 10% ⁴	
Criteria ³	rameters in consisten					down should not	exceed 0.33 ft for Lo		
³ Stabilization ac	hieved after 3 succes	sive readings for L	ow-Flow method; min	imum parameter s	ubset: pH, sp. cond				
	adings > 10 NTUs		purge rate is 0.1 - 0.		s gai/min)			Samplo Timo	8:58
Sample ID:	101	265-0	CR-LPI	FLK			-	Sample Time	
Analysis:			n, chloride, fluorid		and TDS)				
			Radium 226, and						
QC SAMPL		ield Duplicat	1		EQ Rinsate	Blank	TOTAL P	URGED (ml)):
QC Sample							QC	Sample Time	0:
Comments:									
							(inc		

Field Team: SL Date: 10/12/23 Woather/Temp: Fogsy / (ab) 52* Anival Time to Well: 9:12 Purge Method: Bladder B Peristatic Date: Initial DTW (ft btc): (13.17) Purge Method: Bladder B Peristatic Date: Initial DTW (ft btc): (13.17) Purge Setting ⁶ : UOD//win Notes: Initial DTW (ft btc): (13.17) Purge Setting ⁶ : UOD//win Notes: Initial DTW (ft btc): (13.17) Purge Vol. pH Sp. Cond. (mgl.) (mgl.) Notes: 1:5: Begin Aunphag Initial DTW (ft btc): (13.17) Notes: 9:25: (H.15) 1000 5:5'4 41:55 2.73 13.4' Cleerish 9:25: (H.15) 1000 5:5'4 41:55 2.73 13.4' Cleerish 9:26: (H.15) 1000 5:5'4 41:55 2.73 13.4' Cleerish 9:26: (H.15) 1000 5:5'4 41:5'5 2.5'4 13.4' cleerish 9:26:	SITE:	TCM		Proj	ect Number:	CCR			Well ID:	LPLF8
Purge Method: □ Bladder [S] Peristaltic □ Other:	Field Team:		SL						Date:	10/12/23
Purge Method: □ Bladder [S] Peristatitic □ Other:	Weather/Ter	mp: Fo	2994	500 5	2°			Arrival ٦	ime to Well:	9:12
Field Parameters Time 1 DTW2 (m) pH Sp. Cond. (uS/m) DO Temp ORP (mV) Turbidity Note color, odor, etc. A: 15 Bigin Pumping	Purge Metho					Other:		Initial DT	W (ft btc):	(13.17)
Field Parameters Time 1 DTW2 (m) pH Sp. Cond. (uS/m) DO Temp ORP (mV) Turbidity Note color, odor, etc. A: 15 Bigin Pumping	Pump Settin	ig ⁵ : \ \\	oul/m	n	Notes:				× '	
Time 1 DTW2 (mi) pH (us/sem) (mg/L) (*C) (mV) (NTU) Note color, odor, etc. 4:15 Begin Fumping 9:20 (375 5200 5.54 4153 3.88 13.4 clearish 9:20 (1375 5200 5.54 4155 2.73 13.4 clearish 9:20 (4.50) 1500 5.54 4155 2.73 13.4 clearish 9:30 (4.50) 1500 5.54 4154 2.54 13.4 clearish (15.14)										0
9/200 (3.75 5/200 5.574 4/1573 2.88 13.4 cleerish 9/205 (14.15) 10000 5.574 4/1557 2.73 13.4 cleerish 9/205 (15.00) 5.574 4/1557 2.73 13.4 cleerish 9/205 (15.00) 5.574 4/1557 2.73 13.4 cleerish 9/205 (15.14)	Time ¹	DTW ²		рН						Note color, odor, etc.
9:25 (H.15) 1000 5.54 H155 2.73 13.4 clearish 9:30 (H.55) 1500 5.54 H154 2.54 13.4 clearish (15.14)	9:15	Begin Pumping	9					-		
9:30 (x4.50) 1500 5.54 Y154 2.54 j3.4	9:20	(13.75)	500	5.54	4153	3.88	13.4			
9:30 (x4.50) 1500 5.54 Y154 2.54 j3.4	9:25	(14.15)	1000	5.54	4155	2.73	13.4			clearist
Image: Stabilization Image: Stabilization <td< td=""><td>9:30</td><td>(14.50)</td><td>1500</td><td>5.54</td><td>4154</td><td>2.54</td><td>13.4</td><td></td><td>1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -</td><td>clearish</td></td<>	9:30	(14.50)	1500	5.54	4154	2.54	13.4		1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -	clearish
Criteria ³ Image:		(15.14)								
Criteria ³ Image:								1		
Criteria ³ - - E 0.1 units E 3% E 0.3 mg/L - E 10 mV E 10% ¹ Collect field parameters in consistent 3-5 minute intervals for Low-Flow method ² DTW: Total drawdown should not exceed 0.33 ft for Low-Flow method ³ Stabilization achieved after 3 successive readings for Low-Flow method, minimum parameter subset: pH, sp. cond., and turbidity or DO ⁴ For turbidity readings > 10 NTUs ⁵ Low-flow target purge rate is 0.1 - 0.5 L/min (0.03 - 0.13 gal/min) Sample ID:								-		
Criteria ³ - - E 0.1 units E 3% E 0.3 mg/L - E 10 mV E 10% ¹ Collect field parameters in consistent 3-5 minute intervals for Low-Flow method ² DTW: Total drawdown should not exceed 0.33 ft for Low-Flow method ³ Stabilization achieved after 3 successive readings for Low-Flow method, minimum parameter subset: pH, sp. cond., and turbidity or DO ⁴ For turbidity readings > 10 NTUs ⁵ Low-flow target purge rate is 0.1 - 0.5 L/min (0.03 - 0.13 gal/min) Sample ID:										
Criteria ³ Image:										
Criteria ³ Image:										
Criteria ³ Image:										
Criteria ³ - - <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>										
Criteria ³ - - <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>										
Criteria ³ - - <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td></td<>								-		
Criteria ³ Image:										
³ Stabilization achieved after 3 successive readings for Low-Flow method; minimum parameter subset: pH, sp. cond., and turbidity or DO ⁴ For turbidity readings > 10 NTUs ⁵ Low-flow target purge rate is 0.1 - 0.5 L/min (0.03 - 0.13 gal/min) Sample ID:		-		± 0.1 units	± 3%	± 0.3 mg/L		± 10 mV	± 10% ⁴	
Sample ID: IO12_23 - CCR - LPLFS Sample Time: 9:30 Analysis: Appendix III (boron, calcium, chloride, fluoride, pH, sulfate, and TDS) Appendix IV (total metals, Radium 226, and Radium 228). Other, specify QC SAMPLE: Field Duplicate FMS/MSD EQ Rinsate Blank TOTAL PURGED (ml): Z QC Sample ID: IO1223 - CCR - LPLFS MS QC Sample Time: 9:30	¹ Collect field para ³ Stabilization act	ameters in consistent nieved after 3 success	3-5 minute intervals ive readings for Lo	for Low-Flow meth v-Flow method; min	od imum parameter su				w-Flow method	
Analysis: Appendix III (boron, calcium, chloride, fluoride, pH, sulfate, and TDS) Appendix IV (total metals, Radium 226, and Radium 228). Other, specify QC SAMPLE : Field Duplicate Image: Distribution of the system of the sys		0				gal/min)				9.70
Appendix IV (total metals, Radium 226, and Radium 228). Other, specify QC SAMPLE : Field Duplicate Image: Sample ID : Image: Sample ID :						1750		-	sample Time:	1.20
QC SAMPLE : Image: Field Duplicate Image: MS/MSD Image: EQ Rinsate Blank TOTAL PURGED (ml): Image: Provide MS/MSD QC Sample ID : Image: MS/MSD Image: Provide MS/MSD Image: QC Sample Time: Image: Provide MS/MSD Image: QC Sample Time: Image: Provide MS/MSD	Analysis:	Appendix IV	total metals, Ra	dium 226, and		and TDS)				
QC Sample ID : 101223 - CCR - LPLF8 MS QC Sample Time: 9:30	QC SAMPLE			-	MSD 🗆	EQ Rinsate B	lank	TOTAL PI	URGED (ml):	Z
Comments: 101223 - CCR - LPLF8 MSD 9:30			01223 -0	CCR-LPL	F8 MS	5				the second s
	Comments:	1	01223-0	CR-LPL	F8 MS	D				9:30

SITE:	TCM		Proj	ect Number:	cu	2	_	Well ID:	LPLF7R
Field Team:		SI					_	Date:	10/12/23
Weather/Ter	mp: C		al S	2.			Arrival 7		9:50
	od: 🗌 Blade				□Other:		Initial DT	W (ft btc):	(21.05)
Pump Settin	g ⁵ :	Dallal	~	Notes:					
				Field	d Parameters				
Time ¹	DTW ²	Purge Vol. (ml)	рН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
9:56	Begin Pumpin	g					1		
10101	(21.18)	400	5.98	3605	4.33	13.7			clear
10:06	(21.31)	800	6.00	3586	2.75	13.4	1		clear
	(21.50)	1400	6.00	3586	2.47	13.3			clear
	(21.74)								
Stabilization Criteria ³	-	-	± 0.1 units	± 3%	± 0.3 mg/L		± 10 mV	± 10% ⁴	
¹ Collect field para ³ Stabilization ach ⁴ For turbidity rea Sample ID: Analysis:		sive readings for Lo ⁵ Low-flow target p 2.2.3 – C.C. (boron, calcium,	w-Flow method; mir burge rate is 0.1 - 0. <u><i>R</i> - <u>L</u> <u>PL</u> <u>1</u> chloride, fluoric adium 226, and</u>	nimum parameter su 5 L/min (0.03 - 0.13 P 7 R le, pH, sulfate, a Radium 228).	ubset: pH, sp. cond. 3 gal/min)	, and turbidity or E	– Stotal Pl	Sample Time: JRGED (ml):	
QC Sample	ID : _/(61223-0	CR-LPI	LF7R F	0		QC	Sample Time:	10:11
Comments:									
	· · · · ·								

SITE: TCM	\	Proj	ect Number	CCR		Well ID: LPLF5			
Field Team:		SL Clear/1							10/12/23
Weather/Te	mp:(Clear /	Cost (56.			Arrival		10:30
Purge Meth	od: 🗌 Blac	lder 🗆 P	eristaltic	□Grab	□Other:				Dry 15.83
Pump Settir	ng ⁵ :			Notes	:				
					d Parameters				
Time ¹	DTW ²	Purge Vol. (ml)	рН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
	Begin Pumpi	ng							
	D	RY							
								-	
1 [-		-							
Otabilization									
Stabilization Criteria ³	•		± 0.1 units	± 3%	± 0.3 mg/L		± 10 mV	± 10% ⁴	<u>\</u> .
¹ Collect field para		t 3-5 minute intervals sive readings for Lov					ceed 0.33 ft for Lov	v-Flow method	
⁴ For turbidity read			urge rate is 0.1 - 0.5			and tarbianty or by	<u>,</u>		
Sample ID:							- 5	Sample Time:	
Analysis:	Appendix III	(boron, calcium,	chloride, fluoride	e, pH, sulfate,	and TDS)				
[(total metals, Ra	dium 226, and F	Radium 228).					
[Other, speci	fy							
QC SAMPLE	: 🗆 Fi	eld Duplicate	□ MS/N	ASD 🗆	EQ Rinsate E	Blank	TOTAL PL	JRGED (ml):	1
QC Sample I	D :						QC	Sample Time:	
Comments:									

SITE:	CM		Pro	ject Numbe	r: CCR		Well ID: LPLF4				
Field Team		SL,							10/12/23		
Weather/Te	mp:	Chear /	(os)				Arrival		10:37		
Purge Meth	od: 🗌 Blac	lder 🗆 I	Peristaltic	Grab	□Other:				(8.25)		
Pump Settir	ng ⁵ :			Notes	3:						
					Id Parameter						
Time ¹	DTW ²	Purge Vol. (ml)	pH	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.		
	Begin Pumpi	ng			_						
	6	oter	level	only							
				-							
Stabilization Criteria ³			± 0.1 units	± 3%	± 0.3 mg/L		± 10 mV	± 10% ⁴			
		3-5 minute intervals sive readings for Lov			² DTW: Total draws subset: pH, sp. cond.,	down should not ex and turbidity or DC	ceed 0.33 ft for Lov	v-Flow method			
⁴ For turbidity read	ings > 10 NTUs	⁵ Low-flow target p	urge rate is 0.1 - 0.5	5 L/min (0.03 - 0.1	3 gal/min)						
Sample ID:							5	Sample Time:			
Analysis:	Appendix IV	(boron, calcium, (total metals, Ra y	dium 226, and F	Radium 228).							
QC SAMPLE		eld Duplicate			EQ Rinsate B	lank	TOTAL PL	JRGED (ml):			
QC Sample II	D:										
Comments:	<u></u>										

SITE:	TCM)	Pro	ject Number:	CCR			Well ID:	LPLF3
Field Team:		SL							10/12/23
Weather/Te	mp:(clear/	Cool 5	20			Arrival	Time to Well:	10:41
Purge Meth				□Grab	□Other:		Initial D1	W (ft btc):	(9.62)
Pump Settir	g ⁵ :			Notes:					
				Field	d Parameter	S			
Time ¹	DTW ²	Purge Vol. (ml)	рН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
	Begin Pumpir	ng							
	11	100	level	only					
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	HOEV	Lever	Only					
				'					
								1	
1									
<u> </u>									
			1						
							/		
Stabilization									
Criteria ³		*	± 0.1 units	± 3%	± 0.3 mg/L	-	± 10 mV	± 10% ⁴	
			for Low-Flow metho v-Flow method; mini	od mum parameter sul	² DTW: Total draw bset: pH, sp, cond.	down should not ex	ceed 0.33 ft for Low	-Flow method	
⁴ For turbidity readi			urge rate is 0.1 - 0.5						
Sample ID:	2						S	ample Time:	
Analysis:	Appendix III (	boron, calcium,	chloride, fluoride	, pH, sulfate, a	nd TDS)				
	Appendix IV (	total metals, Ra	dium 226, and R	adium 228).					
E	Other, specify	/							
QC SAMPLE	: 🗆 Fie	eld Duplicate	□ MS/M	1SD 🗆	EQ Rinsate B	lank	TOTAL PL	JRGED (ml):	
QC Sample II	):						QC S	Sample Time:	
Comments:									

