



WESTMORELAND COAL COMPANY - *Obed Mountain Mine*

**EPO 2013/ CR-34**  
Obed Mountain Mine  
Monthly Status Report – November 2017

Issued: December 7th, 2017

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## 1.0 MONTHLY STATUS REPORT – NOVEMBER 2017

On December 19, 2013, Alberta Environment and Sustainable Resource Development ("ESRD") issued Environmental Protection Order No. EPO-2013/34-CR, as amended (the "EPO"), to Coal Valley Resources Inc. ("CVRI") and Sherritt International Corporation in respect of the Obed Mountain Mine (the "Mine"). Oversight of the EPO transferred from ESRD to the Alberta Energy Regulator ("AER") in March 2014. CVRI became a subsidiary of Westmoreland Coal Company in April 2014.

We submit the following documents in support of the November 2017 Monthly Status Report:

1. Appendix 1 - November 2017 Data Sonde Data (Please note: data in monthly graphs are raw, uncorrected data. All data will be corrected applying standard correction methods using calibration records, field notes and water levels, data grading, and will be presented in the annual monitoring report).

## 2.0 EPO ACTIVITIES – NOVEMBER 2017

### 2.1 SUMMARY STATUS OF ASSESSMENTS, PLANS AND REPORTS

Table 1 summarizes the status of EPO required plans, assessments and reports. Clauses highlighted in green have been updated, modified or a status changed has occurred in the last thirty days.

<b>Table 1 Summary Status</b>		
<b>EPO 2013/CR-34 - Clause</b>	<b>Status</b>	<b>Comments</b>
<b>Clause 1 and 2</b> Immediate Requirements	Complete	Completed in 2013 -2014. Immediate response requirements were executed, the Short-Term Sampling and Monitoring Plan (STSMP) and subsequent Long-Term Sampling and Monitoring Plan (LTSMP) ensures compliance of requirements on an ongoing basis.
<b>Clause 3</b> Immediate and Short-Term Sampling and Monitoring Plan ('STSMP')	Approved / Complete	The STSMP was executed and then replaced by the LTSMP April 2014.
<b>Clause 6</b> Solids Recovery Plan	Active / Approved	Completed.
<b>Clause 10</b> Solids Recovery Report	Issued - Active	Update issued on May 15 <sup>th</sup> , 2017.

<b>Table 1 Summary Status</b>		
<b>EPO 2013/CR-34 - Clause</b>	<b>Status</b>	<b>Comments</b>
<b>Clause 11</b> Impact Assessment Plan	Approved / Active	Proposed amendments submitted on May 7 <sup>th</sup> , 2017.
<b>Clause 15</b> Impact Assessment Report	Active	Submitted May 15 <sup>th</sup> , 2017.
<b>Clause 17</b> Long Term Sampling and Monitoring Plan ('LTSMP')	Approved / Active	Active and ongoing. Proposed amendments or recommendations submitted on March 15 <sup>th</sup> , 2017.
<b>Clause 22</b> Wildlife Mitigation Plan	Approved / Active	Submitted May 15 <sup>th</sup> , 2017.
<b>Clause 25(a)</b> Fish Sampling and Monitoring Plan	Approved / Active	Submitted May 15 <sup>th</sup> , 2017.
<b>Clause 27</b> Remediation Design	Active / Ongoing	APC-1 to APC-4 design drawings and associated GRA SIR responses were submitted on October 20, 2017. APC-5 and APC-7 design drawings and associated GRA SIR responses were submitted on November 6, 2017.
<b>Clause 34</b> Waste Management Plan	Approved / Executed	The subject plan was approved on February 14, 2014.
<b>Clause 37</b> Wastewater Management Plan	Approved / Executed	The subject plan was approved on February 14, 2014.
<b>Clause 39</b> Monthly Status Reports	Active / Ongoing	Monthly status reports are ongoing.
<b>Clause 41</b> Final Report	In development	The Final Report is required to be submitted to the AER within 30 days of the completion of all work.
<b>Human Health Risk Assessment ('HHRA')</b>	Active	Update submitted May 15 <sup>th</sup> , 2017

## 2.2 CLAUSE 6 – SOLIDS RECOVERY PLAN

The Solids Recovery Plan Report was submitted on May 15, 2017. The 2016 Solids Recovery Plan report provides an update of all stabilization related activities from 2016 (works associated to the sediment traps and terrestrial activities) as well as identify planned activities for 2017.

## 2.3 CLAUSE 15 – IMPACT ASSESSMENT REPORT

The Impact Assessment Report was submitted on May 15, 2017. The 2016 Impacts Report is focused on the results of the data analysis related to vegetation, hydrology, aquatics and wildlife. The 2016 data was compared to the previous two years and results/trends were provided related to the recovery of the various environmental elements. Compared to previous Impacts Reports, the 2016 version did not include the background information on the release event and the methodology as these items remain unchanged. All data collected from 2016 is available for government review.