SITE:	TCM		Proje	ect Number:	CCR		. 0	Well ID:	LPLFZ	
Field Team:		SL							10/12/23	
Weather/Ter	nn: (	1	(a) 5	2.0			- Arrival ⁻		10:45	
Purge Metho		/		Grab	Other:		Initial DTW (ft btc): (14-22)			
Pump Settin				Notes:						
					d Parameters					
Time ¹	DTW ²	Purge Vol. (ml)	рН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.	
	Begin Pumpir	ng					1			
		hicker	- leve	on	4					
-	/	V							1	
							-			
		1							1	
								-		
Stabilization Criteria ³			± 0.1 units	± 3%	± 0.3 mg/L		± 10 mV	± 10% ⁴		
¹ Collect field par	ameters in consisten	t 3-5 minute interval	s for Low-Flow metho	bd			exceed 0.33 ft for Lo	w-Flow method		
⁴ For turbidity rea			w-Flow method; mini ourge rate is 0.1 - 0.5		ubset: pH, sp. cond., 3 gal/min)	and turbidity of D	0			
Sample ID:								Sample Time:		
Analysis:		(boron calcium	chloride, fluoride	e. pH. sulfate.	and TDS)					
Analysist			adium 226, and F							
	Other, speci	fy								
QC SAMPLE	: 🗆 F	ield Duplicate	☐ MS/N	MSD 🗆	EQ Rinsate B	llank	TOTAL P	URGED (ml)		
QC Sample	ID :						QC	Sample Time		
Comments:										

	cm		Proje	ect Number:	CCR			Nell ID:	LPLF7R
Field Team:		SL						Date:	11/29
Neather/Ter	np:	Jondy /	Cold				Arrival T		10:08
	od: 🗆 Bladd	11		Grab	Other:		Initial DT	N (ft btc):	(20.66)
	g ⁵ :)		in	Notes:					
enthe entry					d Parameters				
Time ¹	DTW ²	Purge Vol. (ml)	рН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
10:11	Begin Pumpin	g					1	in a	
10:16	(20.88)	500	5.87	2528	4.95	9.8			clear
10:21	(21.05)	1000	5.83	3555	3.96	9.7			
10:26	(21.18)		5.88	3551	3.46	10.0			
÷.	21.32								
	1			_					
		1							
					-				
			1						
		1				1			
Stabilization			± 0.1 units	± 3%	± 0.3 mg/L		± 10 mV	± 10% ⁴	•
Criteria ³ ¹ Collect field part ³ Stabilization ac	ameters in consisten	t 3-5 minute interva	Is for Low-Flow met ow-Flow method; mi	hod nimum parameter	² DTW: Total draw subset: pH, sp. cond.		exceed 0.33 ft for Lov DO	w-Flow method	
⁴ For turbidity rea	adings > 10 NTUs	⁵ Low-flow target	purge rate is 0.1 - 0	.5 L/min (0.03 - 0.1	13 gal/min)			Samplo Time	: 10;26
Sample ID:			2-LPLF7		Vilei.		÷1. /	Sample Time	10,00
Analysis:			i, chloride, fluorio Radium 226, and		and TDS)				
	Other, speci								
QC SAMPL	E: 🗆 F	ield Duplicate	e 🗌 MS	/MSD [	] EQ Rinsate I	Blank	TOTAL P	URGED (ml	):
QC Sample	ID :						QC	Sample Time	2:
Comments:									

SITE:	TCM		Proj	ect Number:	CCR			Well ID:	LPLF8
Field Team:		SL				0		Date:	11/29/23
Weather/Ter	mp: C	londy/	Cold				Arrival T		10:37
Purge Metho		1.1		Grab	□Other:		Initial DT	W (ft btc):	(12.15)
Pump Settin	a ⁵ : 10	on /mi	1	Notes:					
i anip sam	J	0.11			Parameters	5			
Time ¹	DTW ²	Purge Vol. (ml)	рН	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
10:40	Begin Pumping	1							
10145	(13.11)	800	5.51	4100	3.78	11.00			clear
10:50	(13.54)	1300	5.55	4104	3.20	11.0			clear
10:55	(13.86)	1800	5.57	4100	3.17	10.8			
4	(4.09)								
				1	<u> </u>				
						_			
				- 1					
Stabilization			± 0.1 units	± 3%	± 0.3 mg/L		± 10 mV	± 10% ⁴	
Criteria ³	ameters in consistent	2 E minuto intorual				vdown should not e	exceed 0.33 ft for Lo	1	
³ Stabilization ac	hieved after 3 success adings > 10 NTUs	sive readings for Lo	w-Flow method; mir purge rate is 0.1 - 0.	nimum parameter s	ubset: pH, sp. cond				
Sample ID:								Sample Time	10:55
Analysis:	Appendix III				and TDS)				
, mary oron	Appendix IV								
	Other, specif	у							
QC SAMPL	E: 🗌 Fie	eld Duplicate	MS/	MSD 🗌	EQ Rinsate	Blank	TOTAL P	URGED (ml)	:
QC Sample	ID :						QC	Sample Time	l
Comments:	· · · ·								

SITE:	TCM		Proj	ect Number:	CCR			Well ID:	LPLFZR
ield Team:		SL						Date:	11/29/23
Weather/Ter	nn:	Cloud	1 Cald				- Arrival T		11:06
Purge Metho		. /		□Grab	□Other:				(4.30)
Pump Settin	g ⁵ :	100 ml/	Min	Notes:					
		t al	AL	A STATE OF A	d Parameters				
Time ¹	DTW ²	Purge Vol. (ml)	pH	Sp. Cond. (uS/cm)	DO (mg/L)	Temp (°C)	ORP (mV)	Turbidity (NTU)	Note color, odor, etc.
11:08	Begin Pumpin	g						(	
11:13	(4.62)	750	5.99	4144	3.29	10.7			
11:18	(4.65)	1200	6.01	4109	3.01	10.4			
11:23	(4.77)	1700	6.01	4102	2.70	10.9			
	(4.77)								
	(1)						1		
		-			1				
1									
		· · · · · · · · ·							
Stabilization Criteria ³			± 0.1 units	± 3%	± 0.3 mg/L	•	± 10 mV	± 10% ⁴	
¹ Collect field par	ameters in consisten hieved after 3 succes	at 3-5 minute interva	ls for Low-Flow methow method; mi	hod nimum parameter s			exceed 0.33 ft for Lo DO	w-Flow method	
	adings > 10 NTUs	⁵ Low-flow target	purge rate is 0.1 - 0	.5 L/min (0.03 - 0.1	3 gal/min)				11.00
Sample ID:	112	923-0	CR-LP	LFZR			-0.0	Sample Time	1:23
Analysis:	Appendix III				and TDS)				
	Appendix IV			Kadium 228).					
QC SAMPL		ield Duplicate	-	/MSD [	] EQ Rinsate	Blank	TOTAL P	URGED (ml	):
QC Sample		iela E aplicate							9:
Comments:									
ooninenta.									

Appendix B Laboratory Reports



ALS Environmental ALS Group USA, Corp 1317 South 13th Avenue Kelso, WA 98626 **T** : +1 360 577 7222 **F** : +1 360 636 1068 www.alsglobal.com

Analytical Report for Service Request No: K2305653

June 06, 2023

Marc Read Transalta Centralia Mining, LLC 913 Big Hanaford Rd Centralia, WA 98531

#### **RE: LPLF CCR**

Dear Marc,

Enclosed are the results of the sample(s) submitted to our laboratory May 17, 2023 For your reference, these analyses have been assigned our service request number **K2305653**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at Mark.Harris@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

noe D. Dan

Mark Harris Project Manager



ALS Environmental ALS Group USA, Corp 1317 South 13th Avenue Kelso, WA 98626 **T**: +1 360 577 7222 **F**: +1 360 636 1068 www.alsglobal.com

#### **Table of Contents**

Acronyms Qualifiers State Certifications, Accreditations, And Licenses Case Narrative Chain of Custody General Chemistry

Metals

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#### Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M MCL	Modified Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

#### **Inorganic Data Qualifiers**

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

#### **Metals Data Qualifiers**

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

#### **Organic Data Qualifiers**

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
   DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

#### Additional Petroleum Hydrocarbon Specific Qualifiers

- ${f F}$  The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

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#### ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources- data/water-sciences-home-page/laboratory-certification-branch/non-field-lab- certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaborator yAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com to our laboratory's NELAP-approved quality assurance program. A complete	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.



## Case Narrative

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

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Service Request: K2305653

Date Received: 05/17/2023

Project:LPLF CCRSample Matrix:Ground Water

#### **CASE NARRATIVE**

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

#### Sample Receipt:

Six ground water samples were received for analysis at ALS Environmental on 05/17/2023. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

#### Metals:

**Client:** 

No significant anomalies were noted with this analysis.

Transalta Centralia Mining, LLC

#### General Chemistry:

No significant anomalies were noted with this analysis.

noe D. Dan

Approved by

Date

06/06/2023



# Chain of Custody

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

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ADDRESS 1317 South 13th Ave., Kelso, WA 98626 PHONE 1 360 577 7222 FAX 1 360 636 1068

W2305653 Work Order No.: Chain of Custody

(ALS)	Part of the	ALS Grou	p A Campbell	Brothers Lim	ited Com	pany																				
Project Manager:	Steve Mahr									]	Bill to:			5	Steve Mahr											
Client Name:	TransAlta Centralia Mining Company											Company:				TransAlta Centralia Mining										
Address:	913 Big Hanaford Road											Address:				913 Big Hanaford Road										
City, State ZIP:	Centralia, WA 98531									]	City, State ZIP:			(	Centralia, WA 98531											
Email:	steve_mahr@transalta.com Phone:				360-330-8140					Email:			5	steve_mahr@transalta.com					po#							
Project Name:	LPLF CCR								·——		·	REC	UEST	FED	D ANALYSIS								TAT			
Project Number:																									Routine 21c	
P.O. Number:	4700097853 Line 30																							Same Day 10		
Sampler's Name:	Steve Mahr					]																			Next Day ***	
	SA	MPLE R	ECEIPT																						3 Day	
Temperature (°C):			Temp Blank Present																			5 Day 50%				
Received Intact:	ala si ta si si	Yes No N/A Wet Ice / B																				Surcharges.				
Cooler Custody Sea	ls:	Yes No N/A Total Containers:																			Please call for					
Sample Custody Sea	als:	Yes	No N/A			ers			a																availability	
						Containers		/ TDS	/ Chloride		14	Metals													Due Date:	
Sample Identific	ation	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Col		SM 2540 C /	9056A / Cł	9056A / F	9056A / SO4	6010C / Me													Comments	
													1							-	+	+		++		
101022-CCR-L	PLF1	GW	05/17/2023	7:36		2		X	X	X	X	x										1				
101022-CCR-L	PLF8	GW	05/17/2023	8:21		2		X	х	Х	X	X									1					
101022-CCR-LF	LF7R	GW	05/17/2023	8:51		2		Х	Х	Х	X	X									1	1				
101022-CCR-LPI	_F8 FD	GW	05/17/2023	8:51		2		Х	Х	Х	X	X														
101022-CCR-L	PLF5	GW	05/17/2023	9:26		2		X	Х	x	X	X														
1010-CCR-LPL	.F2R	GW	05/17/2023	11:46		2		X	Х	Х	X	Х														
101022-CCR-LPLF	2R MSD	GW	05/17/2023	11:46		2		Х	Х	Х	X	X														
101022-CCR-LPL	F2R MS	GW	05/17/2023	11:46		2		X	X	X	x	X														
												ļ												<u> </u>	-	
Dissolved		Г	Ag, Al, As, B, B	a Ro Ca Cd				1; 84	0 M	n Mr	<u> </u>		<u>р рк</u>	Sh C		<u> </u>	<u>с, ті</u>	<u> </u>	 7.		_				Anthonia Aratist	
	na kana kana		Ag, Al, As, B, B			·····								·····								- ~	Juitio		Aethods Availab n Request	
			ELINQUISH				<u>~, ()</u>		3, 01		, , , <b>,</b> a	, , , , ,	4 1 K/1	ر , <i>ر</i> ود. 	c, 21,					VED	BY	_1		- 1° V		
Print N	lame			gnature		Date/Time					Print Name						Signature					Date/Time				
Steve	Steve Legg								05/17/2023				MMINI					M.Mullig				······				
				$\supset \overline{\partial}$	5		-						101	- <u></u>	4 <u>.</u>	~	- All	4		<u>, Y \ </u>	<u>VV</u>	11	<u>~~</u>	-0/-1	<u> </u>	

					_		_			PM_	117
~~·	Nori ol	ML	Cooler Receip	t and	Prese			C	XELEZ		
Client	MUND 1	JUNIÓ	2117177	_	<u>Λ</u>	Serv	ice Reques	President la construction de la construction de la construcción de la	7173 -	IA d	<del>)</del>
Received:	<u>)  T  65</u>	Opened:	STATES	By:	$\triangle$	¥	Unloaded:	<u>on</u>	<u>1125</u> By:		• ••
1. Samples w	ere received via?	USPS	Fed Ex	UPS	l	DHL	PDX	Cou	rier <u>Hand D</u>	elivered	
-	ere received in: (cir	· (	oler Box	E	Envelop	е	Other		·····	NA	
	ly seals on coolers		NA Y N	If yes, I	how ma	ny and w	here?				
If present, v	vere custody seals i	ntact?	Y N	If prese	ent, were	e they sig	ned and date	:d?	Y	N	1
	an an an tha an the	an a			der der		Na secondad				
						of temp	Ph Notif			1	
Temp Blank	Sample Temp		Cooler #/COC ID / N	IA SE S	indicat	e with "X"	If out of	temp	Tracking Num	iber NA	Filed
2.		11001									
			$\bigcirc$							· ·	
-	erature Blank prese			•		-			te column above:		نــــــــــــــــــــــــــــــــــــ
If no, take th	he temperature of a	representative	sample bottle contain	ned with	nin the c	ooler; no	tate in the co	lumn "Sa	mple Temp":		
5. Were sample	s received within the	ne method spec	ified temperature ran	ges?					NA (Y	) N	l
If no, were the	hey received on ice	and same day	as collected? If not, r	otate th	e coole	r#above	and notify th	ne PM.	NA Y	N	1
If applicable, tis	ssue samples were	received: F	rozen Partially Tl	hawed	Thaw	ved			$\bigcirc$		
6. Packing ma	iterial: Inserts A	Bappies Bub	ble Wrap Gel Pack	s No	The M	Drv Ice	Sleeves				
	ly papers properly	and the second s		C		ing the	DICEVES		NA Y	) N	-
	es received in good								NA (Y	5	
=	-	•	preservation, etc.)?						NA Y	> n	
10. Did all samp	ole labels and tags	agree with cust	ody papers?						NA Y	5 N	
11. Were approp	priate bottles/conta	iners and volun	nes received for the t	ests indi	icated?				NA TY	) N	
12. Were the pl	I-preserved bottles	(see SMO GEN	V SOP) received at th	e approj	priate pl	H? Indic	ate in the tab	le below	NA X	ACN	>
13. Were VOA	vials received with	out headspace?	Indicate in the table	e below.					(NA) Y	N	
14. Was C12/Re	es negative?								NA Y	N	
15. Were sampl	es received within	the method spe	cified time limit? If n	iot, nota	ite the e	rror below	v and notify	the PM	TA Y	N	[
16. Were 100ml	sterile microbiolo	gy bottles filled	d exactly to the 100m	l mark?	N	$\mathbf{A}$	Y N		Underfilled	Overfill	ed
	· • -=	i diga			and an an	and a state of the	na se				
	mple ID on Bottl		Sample	Don	<u>000</u>	<u>~~</u>	-~ / .	and a chevra a A	Identified by:		
0517	13-UL-	LRLF71 FC		LK	-LK	LFS 1	FP EL	Imil	section		
			1								
				<b>T</b>	1			-			
	Sample ID		Bottle Count Bottle Type	Head-	Broker		Des	Volume	-	1	
0517	7.3-11.R.	-181 F7R	- 3 125 P.	ahare	Broke		Reagent /	Added	Number Dean 2 0	Initials NP	Time
		<u> -1 -1 0 -</u>	10107-	<u> </u>			<u></u>	1/2MC	RE1-62-0	1~	<u>545</u>
		- <u></u>	-				·····				

Notes, Discrepancies, Resolutions: ____

G:\SMO\2022 Forms

SOP: SMO-GEN



# General Chemistry

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

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#### ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Transalta Centralia Mining, LLC
Project:	LPLF CCR
Sample Matrix:	Ground Water
Analysis Method:	300.0
Prep Method:	None

# Service Request: K2305653 Date Collected: 05/17/23 Date Received: 05/17/23 Units: mg/L

Basis: NA

Chloride

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
051723-CCR-LPLF1	K2305653-001	2.92	0.20	2	06/02/23 23:27	
051723-CCR-LPLF8	K2305653-002	6.93	0.20	2	06/02/23 23:36	
051723-CCR-LPLF7R	K2305653-003	11.1	0.20	2	06/02/23 23:45	
051723-CCR-LPLF7R FD	K2305653-004	11.0	0.20	2	06/02/23 23:53	
051723-CCR-LPLF5	K2305653-005	3.07	0.20	2	06/03/23 00:02	
051723-CCR-LPLF2R	K2305653-006	7.57	0.20	2	06/02/23 22:53	
Method Blank	K2305653-MB1	ND U	0.10	1	06/02/23 17:14	
Method Blank	K2305653-MB2	ND U	0.10	1	06/02/23 21:00	

QA/QC Report

Client:	Transalta Centralia M	lining, LLC			Service R	equest:	K23056	53		
Project	LPLF CCR				Date Col	llected:	05/17/23	3		
Sample Matrix:	Ground Water				Date Re	ceived:	05/17/23	3		
					Date An	alyzed:	06/02/23	3		
Replicate Sample Summary										
	General Chemistry Parameters									
Sample Name:	051723-CCR-LPLF	2R			Units: mg/L					
Lab Code:	K2305653-006					<b>Basis:</b>	NA			
Duplicate Sample K2305653- Analysis Sample 006DUP										
Analyte Name	Method	MRL	Result	Result	Average	RP	D	RPD Limit		
Chloride	300.0	0.20	7.57	7.54	7.55	<	1	20		

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: Project:	Transalta Cer LPLF CCR	ntralia Mining	g, LLC			Date	vice Reque e Collected	l: 05/	2305653 /17/23	
Sample Matrix:	Ground Wate	r					e Received		/17/23	
						Dat	e Analyzed	l: 06	/2/23	
						Dat	e Extracte	d: NA	A	
Duplicate Matrix Spike Summary										
				Chlori	de					
Sample Name:	051723-CCR	-LPLF2R					Unit	s: mg	g/L	
Lab Code:	K2305653-00	)6					Basi	s: NA	A	
Analysis Method:	300.0									
Prep Method:	None									
			Matrix Spike K2305653-006MS		-	Duplicate Matrix Spike K2305653-006DMS				
	Sample		Spike			Spike		% Rec		RPD
Analyte Name	Result	Result	Amount	% Rec	Result	Amount	% Rec	Limits	RPD	Limit
Chloride	7.57	15.2	8.00	96	15.2	8.00	96	90-110	<1	20

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Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

QA/QC Report

Client: Project: Sample Matrix:	Transalta Centralia Mining, LLC LPLF CCR Ground Water		Service Request: Date Analyzed: Date Extracted:	K2305653 06/02/23 NA					
Lab Control Sample Summary Chloride									
		Chioriae							
Analysis Method:	300.0		Units:	mg/L					
Prep Method:	None		Basis:	NA					
			Analysis Lot:	806236					
Sample Name	Lab Code	Result	Spike Amount % H	% Rec Rec Limits					

4.84

4.84

5.00

5.00

97

97

90-110

90-110

K2305653-LCS2

K2305653-LCS3

Lab Control Sample Lab Control Sample

Analytical Report

Client:	Transalta Centralia Mining, LLC
Project:	LPLF CCR
Sample Matrix:	Ground Water
Analysis Method: Prep Method:	300.0 None

# Service Request: K2305653 Date Collected: 05/17/23 Date Received: 05/17/23 Units: mg/L

Basis: NA

Fluoride

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
051723-CCR-LPLF1	K2305653-001	ND U	0.20	2	06/02/23 23:27	
051723-CCR-LPLF8	K2305653-002	ND U	0.20	2	06/02/23 23:36	
051723-CCR-LPLF7R	K2305653-003	ND U	0.20	2	06/02/23 23:45	
051723-CCR-LPLF7R FD	K2305653-004	ND U	0.20	2	06/02/23 23:53	
051723-CCR-LPLF5	K2305653-005	ND U	0.20	2	06/03/23 00:02	
051723-CCR-LPLF2R	K2305653-006	ND U	0.20	2	06/02/23 22:53	
Method Blank	K2305653-MB1	ND U	0.10	1	06/02/23 17:14	
Method Blank	K2305653-MB2	ND U	0.10	1	06/02/23 21:00	

QA/QC Report

Client:	Transalta Centralia N	lining, LLC			Service R	equest:	K23056	53			
Project	LPLF CCR				Date Col	lected:	05/17/2	3			
Sample Matrix:	Ground Water				Date Re	ceived:	05/17/2	3			
					Date Ana	alyzed:	06/02/22	3			
Replicate Sample Summary											
	General Chemistry Parameters										
Sample Name:	051723-CCR-LPLF	2R			Units: mg/L						
Lab Code:	K2305653-006					<b>Basis:</b>	NA				
Duplicate Sample K2305653- Analysis Sample 006DUP											
Analyte Name	Method	MRL	Result	Result	Average	RP	D	RPD Limit			
Fluoride	300.0	0.20	ND U	ND U	NC	N	С	20			

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QA/QC Report

Client:	Transalta Cer	ntralia Mining	g, LLC			Serv	vice Reque	st: K2	305653	
Project:	LPLF CCR					Dat	e Collected	l: 05/	/17/23	
Sample Matrix:	Ground Wate	er				Dat	e Received	: 05/	/17/23	
						Dat	e Analyzed	l: 06/	/2/23	
						Dat	e Extracte	d: NA	A	
Duplicate Matrix Spike Summary										
				Fluorio	de					
Sample Name:	051723-CCR	-LPLF2R					Unit	s: mg	g/L	
Lab Code:	K2305653-00	06					Basi	s: NA	A	
Analysis Method:	300.0									
Prep Method:	None									
			Matrix Spike K2305653-006MS		Duplicate M K2305653	-	е			
	Sample		Spike			Spike		% Rec		RPD
Analyte Name	Result	Result	Amount	% Rec	Result	Amount	% Rec	Limits	RPD	Limit
Fluoride	ND U	8.19	8.00	102	8.18	8.00	102	90-110	<1	20

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QA/QC Report

Client: Project: Sample Matrix:	Transalta Centralia Mining, LLC LPLF CCR Ground Water		Service Request: Date Analyzed: Date Extracted:	K230565 06/02/23 NA	-				
Lab Control Sample Summary Fluoride									
		Thuinac							
Analysis Method:	300.0		Units:	mg/L					
Prep Method:	None		Basis:	NA					
			Analysis Lot:	806236					
Sample Name	Lab Code	Result	Spike Amount %	Rec	% Rec Limits				

Sample Name	Lab Code	Result	Amount	% Rec	Limits
Lab Control Sample	K2305653-LCS2	4.94	5.00	99	90-110
Lab Control Sample	K2305653-LCS3	4.96	5.00	99	90-110

Analytical Report

Client:	Transalta Centralia Mining, LLC
Project:	LPLF CCR
Sample Matrix:	Ground Water
Analysis Method:	300.0
Prep Method:	None

# Service Request: K2305653 Date Collected: 05/17/23 Date Received: 05/17/23 Units: mg/L

Basis: NA

Sulfate

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
	V2205652 001	1200	(0)	200	05/21/22 17.11	-
051723-CCR-LPLF1	K2305653-001	1390	60	300	05/31/23 17:11	
051723-CCR-LPLF8	K2305653-002	2270	60	300	05/31/23 17:19	
051723-CCR-LPLF7R	K2305653-003	1520	60	300	05/31/23 17:28	
051723-CCR-LPLF7R FD	K2305653-004	1520	60	300	05/31/23 17:37	
051723-CCR-LPLF5	K2305653-005	758	60	300	05/31/23 17:45	
051723-CCR-LPLF2R	K2305653-006	1460	100	500	05/31/23 16:36	
Method Blank	K2305653-MB1	ND U	0.20	1	05/31/23 16:27	
Method Blank	K2305653-MB2	ND U	0.20	1	05/31/23 20:13	
Method Blank	K2305653-MB3	ND U	0.20	1	05/31/23 23:58	

QA/QC Report

Client: Project	Transalta Centralia I LPLF CCR	Mining, LL	С		Service Ro Date Col	-					
Sample Matrix:	Ground Water				Date Re	ceived:	05/17/23	3			
					Date Ana	alyzed:	05/31/23	3			
Replicate Sample Summary											
	General Chemistry Parameters										
Sample Name:	051723-CCR-LPLF	2R				Units:	mg/L				
Lab Code:	K2305653-006					<b>Basis:</b>	NA				
	Analysis		Sample	Duplicate Sample K2305653- 006DUP							
Analyte Name	Method	MRL	Result	Result	Average	RP	D	RPD Limit			
Sulfate	300.0	100	1460	1470	1470	<	1	20			

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QA/QC Report

Client:	Transalta Cer	ntralia Mining	g, LLC			Ser	vice Reque	st: K2	305653	
Project:	LPLF CCR					Dat	e Collected	l: 05/	/17/23	
Sample Matrix:	Ground Wate	r				Dat	e Received	: 05/	/17/23	
						Dat	e Analyzed	l: 05/	/31/23	
						Dat	e Extracte	d: NA	Δ	
			Duplicat	e Matrix S	pike Sumn	nary				
				Sulfat	æ					
Sample Name:	051723-CCR	-LPLF2R					Unit	s: mg	g/L	
Lab Code:	K2305653-00	)6					Basi	s: NA	A	
Analysis Method:	300.0									
Prep Method:	None									
				<b>x Spike</b> 53-006MS		Duplicate M K2305653	-	e		
	Sample		Spike			Spike		% Rec		RPD
Analyte Name	Result	Result	Amount	% Rec	Result	Amount	% Rec	Limits	RPD	Limit
Sulfate	1460	3470	2000	100	3460	2000	100	90-110	<1	20

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QA/QC Report

Client: Project: Sample Matrix:	Transalta Centralia Mining, LLC LPLF CCR Ground Water	Service Request: Date Analyzed: Date Extracted:	K2305653 05/31/23 NA
	Lab Control Sample Summary Sulfate		
Analysis Method: Prep Method:	300.0 None	Units: Basis: Analysis Lot:	mg/L NA 805988

			Spike		% Rec
Sample Name	Lab Code	Result	Amount	% Rec	Limits
Lab Control Sample	K2305653-LCS2	4.97	5.00	99	90-110
Lab Control Sample	K2305653-LCS3	4.98	5.00	100	90-110
Lab Control Sample	K2305653-LCS4	5.00	5.00	100	90-110

Analytical Report

Client:	Transalta Centralia Mining, LLC
Project:	LPLF CCR
Sample Matrix:	Ground Water
Analysis Method:	SM 2540 C
Prep Method:	None

# Service Request: K2305653 Date Collected: 05/17/23 Date Received: 05/17/23 Units: mg/L

Basis: NA

#### Solids, Total Dissolved

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
051723-CCR-LPLF1	K2305653-001	2660	20	1	05/24/23 15:05	
051723-CCR-LPLF8	K2305653-002	3720	20	1	05/24/23 15:05	
051723-CCR-LPLF7R	K2305653-003	2900	20	1	05/24/23 15:05	
051723-CCR-LPLF7R FD	K2305653-004	2900	20	1	05/24/23 15:05	
051723-CCR-LPLF5	K2305653-005	1640	10	1	05/24/23 15:05	
051723-CCR-LPLF2R	K2305653-006	3190	20	1	05/24/23 15:05	
Method Blank	K2305653-MB1	ND U	13	1	05/24/23 15:05	
Method Blank	K2305653-MB2	ND U	13	1	05/24/23 15:05	

			QA/QC Report				
Client:	Transalta Centralia Mining	, LLC			Service Req	uest: K23	305653
Project	LPLF CCR				Date Colle	cted: 05/	17/23
Sample Matrix:	Ground Water				Date Rece	ived: 05/	17/23
					Date Analy	yzed: 05/2	24/23
		Replie	cate Sample Su	mmary			
		Genera	l Chemistry Pa	rameters			
Sample Name:	051723-CCR-LPLF2R				τ	U <b>nits:</b> mg	g/L
Lab Code:	K2305653-006				I	Basis: NA	A
			Sample	Duplicate Sample K2305653- 006DUP			
Analyte Name	Analysis Method	MRL	Result	Result	Average	RPD	<b>RPD</b> Limit
Solids, Total Dissolved	SM 2540 C	20	3190	3190	3190	<1	5

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QA/QC Report

Client: Project: Sample Matrix:	Transalta Centr LPLF CCR Ground Water	alia Mining, LLC				Service Re Date Analy Date Extra	yzed:	K2305653 05/24/23 NA	3
		-		ontrol Sam emistry Pa	ple Summary rameters				
Analysis Method:	SM 2540 C					Units:		mg/L	
Prep Method:	None					Basis:		NA	
						Analysis L	ot:	805339	
	La	b Control Sampl	e	D	uplicate Lab Co	ontrol Samj	ple		
	]	K2305653-LCS1			K2305653-1	DLCS1			
Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	<b>RPD</b> Limit
Solids, Total Dissolved		1920	99	1900	1920	99	85-115	<1 <1	5



# Metals

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Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2305653
Project:	LPLF CCR	<b>Date Collected:</b> 05/17/23 07:36
Sample Matrix:	Ground Water	Date Received: 05/17/23 15:10
Sample Name: Lab Code:	051723-CCR-LPLF1 K2305653-001	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Boron	6010C	0.602	mg/L	0.021	1	05/31/23 13:59	05/22/23	
Calcium	6010C	234	mg/L	0.021	1	05/31/23 13:59	05/22/23	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2305653
Project:	LPLF CCR	Date Collected: 05/17/23 08:21
Sample Matrix:	Ground Water	Date Received: 05/17/23 15:10
Sample Name: Lab Code:	051723-CCR-LPLF8 K2305653-002	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Boron	6010C	1.19	mg/L	0.11	5	05/31/23 13:56	05/22/23	
Calcium	6010C	417	mg/L	0.11	5	05/31/23 13:56	05/22/23	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2305653
Project:	LPLF CCR	<b>Date Collected:</b> 05/17/23 08:51
Sample Matrix:	Ground Water	Date Received: 05/17/23 15:10
Sample Name: Lab Code:	051723-CCR-LPLF7R K2305653-003	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Boron	6010C	0.341	mg/L	0.021	1	05/31/23 14:01	05/22/23	
Calcium	6010C	281	mg/L	0.021	1	05/31/23 14:01	05/22/23	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2305653
Project:	LPLF CCR	<b>Date Collected:</b> 05/17/23 08:51
Sample Matrix:	Ground Water	Date Received: 05/17/23 15:10
Sample Name: Lab Code:	051723-CCR-LPLF8 FD K2305653-004	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Boron	6010C	0.330	mg/L	0.021	1	05/31/23 14:04	05/22/23	
Calcium	6010C	279	mg/L	0.021	1	05/31/23 14:04	05/22/23	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2305653
Project:	LPLF CCR	<b>Date Collected:</b> 05/17/23 09:26
Sample Matrix:	Ground Water	Date Received: 05/17/23 15:10
Sample Name: Lab Code:	051723-CCR-LPLF5 K2305653-005	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Boron	6010C	0.101	mg/L	0.021	1	05/31/23 14:06	05/22/23	
Calcium	6010C	342	mg/L	0.021	1	05/31/23 14:06	05/22/23	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2305653
Project:	LPLF CCR	<b>Date Collected:</b> 05/17/23 11:46
Sample Matrix:	Ground Water	Date Received: 05/17/23 15:10
Sample Name: Lab Code:	051723-CCR-LPLF2R K2305653-006	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Boron	6010C	0.365	mg/L	0.021	1	05/31/23 13:46	05/22/23	
Calcium	6010C	441	mg/L	0.021	1	05/31/23 13:46	05/22/23	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2305653
Project:	LPLF CCR	Date Collected: NA
Sample Matrix:	Ground Water	Date Received: NA
Sample Name: Lab Code:	Method Blank KQ2308982-03	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Boron	6010C	ND U	mg/L	0.021	1	05/31/23 13:20	05/22/23	
Calcium	6010C	ND U	mg/L	0.042	1	05/31/23 13:20	05/22/23	

QA/QC Report

Client:	Transalta Centralia Mining	g, LLC		Service Request:	K2305653
Project	LPLF CCR			Date Collected:	05/17/23
Sample Matrix:	Ground Water			Date Received:	05/17/23
				Date Analyzed:	05/31/23
		Replicate Samp	le Summary		
		Total M	letals		
Sample Name:	051723-CCR-LPLF2R			Units	mg/L
Lab Code:	K2305653-006			Basis	NA
	Analysis	Sample	Duplicate Sample KQ2308982-01		
Analyte Name	Method M	RL Result	Result	Average R	PD RPD Limit

0.365

441

0.021

0.021

0.363

439

0.364

440

<1

<1

20

20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

6010C

6010C

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Boron

Calcium

QA/QC Report

Client:	Transalta Centralia Mining, Ll	LC	Service	Request:	K2305653
Project:	LPLF CCR		Date C	ollected:	05/17/23
Sample Matrix:	Ground Water		Date R	eceived:	05/17/23
			Date A	nalyzed:	05/31/23
			Date E	xtracted:	05/22/23
		Matrix Spike Su	mmary		
		Total Meta	•		
Sample Name:	051723-CCR-LPLF2R			Units:	mg/L
Lab Code:	K2305653-006			<b>Basis:</b>	NA
Analysis Method:	6010C				
Prep Method:	EPA CLP ILM04.0				
		Matrix Spike			
		KQ2308982-02			
Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Boron	0.365	0.839	0.500	95	75-125
Calcium	441	449	10.0	81 #	75-125

Results flagged with an asterisk  $(\ast)$  indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

QA/QC Report

Client:Transalta Centralia Mining, LLCProject:LPLF CCRSample Matrix:Ground Water

## **Service Request:** K2305653 **Date Analyzed:** 05/31/23

## Lab Control Sample Summary Total Metals

Units:mg/L Basis:NA

# Lab Control Sample

KQ2308982-04

Analyte Name	<b>Analytical Method</b>	Result	Spike Amount	% Rec	% Rec Limits
Boron	6010C	0.513	0.500	103	80-120
Calcium	6010C	12.7	12.5	101	80-120



Service Request No:K2306991

Steve Legg Transalta Centralia Mining, LLC 913 Big Hanaford Rd Centralia, WA 98531

## Laboratory Results for:LPLF CCR

Dear Steve,

Enclosed are the results of the sample(s) submitted to our laboratory June 20, 2023 For your reference, these analyses have been assigned our service request number **K2306991**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Shari Endy Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626 PHONE +1 360 577 7222 | FAX +1 360 636 1068 ALS Group USA, Corp. dba ALS Environmental



# Narrative Documents

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360) 577-7222 Fax (360) 425-9096 www.alsglobal.com

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Sample Matrix: Ground Water

LPLF CCR

Service Request: K2306991

Date Received: 06/20/2023

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

#### Sample Receipt:

Three ground water samples were received for analysis at ALS Environmental on 06/20/2023. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

#### Metals:

**Client:** 

**Project:** 

No significant anomalies were noted with this analysis.

Transalta Centralia Mining, LLC

#### General Chemistry:

No significant anomalies were noted with this analysis.

Approved by

Shari Cula

Date

07/07/2023



### SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

	Lab ID: K2306991-001										
Results	Flag	MDL	MRL	Units	Method						
0.365			0.021	mg/L	6010C						
439			0.021	mg/L	6010C						
3230			40	mg/L	SM 2540 C						
Lab ID: K2306991-002											
Results	Flag	MDL	MRL	Units	Method						
1.20			0.21	mg/L	6010C						
421			0.21	mg/L	6010C						
Lab ID: K2306991-003											
Results	Flag	MDL	MRL	Units	Method						
283			0.021	mg/L	6010C						
10.8			0.50	mg/L	9056A						
	0.365 439 3230 <b>Results</b> 1.20 421 <b>Results</b> 283	Results         Flag           0.365         439           3230         Lab           Results         Flag           1.20         421           Lab         Results         Flag           283         Flag         1.20	Results         Flag         MDL           0.365         439         3230	Results         Flag         MDL         MRL           0.365         0.021         0.021           439         0.021         3230         40           Lab         D:: K2306991-002         MRL           Results         Flag         MDL         MRL           1.20         0.21         0.21         0.21           421         0.21         0.21         0.21           Lab         D:: K2306991-003         MRL           283         MDL         MRL	Results         Flag         MDL         MRL         Units           0.365         0.021         mg/L         0.021         mg/L           439         0.021         mg/L         0.021         mg/L           3230         40         mg/L         0.021         mg/L           Results         Flag         MDL         MRL         Units           1.20         0.21         mg/L         0.21         mg/L           421         0.21         mg/L         0.21         mg/L           283         MDL         MRL         Units         0.21         mg/L						



# Sample Receipt Information

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### SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	CLIENT SAMPLE ID	DATE	<u>TIME</u>
K2306991-001	062023-CCR-LPLF2R	6/20/2023	1104
K2306991-002	062023-CCR-LPLF8	6/20/2023	1028
K2306991-003	062023-CCR-LPLF7R	6/20/2023	0958

K72020441



ADDRESS 1317 South 13th Ave., Kelso, WA 98626 PHONE 1 360 577 7222 FAX 1 360 636 1068

### Work Order No.:

Chain of Custody

(ALS)	Part of the	ALS Group	o A Campbell	Brothers Lim	ited Com	pany																	
Project Manager:	Steve Leg								Bill	to:	•••	Steve Legg											
Client Name:	TransAlta	Centralia	Mining Comp	bany							]	Com	pany:		TransAlta Centralia Mining								
Address:	913 Big Ha	anaford F	Road							]	Add	ress:	913 B	ig Ha	naforc	Road							
City, State ZIP:	Centralia,	WA 9853	31								]	City, State ZIP:			Centra	alia, V	VA 98	531					
Email:	steve_legg@transalta.com Phone:					360-807-8073						Ema		5 g - 5 - 5 				salta.c	om	p p	0#		
Project Name:	LPLF CCR												REQU	ESTE	D ANA	LYSIS	5			·	· · · · ·	TAT	-
Project Number:																						Routine 2	21 da
P.O. Number:	47000920	539 Line	30																			Same Day ]	
Sampler's Name:	Steve Leg	g															ļ					Next Day ***	: sle
	SA	MPLE RE	ECEIPT											***								3 Day	
Temperature (°C):			Temp Blai	nk Present																		5 Day	50%
Received Intact:		Yes	No N/A	Wet Ice / I	Blue Ice																	Surcharges.	
Cooler Custody Seal	ls: ^{Negenee} e	Yes	No N/A	Total Cont	ainers:	1																Please call fo	
Sample Custody Sea	als: Basese	Yes	No N/A			ers			eu													availability	
Sample Identifica	ation	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Containers		SM 2540 C / TDS	9056A / Chloride	9056A / F	9056A / SO4	6010C / Metals										Due Date:	
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062023-CCR-LF	PLF8	GW	06/20/2023	10:28		1						X								1	1	Boron only	
062023-CCR-LP	LF7R	GW	06/20/2023	9:58		2			Х			X										Calcium, Chlor	ride
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<u></u>						<u> </u>				<u> </u>													
Dissolved			.g, Al, As, B, B						-											Adg	and the second states of the	l Methods Availa	able
Total			g, Al, As, B, B		, Co, Cr,	Cu, I	Fe, K, I	Li, M	g, M	n, Mo	o, Na	, Ni, I	P, Pb, Sl	b, Se,	Si, Sn, S	r, Tl,					<u> </u>	pon Request	
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Steve L	Legg				γ	06/	/20/2	023					=#c	ollow	La					$\geq$		1020/2	kr
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12			Cooler Receipt	and P	reser	vatio	n Form				рм_/	AH
Client	Trans SH	a			10301		ice Reque	st <b>K23</b>	2094	and any second		
Received	10/23	Opened:	6/20/23	By:		=	Unloaded	1 1-7	0/23	By:	<u> </u>	$\leq$
1. Sample	s were received via?	USPS		U <b>PS</b>	DI	ЧL	PDX	Couri	er Ha	nd Deliv	ered	
-	s were received in: (cir		eler Box		ivelope					and a second	NA	
3. Were <u>cu</u>	stody seals on coolers?	? N		lf yes, ho	ow manj	y and w						
lf preser	it, were custody seals i	ntact?	Y N I	f presen	it, were	they sig	med and da	ted?		Y	N	
			Alternetister					×M				
	ab Ct- T				Out of		No	lified	Tracking	Number		Filed
Temp Bla		IR Gun	Cooler #/COC ID / N/		indicate	WILL X		of temp	TRUCKIN	NULLING		riteu
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4. Was a Te	mperature Blank prese	ent in cooler?	NA (Y) N	If ves. n	otate th	e tempe	rature in th	e appropriate	column abo	ve:		
	ke the temperature of a		- AND	• •		•		,				
	nples received within t	<b>m</b>	-			, .			NA	Y	$\bigcirc$	
	ere they received on ic	•	-	-	e cooler	# abov	e and notify	the PM.	NA	Ø.)	N	
	e, tissue samples were		rozen Partially Th		Thawe					$\circ$		
6. Packin	g material: Inserts	Remaine Rul	ble Wron Gel Pack	. Wa	Inc) D	In Inc	Slamas					
	ustody papers properly	Contractor of the second	-	3		ny ice	DICEVES	·····	NA	<u></u>	N	
	imples received in goo								NA	X	N	
	Il sample labels comple		,						NA	S.	N	
10. Did all	sample labels and tags	agree with cust	tody papers?						NA	D	Ν	
11. Were a	ppropriate bottles/cont	ainers and volu	mes received for the te	ests indi	cated?				NA	a	N	
12. Were th	ne pH-preserved bottle	s (see SMO GE	N SOP) received at th	e approp	oriate pl	1? Indi	icate in the	table below	NA	$\odot$	N	
13. Were V	OA vials received wit	hout headspace	? Indicate in the table	e below.					(A)	Y	N	
14. Was C	2/Res negative?								NA	Y	N	
15. Were s	amples received within	the method sp	ecified time limit? If r	ot, nota	te the er	TOT bel	ow and noti	fy the PM	KA	Y	N	
16. Were 1	00ml sterile microbiol	ogy bottles fille	d exactly to the 100m	l mark?	<u> </u>	<u>A)</u>	Y	N	Underfi	lled (	Overfille	đ
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	Milest		Bottle Count	Head-	T			Volume	Reagent	Lot	î	
	Sample ID		Bottle Type		Broke	рН	Reagen		Numb		Initials	Time
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# **Miscellaneous Forms**

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#### **Inorganic Data Qualifiers**

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

#### **Metals Data Qualifiers**

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- $i \,$   $\,$  The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

#### **Organic Data Qualifiers**

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
   DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

#### Additional Petroleum Hydrocarbon Specific Qualifiers

- ${f F}$  The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

## ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources- data/water-sciences-home-page/laboratory-certification-branch/non-field-lab- certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaborator yAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com to our laboratory's NFLAP-approved quality assurance program A complete	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

# Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M MCL	Modified Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
ТРН	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Analyst Summary report

Client:	Transalta Centralia Mining, LLC
Project:	LPLF CCR/

062023-CCR-LPLF2R

K2306991-001

Ground Water

## Service Request: K2306991

**Date Collected:** 06/20/23 **Date Received:** 06/20/23

Analysis Method 6010C SM 2540 C		Extracted/Digested By ACOUCH	<b>Analyzed By</b> AMCKORNEY JBYMAN
Sample Name: Lab Code: Sample Matrix:	062023-CCR-LPLF8 K2306991-002 Ground Water		<b>Date Collected:</b> 06/20/23 <b>Date Received:</b> 06/20/23
<b>Analysis Method</b> 6010C		<b>Extracted/Digested By</b> ACOUCH	<b>Analyzed By</b> AMCKORNEY
Sample Name: Lab Code: Sample Matrix:	062023-CCR-LPLF7R K2306991-003 Ground Water		<b>Date Collected:</b> 06/20/23 <b>Date Received:</b> 06/20/23
Analysis Method		Extracted/Digested By	Analyzed By

6010C 9056A

Sample Name:

Sample Matrix:

Lab Code:

AMCKORNEY

NFOTH

ACOUCH



# Sample Results

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360) 577-7222 Fax (360) 425-9096 www.alsglobal.com



# Metals

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360) 577-7222 Fax (360) 425-9096 www.alsglobal.com

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2306991
Project:	LPLF CCR	Date Collected: 06/20/23 11:04
Sample Matrix:	Ground Water	Date Received: 06/20/23 15:50
Sample Name: Lab Code:	062023-CCR-LPLF2R K2306991-001	Basis: NA

Analvte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analvzed	Date Extracted	0
Boron	6010C	0.365	mg/L	0.021	1	07/06/23 13:46	06/23/23	<u> </u>
Calcium	6010C	439	mg/L	0.021	1	07/06/23 13:46	06/23/23	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2306991
Project:	LPLF CCR	<b>Date Collected:</b> 06/20/23 10:28
Sample Matrix:	Ground Water	Date Received: 06/20/23 15:50
Sample Name: Lab Code:	062023-CCR-LPLF8 K2306991-002	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Boron	6010C	1.20	mg/L	0.21	10	07/06/23 14:03	06/23/23	
Calcium	6010C	421	mg/L	0.21	10	07/06/23 14:03	06/23/23	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2306991
Project:	LPLF CCR	<b>Date Collected:</b> 06/20/23 09:58
Sample Matrix:	Ground Water	Date Received: 06/20/23 15:50
Sample Name: Lab Code:	062023-CCR-LPLF7R K2306991-003	Basis: NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Calcium	6010C	283	mg/L	0.021	1	07/06/23 14:06	06/23/23	



# **General Chemistry**

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360) 577-7222 Fax (360) 425-9096 www.alsglobal.com

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2306991
Project:	LPLF CCR	<b>Date Collected:</b> 06/20/23 11:04
Sample Matrix:	Ground Water	Date Received: 06/20/23 15:50
Sample Name: Lab Code:	062023-CCR-LPLF2R K2306991-001	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Solids, Total Dissolved	SM 2540 C	3230	mg/L	40	1	06/22/23 15:25	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2306991
Project:	LPLF CCR	<b>Date Collected:</b> 06/20/23 09:58
Sample Matrix:	Ground Water	Date Received: 06/20/23 15:50
Sample Name: Lab Code:	062023-CCR-LPLF7R K2306991-003	Basis: NA

	Analysis						
Analyte Name	Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Chloride	9056A	10.8	mg/L	0.50	5	07/03/23 19:03	



# QC Summary Forms

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360) 577-7222 Fax (360) 425-9096 www.alsglobal.com



# Metals

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360) 577-7222 Fax (360) 425-9096 www.alsglobal.com

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2306991
Project:	LPLF CCR	Date Collected: NA
Sample Matrix:	Ground Water	Date Received: NA
Sample Name: Lab Code:	Method Blank KQ2310957-02	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Boron	6010C	ND U	mg/L	0.021	1	07/06/23 13:41	06/23/23	
Calcium	6010C	ND U	mg/L	0.042	1	07/06/23 13:41	06/23/23	

QA/QC Report

Client:	Transalta Centralia Mining, LI	LC	Service	Request:	K2306991
Project:	LPLF CCR		Date C	ollected:	06/20/23
Sample Matrix:	Ground Water		Date R	eceived:	06/20/23
			Date A	nalyzed:	07/6/23
			Date E	xtracted:	06/23/23
		Matrix Spike Sum	mary		
		Total Metals	•		
Sample Name:	062023-CCR-LPLF2R			Units:	mg/L
Lab Code:	K2306991-001			Basis:	NA
Analysis Method:	6010C				
Prep Method:	EPA CLP ILM04.0				
		Matrix Spike			
		KQ2310957-03			
Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits

0.848

452

0.500

10.0

96

136 #

75-125

75-125

Results flagged with an asterisk  $(\ast)$  indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

0.365

439

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

Analy Boron

Calcium

QA/QC Report

Client:	Transalta Centralia M	Mining, LLC			Service R	Request:	K23069	991
Project	LPLF CCR				Date Co	ollected:	06/20/2	3
Sample Matrix:	Ground Water				Date Ro	eceived:	06/20/2	.3
					Date Ar	nalyzed:	07/06/2	.3
		]	Replicate Samp	ple Summary				
			Total M	letals				
Sample Name:	062023-CCR-LPLF	2R				Units:	mg/L	
Lab Code:	K2306991-001					<b>Basis:</b>	NA	
	A ]		<b>C</b>	Duplicate Sample				
Analyte Name	Analysis Method	MRL	Sample Result	KQ2310957-04 Result	Average	RP	מי	<b>RPD</b> Limit
Boron	6010C	0.021	0.365	0.364	0.365	<		20

439

438

439

<1

20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

6010C

0.021

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Calcium

QA/QC Report

Client:Transalta Centralia Mining, LLCProject:LPLF CCRSample Matrix:Ground Water

**Service Request:** K2306991 **Date Analyzed:** 07/06/23

# Lab Control Sample Summary Total Metals

Units:mg/L Basis:NA

# Lab Control Sample

KQ2310957-01

Analyte Name	<b>Analytical Method</b>	Result	Spike Amount	% Rec	% Rec Limits
Boron	6010C	0.503	0.500	101	80-120
Calcium	6010C	13.6	12.5	109	80-120



# **General Chemistry**

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360) 577-7222 Fax (360) 425-9096 www.alsglobal.com

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2306991
Project:	LPLF CCR	Date Collected: NA
Sample Matrix:	Ground Water	Date Received: NA
Sample Name: Lab Code:	Method Blank K2306991-MB1	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Chloride	9056A	ND U	mg/L	0.10	1	07/03/23 16:09	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2306991
Project:	LPLF CCR	Date Collected: NA
Sample Matrix:	Ground Water	Date Received: NA
Sample Name: Lab Code:	Method Blank K2306991-MB1	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Solids, Total Dissolved	SM 2540 C	ND U	mg/L	10	1	06/22/23 15:25	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2306991
Project:	LPLF CCR	Date Collected: NA
Sample Matrix:	Ground Water	Date Received: NA
Sample Name: Lab Code:	Method Blank K2306991-MB2	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Solids, Total Dissolved	SM 2540 C	ND U	mg/L	10	1	06/22/23 15:25	

QA/QC Report

Client: Project: Sample Matrix:	Transalta Cer LPLF CCR Ground Wate		g, LLC			Date Date	vice Reque e Collected e Received	: 06, : 06,	2306991 /20/23 /20/23	
							e Analyzed e Extracteo		/3/23	
			Duplicate	e Matrix Sj Chlorie	-	nary				
Sample Name:	062023-CCR	-LPLF7R					Unit	s: mg	g/L	
Lab Code:	K2306991-00	03					Basis	s: NA	A	
Analysis Method:	9056A									
Prep Method:	None									
				<b>x Spike</b> 1-003MS		Duplicate M K2306991-	-	2		
	Sample		Spike			Spike		% Rec		RPD
Analyte Name	Result	Result	Amount	% Rec	Result	Amount	% Rec	Limits	RPD	Limit
Chloride	10.8	29.1	20.0	91	29.1	20.0	92	80-120	<1	20

Results flagged with an asterisk  $(\ast)$  indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

QA/QC Report

Client:	Transalta Centralia M	/lining, LLC	2		Service R	equest:	K23069	991
Project	LPLF CCR				Date Co	llected:	06/20/2	23
Sample Matrix:	Ground Water				Date Re	ceived:	06/20/2	23
					Date An	alyzed:	07/03/2	23
			Replicate Samp	ole Summary				
		G	eneral Chemist	ry Parameters				
Sample Name:	062023-CCR-LPLF	7R				Units:	mg/L	
Lab Code:	K2306991-003					<b>Basis:</b>	NA	
	Analysis		Sample	Duplicate Sample K2306991- 003DUP				
Analyte Name	Method	MRL	Result	Result	Average	RP	D	<b>RPD</b> Limit
Chloride	9056A	0.50	10.8	10.7	10.7	1		20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:Transalta Centralia Mining, LLCProject:LPLF CCRSample Matrix:Ground Water

# Service Request: K2306991 Date Analyzed: 06/22/23 - 07/03/23

## Lab Control Sample Summary General Chemistry Parameters

Units:mg/L Basis:NA

## Lab Control Sample K2306991-LCS

Analyte Name	<b>Analytical Method</b>	Result	Spike Amount	% Rec	% Rec Limits
Chloride	9056A	4.85	5.00	97	80-120
Solids, Total Dissolved	SM 2540 C	1430	1430	100	85-115



Service Request No:K2311662

Accounts Payable Transalta Centralia Mining, LLC 913 Big Hanaford Road Centralia, WA 98531

# Laboratory Results for: LPLF CCR

Dear Accounts,

Enclosed are the results of the sample(s) submitted to our laboratory October 12, 2023 For your reference, these analyses have been assigned our service request number **K2311662**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Shari Endy Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626 PHONE +1 360 577 7222 | FAX +1 360 636 1068 ALS Group USA, Corp. dba ALS Environmental



# Narrative Documents

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360) 577-7222 Fax (360) 425-9096 www.alsglobal.com

Service Request: K2311662 Date Received: 10/12/2023

Sample Matrix: Ground Water

LPLF CCR

## **CASE NARRATIVE**

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

### Sample Receipt:

Five ground water samples were received for analysis at ALS Environmental on 10/12/2023. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

### Metals:

**Client:** 

**Project:** 

No significant anomalies were noted with this analysis.

Transalta Centralia Mining, LLC

### General Chemistry:

No significant anomalies were noted with this analysis.

Approved by

Shari Cula

10/31/2023



## SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: 101223-CCR-LPLF1		Lab	DID: K2311	662-001		
Analyte	Results	Flag	MDL	MRL	Units	Method
Boron	0.593		0.003	0.021	mg/L	6010C
Calcium	228		0.003	0.021	mg/L	6010C
Chloride	3.28		0.010	0.20	mg/L	300.0
Fluoride	0.1	J	0.10	1.0	mg/L	300.0
Solids, Total Dissolved	2990			40	mg/L	SM 2540 C
Sulfate	1490		30	100	mg/L	300.0

CLIENT ID: 101223-CCR-LPLF2R						
Analyte	Results	Flag	MDL	MRL	Units	Method
Boron	0.347		0.003	0.021	mg/L	6010C
Calcium	464		0.003	0.021	mg/L	6010C
Chloride	7.54		0.010	0.20	mg/L	300.0
Solids, Total Dissolved	3430			40	mg/L	SM 2540 C
Sulfate	1560		30	100	mg/L	300.0

CLIENT ID: 101223-CCR-LPLF8	Lab ID: K2311662-003								
Analyte	Results	Flag	MDL	MRL	Units	Method			
Boron	1.04		0.003	0.021	mg/L	6010C			
Calcium	406		0.003	0.021	mg/L	6010C			
Chloride	6.89		0.010	0.20	mg/L	300.0			
Solids, Total Dissolved	3760			40	mg/L	SM 2540 C			
Sulfate	2230		30	100	mg/L	300.0			

CLIENT ID: 101223-CCR-LPLF7R		Lab	DID: K2311	662-004		
Analyte	Results	Flag	MDL	MRL	Units	Method
Boron	0.326		0.003	0.021	mg/L	6010C
Calcium	262		0.003	0.021	mg/L	6010C
Chloride	9.99		0.010	0.20	mg/L	300.0
Solids, Total Dissolved	2810			40	mg/L	SM 2540 C
Sulfate	1430		30	100	mg/L	300.0

CLIENT ID: 101223-CCR-LPLF7R FD		Lab	DID: K2311	662-005		
Analyte	Results	Flag	MDL	MRL	Units	Method
Boron	0.331		0.003	0.021	mg/L	6010C
Calcium	264		0.003	0.021	mg/L	6010C
Chloride	9.96		0.010	0.20	mg/L	300.0
Solids, Total Dissolved	2830			40	mg/L	SM 2540 C
Sulfate	1430		30	100	mg/L	300.0



# Sample Receipt Information

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360) 577-7222 Fax (360) 425-9096 www.alsglobal.com

## SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	CLIENT SAMPLE ID	DATE	TIME
K2311662-001	101223-CCR-LPLF1	10/12/2023	0755
K2311662-002	101223-CCR-LPLF2R	10/12/2023	0858
K2311662-003	101223-CCR-LPLF8	10/12/2023	0930
K2311662-004	101223-CCR-LPLF7R	10/12/2023	1011
K2311662-005	101223-CCR-LPLF7R FD	10/12/2023	1011

Project Manager:Steve LeClient Name:TransAltAddress:913 BigCity, State ZIP:CentraliaEmail:steve LeProject Name:LPLF COProject Number:Project Number:P.O. Number:470009Sampler's Name:Steve Le	egg a Centralia Hanaford I a, WA 985 gg@transa CR 2639 Line egg AMPLE R	31 <u>alta.com</u> 2 30 E <b>CEIPT</b>		ited Com		-807-i	8073	·····				to: 1pany:	231	Ste	ve Leç		olio Min	ìna		<u></u>		
Client Name: TransAlt Address: 913 Big City, State ZIP: Centralia Email: steve le Project Name: LPLF CC Project Number: 470009 Sampler's Name: Steve Le S Temperature ('C): Received Intact: Cooler Custody Seals:	a Centralia Hanaford I a, WA 985 gg@transa CR 2639 Line 299 AMPLE R Yes	Road 31 alta.com 30 ECEIPT	Dany	Phone:	360	-807-	8073	}			Con	ipany:					olio Min	ina	*****			
Address:913 BigCity, State ZIP:CentraliaEmail:steve_leProject Name:LPLF COProject Number:470009Sampler's Name:Steve LeSTemperature ('C):Received Intact:Cooler Custody Seals:	Hanaford I a, WA 985 gg@transa CR 2639 Line 299 AMPLE R Yes	Road 31 alta.com 30 ECEIPT	pany	Phone:	360	-807-	8073	}						Tra	nsAlta	Contr	alia Min	ina	*****	***********		
City, State ZIP:       Centralia         Email:       steve le         Project Name:       LPLF CO         Project Number:       470009         Sampler's Name:       Steve Le         Sampler's Name:       Steve Le         Sampler's Name:       Steve Le         Seceived Intact:       Cooler Custody Seals:	a, WA 985 gg@transa CR 2639 Line agg AMPLE R Yes	31 <u>alta.com</u> 2 30 E <b>CEIPT</b>		Phone:	360	-807-	8073	}			Add			TransAlta Centralia Mining					ļ			
Email:       steve_le         Project Name:       LPLF CC         Project Number:       470009         Sampler's Name:       Steve_Le         Sampler's Name:	gg@trans; CR 2639 Line 29g AMPLE R Yes	a <u>lta.com</u> 30 ECEIPT		Phone:	360	-807-	8073	}		Address:					913 Big Hanaford Road							
Project Name:       LPLF C0         Project Number;       P.O. Number;         P.O. Number:       470009         Sampler's Name:       Steve Lo         Sampler's Name:	2639 Line 299 AMPLE R Yes	30 E <b>CEIPT</b>		Phone:	360	-807-	8073	5	City, State ZIP: Centralia, WA 98531													
Project Number: 470009 P.O. Number: 470009 Sampler's Name: Steve Le S Temperature ('C): Received Intact: Cooler Custody Seals:	2639 Line 2gg AMPLE R Yes	ECEIPT		****		9,9,9,9,9,9 <b>8</b>					Ema		90900				nsalta.c	om	୍ର p	0#		
P.O. Number: 470009 Sampler's Name: Steve Le S Temperature ('C): Received Intact: Cooler Custody Seals:	agg AMPLE R Yes	ECEIPT						155 5 10	1919-11196	dan seda	ind startig F	REQU	IESTE	<u>D AN</u>	IALYS	SIS 1	an a	ally and a la	-165333	94948-972- 	Alfa ana ba	TAT
Sampler's Name: Steve Le S Temperature ('C): Received Intact: Cooler Custody Seals:	agg AMPLE R Yes	ECEIPT			- Color																R	outine 21day
S Temperature (°C): Received Intact: Cooler Custody Seals:	AMPLE R Yes		Steve Legg																		Sa Sa	ame Day 100%
Temperature ('C): Received Intact: Cooler Custody Seals:	Yes		SAMPLE RECEIPT																		N	ext Day ***
Received Intact: Cooler Custody Seals:		Tamp Plan																			3	Day
Cooler Custody Seals:		I stemp pigt	nk Present				ļ											and the second second			5	Day 50%
					1									]								ırcharges.
Sample Custody Seals:	Yes	No N/A	Total Cont	ainers:	1 🔅																	ase call for
	Yes	No N/A			ers			0,			Т											ailability
Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Containers		SM 2540 C / TDS	9056A / Chloride	9056A / F	9056A / SO4	6010C / Metals											oue Date:
101223-CCR-LPLF1	GW	10/12/2023	7:55				x	~	x	x	x											
101223-CCR-LPLF2R	GW	10/12/2023	8:58		2	ļļ		X		+	X											
101223-CCR-LPLF8	GW				2		X	X		X										┨───┤───		
		10/12/2023	9:30		2		X	X		X	<u>X</u>			+						<b></b>		
101223-CCR-LPLF8 MS	GW	10/12/2023	9:30	<u> </u>	2		X	X	X	X	X											
101223-CCR-LPLF8 MSD	GW	10/12/2023	9:30		2		X	X	X	X	X									<u> </u>	_	
101223-CCR-LPLF7R	GW	10/12/2023	10:11		2		X	X	X	X	X			<u> </u>						<u> </u>		
101223-CCR-LPLF7R FD	GW	10/12/2023	10:11		2		X	X	<u>x</u>	x	<u>x</u>			<u></u>						<u> </u>		
														ļ						<u> </u>		
	· <b> </b>	ļ		<b>_</b>		ļļ.														<u> </u>		
	<u> </u>			<u></u>	<u> </u>									<u> </u>								
Dissolved	1999 - 1997 <mark>/</mark>	ng, Al, As, B, Ba	a, Be, Ca, Cd	, Co, Cr,	Cu, F	e, K, I	Li, M	g, Mr	п, Мо,	Na,	, Ni, I	P, Pb, SI	b, Se, S	Si, Sn	, Sr, T	l, V, Zr	i, Zr		Add			ds Available
Total		g, Al, As, B, Ba	· · · · · · · · · · · · · · · · · · ·	, Co, Cr,	Cu, F	e, K, I	Lì, M	g, Mr	n, Mo,	Na,	, Ni, I	P, Pb, Sl	b, Se, S	Si, Sn	, Sr, T					U	pon Req	uest
	RE	LINQUISH	ED BY	er et egi på	garde L	etter fi	en de la	9939 <u>0</u>	8938	teredi 	0.995	-222-222-22	e estatut.	A SE		RE	CEIVE	DBY	<u>/ 3988</u>	an search		
Print Name		Sig	gnature			Dat	e/Ti	me				Prin	t Nam	ie i	te est est	지원 문	0	Signa	uure,	Neses	S n	nto /Time Star
Steve Legg	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Steve Legg			10/	12/2														7 /		ate/Time

											PM <	
			<b>Cooler Receipt</b>	and	Prese	rvati	on F	orm			1 //1 <u>~</u> ~	
Client ra	nsalt	a re	ntralia	<u> </u>					K23 1	.662		
Received:	0/12/13	Opened:	10/12/23	≥ By:	m	m		oaded:		UZ3 By:	M	ħ
1. Samples w	ere received via?	USPS	Fed Ex	UPS	D	HL	P	PDX	Cou	rier Hand D	elivered	<i>x</i>
2. Samples w	ere received in: (cir	cle) (Co	oler Box	E	nvelope	!	Ot	her		×	NA	
3. Were custo	dy seals on coolers?		NA Y (N)		now mar		where	?				
If present, v	vere custody seals i	ntact?						and date	d?	Y		
	1			· 	-	•						······································
Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / N/	A	Out c	of temp with ")		PM Notifi If out of	ed	Tracking Num	ber NA	Filed
BO	• -	IRIA	)									
	-		Treasure to the second s									
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4. Was a Tempe	erature Blank prese	nt in cooler?	NAYN	If yes, r	notate th	e temp	erature	e in the a	ppropriat	e column above:		]
If no, take t	he temperature of a	representative	sample bottle contain	-								
			cified temperature rang			,				NA Y	N	
			as collected? If not, not	-	e coolet	# abov	e and	notify th	e PM			
	ssue samples were		rozen Partially Th		Thaw		C and	nonij a	₩ I 37E,		N	
	-		,,,,,	-								
	(		bble Wrap Gel Packs	s (Wel	l lce L	ry Ice	Slee	eves		- 		
	dy papers properly		•								N	
	les received in good		broken) , preservation, etc.)?							NA Y	N	
	ple labels and tags a									NA (Y NA (Y	N N	
-		-	mes received for the te	sts indi	cated?					NA (Y	N	
			N SOP) received at the			1? Indi	icate ir	n the tab	le helow	NA Y	Ń	$\mathbf{i}$
			? Indicate in the table		····· #-					NA Y	N	/
14. Was C12/R		•								NA Y	N	
15. Were sampl	es received within	the method sp	ecified time limit? If n	ot. nota	te the er	ror belo	ow and	i notify t	he PM	NA Y	N	
			d exactly to the 100ml		and the second se	,	Y	N		Underfilled	Overfille	d
[						and the second s	T			ondo mica		u
Sa	imple ID on Bott	e	Sample	ID on	coc					Identified by:		
				•								
			-									
	Cameria In		Bottle Count	Head-		T			Volume	Reagent Lot		
101002	Sample ID	DIFT	Bottle Type	space	Broke		Rea	igent #D	added	Number	Initials	Time

Sample ID	Bottle Type	space	Broke	pH	Reagent	added	Number	Initials	Time
101723-CCR-LP LFZR	125 ml			X	HIDZ	0.5m	0		1255
	,				7				
		<del> </del>					<u> </u>	<b> </b>	

Notes, Discrepancies, Resolutions:

G:\SMO\2022 Forms

SOP: SMO-GEN



# **Miscellaneous Forms**

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#### **Inorganic Data Qualifiers**

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

#### **Metals Data Qualifiers**

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- $i \,$   $\,$  The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

#### **Organic Data Qualifiers**

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
   DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

#### Additional Petroleum Hydrocarbon Specific Qualifiers

- ${f F}$  The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

# ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources- data/water-sciences-home-page/laboratory-certification-branch/non-field-lab- certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaborator yAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com to our laboratory's NFLAP-approved quality assurance program A complete	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

# Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M MCL	Modified Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Analyst Summary report

Client:	Transalta Centralia Mining, LLC
Project:	LPLF CCR/

101223-CCR-LPLF1

K2311662-001

Ground Water

Sample Name:

Sample Matrix:

Lab Code:

### Service Request: K2311662

**Date Collected:** 10/12/23 **Date Received:** 10/12/23

Analysis Method		Extracted/Digested By	Analyzed By
300.0			NFOTH
6010C		MSOLADEY	AMCKORNEY
SM 2540 C			JBYMAN
Sample Name:	101223-CCR-LPLF2R		Date Collected: 10/12/23
Lab Code:	K2311662-002		<b>Date Received:</b> 10/12/23
Sample Matrix:	Ground Water		

Analysis Method	Extracted/Digested By	Analyzed By
300.0		NFOTH
6010C	MSOLADEY	AMCKORNEY
SM 2540 C		JBYMAN

Sample Name:	101223-CCR-LPLF8
Lab Code:	K2311662-003
Sample Matrix:	Ground Water

101223-CCR-LPLF7R

K2311662-004

Ground Water

	Date
LADEI	

Date Collected: 10/12/23 **Date Received:** 10/12/23

By

Analysis Method	Extracted/Digested By	Analyzed By
300.0		NFOTH
6010C	MSOLADEY	AMCKORNEY
SM 2540 C		JBYMAN

Date Collected: 10/12/23 **Date Received:** 10/12/23

Analysis Method	Extracted/Digested By	Analyzed By
300.0		NFOTH
6010C	MSOLADEY	AMCKORNEY
SM 2540 C		JBYMAN

Sample Name:

Sample Matrix:

Lab Code:

Analyst Summary report

# Client:Transalta Centralia Mining, LLCProject:LPLF CCR/

### Service Request: K2311662

Sample Name:101223-CCR-LPLF7R FDLab Code:K2311662-005Sample Matrix:Ground Water

**Date Collected:** 10/12/23 **Date Received:** 10/12/23

Analysis Method	Extracted/Digested By	Analyzed By
300.0		NFOTH
6010C	MSOLADEY	AMCKORNEY
SM 2540 C		JBYMAN



# Sample Results

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# Metals

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Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2311662
Project:	LPLF CCR	<b>Date Collected:</b> 10/12/23 07:55
Sample Matrix:	Ground Water	Date Received: 10/12/23 12:30
Sample Name: Lab Code:	101223-CCR-LPLF1 K2311662-001	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Boron	6010C	0.593	mg/L	0.021	0.003	1	10/30/23 08:29	10/17/23	
Calcium	6010C	228	mg/L	0.021	0.003	1	10/30/23 08:29	10/17/23	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request:	K2311662
Project:	LPLF CCR	Date Collected:	10/12/23 08:58
Sample Matrix:	Ground Water	Date Received:	10/12/23 12:30
Sample Name: Lab Code:	101223-CCR-LPLF2R K2311662-002	Basis:	NA

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Boron	6010C	0.347	mg/L	0.021	0.003	1	10/30/23 08:32	10/17/23	
Calcium	6010C	464	mg/L	0.021	0.003	1	10/30/23 08:32	10/17/23	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2311662
Project:	LPLF CCR	<b>Date Collected:</b> 10/12/23 09:30
Sample Matrix:	Ground Water	Date Received: 10/12/23 12:30
Sample Name: Lab Code:	101223-CCR-LPLF8 K2311662-003	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Boron	6010C	1.04	mg/L	0.021	0.003	1	10/30/23 08:15	10/17/23	
Calcium	6010C	406	mg/L	0.021	0.003	1	10/30/23 08:15	10/17/23	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2311662
Project:	LPLF CCR	<b>Date Collected:</b> 10/12/23 10:11
Sample Matrix:	Ground Water	Date Received: 10/12/23 12:30
Sample Name: Lab Code:	101223-CCR-LPLF7R K2311662-004	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Boron	6010C	0.326	mg/L	0.021	0.003	1	10/30/23 08:35	10/17/23	
Calcium	6010C	262	mg/L	0.021	0.003	1	10/30/23 08:35	10/17/23	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2311662
Project:	LPLF CCR	<b>Date Collected:</b> 10/12/23 10:11
Sample Matrix:	Ground Water	Date Received: 10/12/23 12:30
Somulo Nome	101223-CCR-LPLF7R FD	Basis: NA
Sample Name:		Dasis: INA
Lab Code:	K2311662-005	

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Boron	6010C	0.331	mg/L	0.021	0.003	1	10/30/23 08:38	10/17/23	
Calcium	6010C	264	mg/L	0.021	0.003	1	10/30/23 08:38	10/17/23	



# **General Chemistry**

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Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2311662
Project:	LPLF CCR	<b>Date Collected:</b> 10/12/23 07:55
Sample Matrix:	Ground Water	<b>Date Received:</b> 10/12/23 12:30
Sample Name: Lab Code:	101223-CCR-LPLF1 K2311662-001	Basis: NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Chloride	300.0	3.28	mg/L	0.20	0.010	2	10/17/23 03:24	
Fluoride	300.0	0.1 J	mg/L	1.0	0.10	10	10/25/23 23:01	
Sulfate	300.0	1490	mg/L	100	30	500	10/16/23 18:07	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2311662
Project:	LPLF CCR	<b>Date Collected:</b> 10/12/23 07:55
Sample Matrix:	Ground Water	Date Received: 10/12/23 12:30
Sample Name: Lab Code:	101223-CCR-LPLF1 K2311662-001	Basis: NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total Dissolved	SM 2540 C	2990	mg/L	40	-	1	10/13/23 11:42	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2311662
Project:	LPLF CCR	<b>Date Collected:</b> 10/12/23 08:58
Sample Matrix:	Ground Water	Date Received: 10/12/23 12:30
Sample Name: Lab Code:	101223-CCR-LPLF2R K2311662-002	Basis: NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Chloride	300.0	7.54	mg/L	0.20	0.010	2	10/17/23 03:33	
Fluoride	300.0	ND U	mg/L	1.0	0.10	10	10/25/23 06:52	
Sulfate	300.0	1560	mg/L	100	30	500	10/16/23 18:16	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request:	K2311662
Project:	LPLF CCR	Date Collected:	10/12/23 08:58
Sample Matrix:	Ground Water	Date Received:	10/12/23 12:30
Sample Name: Lab Code:	101223-CCR-LPLF2R K2311662-002	Basis:	NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total Dissolved	SM 2540 C	3430	mg/L	40	-	1	10/13/23 11:42	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2311662
Project:	LPLF CCR	<b>Date Collected:</b> 10/12/23 09:30
Sample Matrix:	Ground Water	<b>Date Received:</b> 10/12/23 12:30
Sample Name: Lab Code:	101223-CCR-LPLF8 K2311662-003	Basis: NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Chloride	300.0	6.89	mg/L	0.20	0.010	2	10/17/23 02:49	
Fluoride	300.0	ND U	mg/L	1.0	0.10	10	10/25/23 06:17	
Sulfate	300.0	2230	mg/L	100	30	500	10/16/23 17:33	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2311662
Project:	LPLF CCR	<b>Date Collected:</b> 10/12/23 09:30
Sample Matrix:	Ground Water	<b>Date Received:</b> 10/12/23 12:30
Sample Name: Lab Code:	101223-CCR-LPLF8 K2311662-003	Basis: NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total Dissolved	SM 2540 C	3760	mg/L	40	-	1	10/13/23 11:42	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2311662
Project:	LPLF CCR	<b>Date Collected:</b> 10/12/23 10:11
Sample Matrix:	Ground Water	<b>Date Received:</b> 10/12/23 12:30
Sample Name: Lab Code:	101223-CCR-LPLF7R K2311662-004	Basis: NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Chloride	300.0	9.99	mg/L	0.20	0.010	2	10/17/23 03:41	
Fluoride	300.0	ND U	mg/L	1.0	0.10	10	10/25/23 07:01	
Sulfate	300.0	1430	mg/L	100	30	500	10/16/23 18:25	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2311662
Project:	LPLF CCR	Date Collected: 10/12/23 10:11
Sample Matrix:	Ground Water	Date Received: 10/12/23 12:30
Sample Name: Lab Code:	101223-CCR-LPLF7R K2311662-004	Basis: NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total Dissolved	SM 2540 C	2810	mg/L	40	-	1	10/13/23 11:42	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2311662
Project:	LPLF CCR	<b>Date Collected:</b> 10/12/23 10:11
Sample Matrix:	Ground Water	Date Received: 10/12/23 12:30
Sample Name: Lab Code:	101223-CCR-LPLF7R FD K2311662-005	Basis: NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Chloride	300.0	9.96	mg/L	0.20	0.010	2	10/17/23 03:50	
Fluoride	300.0	ND U	mg/L	1.0	0.10	10	10/25/23 07:09	
Sulfate	300.0	1430	mg/L	100	30	500	10/16/23 18:33	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request:	K2311662
Project:	LPLF CCR	Date Collected:	10/12/23 10:11
Sample Matrix:	Ground Water	Date Received:	10/12/23 12:30
Sample Name: Lab Code:	101223-CCR-LPLF7R FD K2311662-005	Basis:	NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total Dissolved	SM 2540 C	2830	mg/L	40	-	1	10/13/23 11:42	



# QC Summary Forms

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Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2311662
Project:	LPLF CCR	Date Collected: NA
Sample Matrix:	Ground Water	Date Received: NA
Sample Name: Lab Code:	Method Blank KQ2318033-01	Basis: NA

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Boron	6010C	ND U	mg/L	0.021	0.003	1	10/30/23 08:10	10/17/23	
Calcium	6010C	ND U	mg/L	0.021	0.003	1	10/30/23 08:10	10/17/23	

QA/QC Report

Client:	Transalta Centralia Mining, Ll	LC	Service	<b>Request:</b>	K2311662
Project:	LPLF CCR		Date C	ollected:	10/12/23
Sample Matrix:	Ground Water		Date R	eceived:	10/12/23
			Date A	nalyzed:	10/30/23
			Date Ex	xtracted:	10/17/23
		Matrix Spike S	ummary		
		Total Met	•		
Sample Name:	101223-CCR-LPLF8			Units:	mg/L
Lab Code:	K2311662-003			Basis:	NA
Analysis Method:	6010C				
Prep Method:	EPA CLP ILM04.0				
		<b>Matrix Spike</b> KQ2318033-04			
Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits

1.52

401

0.500

10.0

96

-57 #

75-125

75-125

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

1.04

406

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

Boron

Calcium

QA/QC Report

Client: Project Sample Matrix:	Transalta Centrali LPLF CCR Ground Water	a Mining, I	LC			Service Request: Date Collected: Date Received: Date Analyzed:	10/12/2 10/12/2	23 23
			-	Sample Sun otal Metals	ımary	Date Analyzeu.	10/30/2	
Sample Name: Lab Code:	101223-CCR-LP K2311662-003 Analysis	LF8		Sample	Duplicate Sample KQ2318033-03	Units: Basis:	mg/L NA	
Analyte Name	Method	MRL	MDL	Result	Result	8	RPD	<b>RPD Limit</b>
Boron Calcium	6010C 6010C	0.021 0.021	0.003 0.003	1.04 406	1.07 407	1.06 407	3 <1	20 20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:Transalta Centralia Mining, LLCProject:LPLF CCRSample Matrix:Ground Water

**Service Request:** K2311662 **Date Analyzed:** 10/30/23

# Lab Control Sample Summary Total Metals

Units:mg/L Basis:NA

# Lab Control Sample

KQ2318033-02

Analyte Name	<b>Analytical Method</b>	Result	Spike Amount	% Rec	% Rec Limits
Boron	6010C	0.496	0.500	99	80-120
Calcium	6010C	13.2	12.5	106	80-120



# **General Chemistry**

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Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2311662
Project:	LPLF CCR	Date Collected: NA
Sample Matrix:	Ground Water	Date Received: NA
Sample Name: Lab Code:	Method Blank K2311662-MB1	Basis: NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Chloride	300.0	ND U	mg/L	0.10	0.005	1	10/16/23 17:15	
Fluoride	300.0	ND U	mg/L	0.10	0.010	1	10/24/23 23:29	
Sulfate	300.0	ND U	mg/L	0.20	0.06	1	10/16/23 17:15	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request:	K2311662
Project:	LPLF CCR	Date Collected:	NA
Sample Matrix:	Ground Water	Date Received:	NA
Sample Name: Lab Code:	Method Blank K2311662-MB1	Basis: 1	NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total Dissolved	SM 2540 C	ND U	mg/L	10	-	1	10/13/23 11:42	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2311662
Project:	LPLF CCR	Date Collected: NA
Sample Matrix:	Ground Water	Date Received: NA
Sample Name: Lab Code:	Method Blank K2311662-MB2	Basis: NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Chloride	300.0	ND U	mg/L	0.10	0.005	1	10/16/23 21:01	
Fluoride	300.0	ND U	mg/L	0.10	0.010	1	10/25/23 02:31	
Sulfate	300.0	ND U	mg/L	0.20	0.06	1	10/16/23 21:01	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K231	11662
Project:	LPLF CCR	Date Collected: NA	
Sample Matrix:	Ground Water	Date Received: NA	
Sample Name: Lab Code:	Method Blank K2311662-MB2	Basis: NA	

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total Dissolved	SM 2540 C	ND U	mg/L	10	-	1	10/13/23 11:42	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: 1	K2311662
Project:	LPLF CCR	Date Collected: 1	NA
Sample Matrix:	Ground Water	Date Received: 1	NA
Sample Name: Lab Code:	Method Blank K2311662-MB3	Basis: 1	NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Chloride	300.0	ND U	mg/L	0.10	0.005	1	10/17/23 00:47	
Fluoride	300.0	ND U	mg/L	0.10	0.010	1	10/25/23 20:33	
Sulfate	300.0	ND U	mg/L	0.20	0.06	1	10/17/23 00:47	

QA/QC Report

Client: Project: Sample Matrix:	Transalta Cer LPLF CCR Ground Wate		s, LLC			Date Date	vice Reque e Collected e Received e Analyzed	l: 10. : 10.	2311662 /12/23 /12/23 /25/23	
						Date	e Extracte	d: NA	A	
			Duplicat	e Matrix S	pike Sumr	nary				
				Fluorio	de					
Sample Name:	101223-CCR	-LPLF1					Unit	s: mg	g/L	
Lab Code:	K2311662-00	)1					Basis	s: NA	4	
Analysis Method:	300.0									
Prep Method:	None									
				<b>x Spike</b> 52-001MS		Duplicate M K2311662-	-	е		
	Sample		Spike			Spike		% Rec		RPD
Analyte Name	Result	Result	Amount	% Rec	Result	Amount	% Rec	Limits	RPD	Limit
Fluoride	0.1 J	37.8	40.0	94	37.7	40.0	94	90-110	<1	20

Results flagged with an asterisk  $(\ast)$  indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

QA/QC Report

Client:	Transalta Centralia Mining, LLC
Project:	LPLF CCR
Sample Matrix:	Ground Water

# Service Request:K2311662 Date Collected:10/12/23 Date Received:10/12/23 Date Analyzed:10/16/23 - 10/25/23

<b>Duplicate Matrix Spike Summary</b>
General Chemistry Parameters

Sample Name: Lab Code:		101223-CCR-LPLF8 K2311662-003						Units:mg/L Basis:NA				
				Matrix Spike K2311662-003MS			Duplicate Matrix Spike K2311662-003DMS					
		Sample		Spike			Spike		% Rec		RPD	
Analyte Name	Method	Result	Result	Amount	% Rec	Result	Amount	% Rec	Limits	RPD	Limit	
Chloride	300.0	6.89	14.4	8.00	94	14.5	8.00	95	90-110	<1	20	
Fluoride	300.0	ND U	37.5	40.0	94	37.6	40.0	94	90-110	<1	20	
Sulfate	300.0	2230	4160	2000	97	4170	2000	97	90-110	<1	20	

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	Transalta Central	ia Mining,	LLC			Service Reques	t: K2311	662
Project	LPLF CCR					Date Collected	l: 10/12/2	23
Sample Matrix:	Ground Water					Date Received	l: 10/12/2	23
						Date Analyzed	l: 10/25/2	23
			Replicate	e Sample Sumi	mary			
			General C	hemistry Para	meters			
Sample Name:	101223-CCR-LF	PLF1				Unit	s: mg/L	
Lab Code:	K2311662-001					Basi	s: NA	
					Duplicate Sample K2311662-			
Analyte Name	Analysis Method	MRL	MDL	Sample Result	001DUP Result	Avorago	RPD	<b>RPD</b> Limit
Fluoride	300.0	1.0	0.10	0.1 J	0.1 J	<b>Average</b> 0.101	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

				•				
Client:	Transalta Centralia Min	ing, LLC				Service Request:	K23116	62
Project	LPLF CCR					Date Collected:	10/12/23	3
Sample Matrix:	Ground Water					Date Received:	10/12/23	3
						Date Analyzed:	10/13/23	3 - 10/25/23
		I	Replicate Sar	nple Summar	ry			
		Ge	eneral Chemi	stry Paramet	ters			
Sample Name:	101223-CCR-LPLF8					Units:	mg/L	
Lab Code:	K2311662-003					Basis:	NA	
	Analysis			Sample	Duplicate Sample K2311662- 003DUP			
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	<b>RPD</b> Limit
Chloride	300.0	0.20	0.010	6.89	6.85	6.87	<1	20

ND U

3760

2230

ND U

3760

2220

NC

3760

2230

NC

<1

<1

20

5

20

0.10

-30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

300.0

SM 2540 C

300.0

1.0

40

100

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Fluoride

Sulfate

Solids, Total Dissolved

QA/QC Report

Client:Transalta Centralia Mining, LLCProject:LPLF CCRSample Matrix:Ground Water

## Service Request: K2311662 Date Analyzed: 10/13/23 - 10/24/23

## Lab Control Sample Summary General Chemistry Parameters

Units:mg/L Basis:NA

# Lab Control Sample

K2311662-LCS1

Analyte Name	<b>Analytical Method</b>	Result	Spike Amount	% Rec	% Rec Limits
Chloride	300.0	4.82	5.00	96	90-110
Fluoride	300.0	4.82	5.00	96	90-110
Solids, Total Dissolved	SM 2540 C	1400	1430	98	85-115
Sulfate	300.0	4.95	5.00	99	90-110

QA/QC Report

Client:Transalta Centralia Mining, LLCProject:LPLF CCRSample Matrix:Ground Water

## Service Request: K2311662 Date Analyzed: 10/16/23 - 10/25/23

## Lab Control Sample Summary General Chemistry Parameters

Units:mg/L Basis:NA

## Lab Control Sample

K2311662-LCS2

Analyte Name	<b>Analytical Method</b>	Result	Spike Amount	% Rec	% Rec Limits
Chloride	300.0	4.85	5.00	97	90-110
Fluoride	300.0	4.87	5.00	97	90-110
Sulfate	300.0	4.96	5.00	99	90-110

QA/QC Report

Client:Transalta Centralia Mining, LLCProject:LPLF CCRSample Matrix:Ground Water

## Service Request: K2311662 Date Analyzed: 10/17/23 - 10/25/23

## Lab Control Sample Summary General Chemistry Parameters

Units:mg/L Basis:NA

## Lab Control Sample

K2311662-LCS3

Analyte Name	<b>Analytical Method</b>	Result	Spike Amount	% Rec	% Rec Limits
Chloride	300.0	4.82	5.00	96	90-110
Fluoride	300.0	4.84	5.00	97	90-110
Sulfate	300.0	4.95	5.00	99	90-110



Service Request No:K2313388

Accounts Payable Transalta Centralia Mining, LLC 913 Big Hanaford Road Centralia, WA 98531

## Laboratory Results for: LPLF CCR

Dear Accounts,

Enclosed are the results of the sample(s) submitted to our laboratory November 29, 2023 For your reference, these analyses have been assigned our service request number **K2313388**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Shari Endy Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626 PHONE +1 360 577 7222 | FAX +1 360 636 1068 ALS Group USA, Corp. dba ALS Environmental



## Narrative Documents

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360) 577-7222 Fax (360) 425-9096 www.alsglobal.com

Transalta Centralia Mining, LLC

Project: LPLF CCR Sample Matrix: Water Service Request: K2313388 Date Received: 11/29/2023

**CASE NARRATIVE** 

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

#### Sample Receipt:

Three water samples were received for analysis at ALS Environmental on 11/29/2023. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

#### Metals:

**Client:** 

No significant anomalies were noted with this analysis.

#### General Chemistry:

No significant anomalies were noted with this analysis.

Approved by

Shari Cula

Date

12/13/2023



## SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: 112923-CCR-LPLF2R		Lab	DID: K2313	3388-001		
Analyte	Results	Flag	MDL	MRL	Units	Method
Boron	364		3	84	ug/L	6010C
Solids, Total Dissolved	3480			20	mg/L	SM 2540 C
CLIENT ID: 112923-CCR-LPLF8		Lab	D: K2313	3388-002		
Analyte	Results	Flag	MDL	MRL	Units	Method
Boron	1210		20	420	ug/L	6010C
CLIENT ID: 112923-CCR-LPLF7R		Lab	D: K2313	3388-003		
Analyte	Results	Flag	MDL	MRL	Units	Method
Chloride	9.9		0.3	5.0	mg/L	300.0



# Sample Receipt Information

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360) 577-7222 Fax (360) 425-9096 www.alsglobal.com

### SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	CLIENT SAMPLE ID	DATE	TIME
K2313388-001	112923-CCR-LPLF2R	11/29/2023	1123
K2313388-002	112923-CCR-LPLF8	11/29/2023	1055
K2313388-003	112923-CCR-LPLF7R	11/29/2023	1026



ADDRESS 1317 South 13th Ave., Kelso, WA 98626 PHONE 1 360 577 7222 FAX 1 360 636 1068

## Work Order No.:

Chain of Custody

Part of the ALS Group A Campbell Brothers Limited Company

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Project Manager: Steve Le	egg										Bill to: A Steve Legg						9						
Client Name: TransAll	a Centralia	Mining Com	bany								Con	ipany:		Trar	nsAlta	Centr	alia M	ining					
Address: 913 Big	Hanaford F	Road								]	Add	ress:	i de la compañía de la	913 Big Hanaford Road									
	a, WA 9853	31									City	, State Z	IP:	Cen	tralia,	WA 9	8531						
Email: steve_le	gg@transa	alta.com		Phone:	360	)-807	-807	3			Ema	ult: ^{nggalastr}	an sa	stev	e leg	g@tra	nsalta	.com		ро	y#		
Project Name: LPLF CO	CR				1	a ang	ine en	*********				REQUE	STE	) AN	ALYS	IS	terrester	an an tha a		• • • • • • • •	geneere.	TAT	1990 AS
Project Number:																						Routine	21day
P.O. Number: 470009	2639 Line	: 30																				Same Day	100%
Sampler's Name: Steve Legg																					Next Day *	ή÷.	
S	AMPLE RI	ECEIPT	ogelegelegelegelegelegelegelegelegelegel	enseen																		3 Day	
Temperature (°C):		Temp Bla	nk Present																			5 Day	50%
Received Intact:	Yes	No N/A	Wet Ice / I	Blue Ice																		Surcharge	25
Cooler Custody Seals:	^t Yes	No N/A	Total Cont	ainers:																		Please call	
Sample Custody Seals:	Yes	No N/A			ers			l a			_											availabili	
Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	of Containers		SM 2540 C / TDS	9056A / Chloride	9056A / F	6A / SO4	/ Metals											Due Date	5:
	3 20032300				No.		SM	905	905	9056A ,	6010C											Commen	ts
112923-CCR-LPLF2R	GW	11/29/2023	11:23		2	1	x				x		1							+		TDS, Boron o	nly
112923-CCR-LPLF8	GW	11/29/2023	10:55		1			1	1		x		1									Boron only	
112923-CCR-LPLF7R	GW	11/29/2023	10:26		1			x														Chloride only	,
······								<u> </u>															
	ļ				<u> </u>			ļ									_						
Dissolved	A	I	a, Be, Ca, Cd	. Co, Cr,	L Cu, F	і ⁻ е, К,	⊥ Li, N	L: /Ig, M	in, Mo	L D, Na	L., Ni,	L P, Pb, Sb,	Se, S	Ll Si, Sn,	Sr, T	I , V, Zr	. Zr		A	 ∖ddi	 itiona	l Methods Avai	lable
Fotal	******	.g, Al, As, B, B		*****															{		an an an Antonio	pon Request	
		LINQUISH					\$			1998	da da da da	- Sector parps						ED I	3Y			andres distances ended	
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Steve Legg		1-5	58	14:31	11/	29/7	2023	3		Ŧ	Rait	1	$\mathcal{J}_{0}$	.tτ <i>ι</i>	ie -	-	Fra	2	L	te	ž.	29/23	143

					PMSF		
Co	oler Receipt and	Preservation	n Form				
Client IransAlta		Servic	e Request K23_	13388			
Received: 11.29.23 Opened: 11.	29.23 By:				DC		
1. Samples were received via? USPS	Fed Ex UPS	DHL		ourier Hand Del	ivered		
<ol> <li>Samples were received in: (circle)</li> <li>Cooleg</li> </ol>	)	Envelope			NA		
3. Were custody seals on coolers? NA		-	nere?		1.171		
If present, were custody seals intact?		ent, were they sign		Ŷ			
				-	<u> </u>		
		,	PM				
Temp Blank Sample Temp IR Gun Co	oler #/COC ID / NA	Out of temp indicate with "X"	Notified If out of temp	Tracking Numb	er NA	Filed	
28					<u>ur (u)</u>		
- ~· ( + · E · / -	···				<u></u>		
					<b></b>	+	
				· · · · · · · · · · · · · · · · · · ·	······		
				· · · · · · · · · · · · · · · · · · ·			
4. Was a Temperature Blank present in cooler? NA	A N If yes.	notate the temper	ature in the appron	riate column above:			
If no, take the temperature of a representative sar	$\cup$	-	+				
5. Were samples received within the method specifie	•			NA Y	N		
If no, were they received on ice and same day as		he cooler # above	and notify the PM		N		
If applicable, tissue samples were received: <b>Froz</b>		Thawed					
		$\sim$					
6. Packing material: Inserts Baggies Bubble	- (	et Ice Dry Ice	Sleeves	$\sim$			
7. Were custody papers properly filled out (ink, sig	· •			NA (Y)	N		
<ol> <li>Were samples received in good condition (unbro</li> <li>Were all sample labels complete (ie, analysis, pro</li> </ol>				NA (Y) NA (Y)	'N N		
10. Did all sample labels and tags agree with custody	· ·				N		
11. Were appropriate bottles/containers and volumes	s received for the tests inc	licated?		NA (Y)	N		
12. Were the pH-preserved bottles (see SMO GEN S	OP) received at the approx	opriate pH? Indice	ate in the table bel		/ N		
13. Were VOA vials received without headspace? In	ndicate in the table below	ν.		NÂ Y	N		
14. Was C12/Res negative?				(NA) Y	N		
15. Were samples received within the method specif	fied time limit? If not, no	tate the error below	w and notify the PM	A (NA Y	N		
16. Were 100ml sterile microbiology bottles filled e	xactly to the 100ml mark	? (NA)	Y N	Underfilled	Overfilled		
	 	- 000		I de m <b>êi C</b> ie at Less			
Sample ID on Bottle	Sample ID o	n COC		Identified by:	<u> </u>		
					<u> </u>		
			<u> </u>		MINISTER		
	Bottle Count Head- Volume Reagent Lot						
Sample ID	Bottle Count Head Bottle Type space	e Broke pH	Reagent add		Initials	Time	

Notes, Discrepancies, Resolutions: _

G:\SMO\2022 Forms

SOP: SMO-GEN

Reviewed: 12/9/2022



## **Miscellaneous Forms**

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360) 577-7222 Fax (360) 425-9096 www.alsglobal.com

#### **Inorganic Data Qualifiers**

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

#### **Metals Data Qualifiers**

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- $i \,$   $\,$  The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

#### **Organic Data Qualifiers**

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
   DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

#### Additional Petroleum Hydrocarbon Specific Qualifiers

- ${f F}$  The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

## ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources- data/water-sciences-home-page/laboratory-certification-branch/non-field-lab- certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaborator yAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com to our laboratory's NFLAP-approved quality assurance program A complete	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M MCL	Modified Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
ТРН	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Analyst Summary report

Client:	Transalta Centralia Mining, LLC
Project:	LPLF CCR/

112923-CCR-LPLF2R

K2313388-001

Water

Sample Name:

Sample Matrix:

Lab Code:

### Service Request: K2313388

**Date Collected:** 11/29/23 **Date Received:** 11/29/23

Analysis Method 6010C SM 2540 C		<b>Extracted/Digested By</b> ABOYER	<b>Analyzed By</b> AMCKORNEY AWILSON
Sample Name: Lab Code: Sample Matrix:	112923-CCR-LPLF8 K2313388-002 Water		<b>Date Collected:</b> 11/29/23 <b>Date Received:</b> 11/29/23
<b>Analysis Method</b> 6010C		<b>Extracted/Digested By</b> ABOYER	<b>Analyzed By</b> AMCKORNEY
Sample Name: Lab Code: Sample Matrix:	112923-CCR-LPLF7R K2313388-003 Water		<b>Date Collected:</b> 11/29/23 <b>Date Received:</b> 11/29/23
<b>Analysis Method</b> 300.0		Extracted/Digested By	<b>Analyzed By</b> NFOTH



# Sample Results

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360) 577-7222 Fax (360) 425-9096 www.alsglobal.com



## Metals

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360) 577-7222 Fax (360) 425-9096 www.alsglobal.com

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request:	K2313388
Project:	LPLF CCR	Date Collected:	11/29/23 11:23
Sample Matrix:	Water	Date Received:	11/29/23 14:31
Sample Name: Lab Code:	112923-CCR-LPLF2R K2313388-001	Basis:	NA

**Total Metals** 

	Analysis							Date	
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Extracted	Q
Boron	6010C	364	ug/L	84	3	1	12/05/23 13:38	11/30/23	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2313388
Project:	LPLF CCR	Date Collected: 11/29/23 10:55
Sample Matrix:	Water	Date Received: 11/29/23 14:31
Sample Name: Lab Code:	112923-CCR-LPLF8 K2313388-002	Basis: NA

**Total Metals** 

	Analysis							Date	
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Extracted	Q
Boron	6010C	1210	ug/L	420	20	5	12/05/23 13:41	11/30/23	



# **General Chemistry**

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Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request: K2313388
Project:	LPLF CCR	Date Collected: 11/29/23 11:23
Sample Matrix:	Water	Date Received: 11/29/23 14:31
Sample Name: Lab Code:	112923-CCR-LPLF2R K2313388-001	Basis: NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total Dissolved	SM 2540 C	3480	mg/L	20	-	1	12/06/23 11:32	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request:	K2313388
Project:	LPLF CCR	Date Collected:	11/29/23 10:26
Sample Matrix:	Water	Date Received:	11/29/23 14:31
Sample Name: Lab Code:	112923-CCR-LPLF7R K2313388-003	Basis:	NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Chloride	300.0	9.9	mg/L	5.0	0.3	50	12/07/23 22:39	



# QC Summary Forms

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## Metals

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360) 577-7222 Fax (360) 425-9096 www.alsglobal.com

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request:	K2313388
Project:	LPLF CCR	Date Collected:	NA
Sample Matrix:	Water	Date Received:	NA
Sample Name: Lab Code:	Method Blank KQ2321105-01	Basis:	NA

**Total Metals** 

	Analysis							Date	
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Extracted	Q
Boron	6010C	ND U	ug/L	21	3	1	12/05/23 10:42	11/30/23	

QA/QC Report

Client:Transalta Centralia Mining, LLCProject:LPLF CCRSample Matrix:Water

Service Request: K2313388 Date Analyzed: 12/05/23

## Lab Control Sample Summary Total Metals

Units:ug/L Basis:NA

Lab Control Sample<br/>KQ2321105-02Analyte NameAnalytical MethodResultSpike Amount% Rec% Rec LimitsBoron6010C51650010380-120



# **General Chemistry**

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Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request:	K2313388
Project:	LPLF CCR	Date Collected:	NA
Sample Matrix:	Water	Date Received:	NA
Sample Name: Lab Code:	Method Blank K2313388-MB1	Basis:	NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Chloride	300.0	ND U	mg/L	0.10	0.005	1	12/07/23 12:35	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request:	K2313388
Project:	LPLF CCR	Date Collected:	NA
Sample Matrix:	Water	Date Received:	NA
Sample Name: Lab Code:	Method Blank K2313388-MB1	Basis:	NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total Dissolved	SM 2540 C	ND U	mg/L	10	-	1	12/06/23 11:32	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request:	K2313388
Project:	LPLF CCR	Date Collected:	NA
Sample Matrix:	Water	Date Received:	NA
Sample Name: Lab Code:	Method Blank K2313388-MB2	Basis:	NA

	Analysis		<b>T</b> T <b>1</b> /	MDI	MDI	<b>D</b> 1		0
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Chloride	300.0	ND U	mg/L	0.10	0.005	1	12/07/23 16:27	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request:	K2313388
Project:	LPLF CCR	Date Collected:	NA
Sample Matrix:	Water	Date Received:	NA
Sample Name: Lab Code:	Method Blank K2313388-MB2	Basis:	NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total Dissolved	SM 2540 C	ND U	mg/L	10	-	1	12/06/23 11:32	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request:	K2313388
Project:	LPLF CCR	Date Collected:	NA
Sample Matrix:	Water	Date Received:	NA
Sample Name: Lab Code:	Method Blank K2313388-MB3	Basis:	NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Chloride	300.0	ND U	mg/L	0.10	0.005	1	12/07/23 20:12	

Analytical Report

Client:	Transalta Centralia Mining, LLC	Service Request:	K2313388
Project:	LPLF CCR	Date Collected:	NA
Sample Matrix:	Water	Date Received:	NA
Sample Name: Lab Code:	Method Blank K2313388-MB4	Basis:	NA

	Analysis							
Analyte Name	Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Chloride	300.0	0.006 J	mg/L	0.10	0.005	1	12/07/23 23:57	

QA/QC Report

Client:Transalta Centralia Mining, LLCProject:LPLF CCRSample Matrix:Water

## Service Request: K2313388 Date Analyzed: 12/06/23 - 12/07/23

### Lab Control Sample Summary General Chemistry Parameters

Units:mg/L Basis:NA

## Lab Control Sample

K2313388-LCS1

Analyte Name	<b>Analytical Method</b>	Result	Spike Amount	% Rec	% Rec Limits
Chloride	300.0	4.79	5.00	96	90-110
Solids, Total Dissolved	SM 2540 C	1350	1430	94	85-115

QA/QC Report

Client: Project: Sample Matrix:	Transalta Centralia Mining, LLC LPLF CCR Water			Service Re Date Analy Date Extra	yzed:	K2313388 12/07/23 NA	
Lab Control Sample Summary Chloride							
Analysis Method: Prep Method:	300.0 None			Units: Basis: Analysis L	ot:	mg/L NA 826275	
Sample Name Lab Control Sample		Lab Code K2313388-LCS2	<b>Result</b> 4.82	Spike Amount 5.00	% Rec 96		% Rec Limits 90-110

QA/QC Report

Client: Project: Sample Matrix:	Transalta Cen LPLF CCR Water	tralia Mining, LLC		Service Re Date Analy Date Extra	zed:	K231338 12/07/23 NA	-
Lab Control Sample Summary Chloride							
Analysis Method: Prep Method:	300.0 None			Units: Basis: Analysis L	ot:	mg/L NA 826275	
Sample Name Lab Control Sample		Lab Code K2313388-LCS3	<b>Result</b> 4.79	Spike Amount 5.00	<mark>% Rec</mark> 96	:	% Rec Limits 90-110

QA/QC Report

Client: Project: Sample Matrix:	Transalta Centralia Mining, LLC LPLF CCR Water			Service Request: Date Analyzed: Date Extracted:		K2313388 12/08/23 NA	
Lab Control Sample Summary Chloride							
Analysis Method: Prep Method:	300.0 None			Units: Basis: Analysis Lot:		mg/L NA 826275	
Sample Name Lab Control Sample		Lab Code K2313388-LCS4	Result 4.81	Spike Amount 5.00	% Rec 96		% Rec Limits 90-110