## 2.4 CLAUSES 17 – LONG TERM SAMPLING AND MONITORING PLAN ('LTSMP')

CVRI received approval of the Long-Term Sampling and Monitoring Plan (LTSMP) retroactive to April 24, 2014. The LTSMP is fully implemented and replaces the requirements outlined in Clause 3, the Immediate and Short-Term Sampling and Monitoring Plan (STSMP). The LTSMP is considered active and ongoing.

Table 2 below describes any actions related to data sonde operation or calibration to the end of November.

<b>Table 2 Data Sonde Status</b>			
<b>Site</b>	<b>Event Description</b>	<b>Date Range</b>	<b>Note</b>
APC	Sonde calibration	30-Jan-17	Sonde swapped and calibrated; out of water for 30 minutes
PLC-US	Sonde calibration	31-Jan-17	Sonde swapped and calibrated; out of water for 30 minutes
APC	Sonde calibration	28-Feb-17	Sonde swapped and calibrated; out of water for 30 minutes
PLC-US	Sonde calibration	27-Feb-17	Sonde swapped and calibrated; out of water for 30 minutes
APC	Sonde calibration	20-Mar-17	Sonde swapped and calibrated; out of water for 30 minutes
PLC-US	Sonde calibration	20-Mar-17	Sonde swapped and calibrated; out of water for 30 minutes
APC	Sonde calibration	3-Apr-17	Sonde swapped and calibrated; out of water for 30 minutes
PLC-US	Sonde calibration	3-Apr-17	Sonde swapped and calibrated; out of water for 30 minutes
APC-MTP	Station commissioned	4-Apr-17	Station installed, sonde deployed
APC	Sonde calibration	3-May-17	Attempt to calibrate, but determine pH sensor needs replacing. Calibration aborted. Update loggernet file to decrease data transmission rates.
APC-MTP	Sonde calibration	3-May-17	Attempt to calibrate, but determine temperature sensor needs replacing. Calibration aborted. Update loggernet file to decrease data transmission rates.
PLC-DS	Station commissioned	3-May-17	Station installed. Sonde is on and recording. Issues with Sutron transmitting data
PLC-US	Sonde calibration	4-May-17	Sonde decommissioned and moved to become new APC-US site
APC-US	Station commissioned	4-May-17	Station installed, sonde deployed
APC	Sonde calibration	17-May-17	Sonde calibrated; out of water for 30 minutes; Updated loggernet file to increase transmission rate
APC-US	Troubleshooting sonde	17-May-17	Updated loggernet file to increase transmission rate

<b>Table 2 Data Sonde Status</b>			
<b>Site</b>	<b>Event Description</b>	<b>Date Range</b>	<b>Note</b>
APC-MTP	Sonde calibration	18-May-17	Sonde calibrated; out of water for 30 minutes
APC	Sonde calibration	7-Jun-17	Sonde swapped and calibrated; out of water for 30 minutes - rapid changes in water levels resulted in sonde being periodically dry, affecting data values
APC-US	Sonde calibration	7-Jun-17	Sonde swapped and calibrated; out of water for 30 minutes - rapid changes in water levels resulted in sonde being periodically dry, affecting data values
APC-MTP	Sonde calibration	8-Jun-17	Sonde swapped and calibrated; out of water for 30 minutes - rapid changes in water levels resulted in sonde being periodically dry, affecting data values
PLC-DS	Sonde calibration	7-Jun-17	Sonde swapped and calibrated; out of water for 30 minutes - coding error at cloud based hosting site resulted in data being recorded under wrong headings. Issue has been corrected and will correct June data during annual report using manual sonde downloads.
APC	Sonde calibration	4-Jul-17	Sonde calibrated; out of water for 30 minutes; Sonde and PT indicate reach was dry between July 10 and July 18
APC-US	Sonde calibration	4-Jul-17	Sonde swapped and calibrated; out of water for 30 minutes
PLC-DS	Sonde calibration	4-Jul-17	Sonde swapped and calibrated; out of water for 30 minutes; data coding error was corrected
APC-MTP	Sonde calibration	5-Jul-17	Sonde swapped and calibrated; out of water for 30 minutes. Sonde and PT indicate reach was dry between July 10 and July 18, possibly damaging the DO sensor. Will repair in August.
APC-MTP	Sonde calibration	22-Jul-17	DO sensor failure; will repair in August
APC-US	Sonde calibration	10-Aug-17	Sonde swapped and calibrated; out of water for 30 minutes
PLC-DS	Sonde calibration	10-Aug-17	Sonde swapped and calibrated; out of water for 30 minutes
APC-MTP	Sonde calibration	10-Aug-17	Sonde swapped and calibrated; out of water for 30 minutes - Fix DO issue, but low water levels cause new DO sensor to fail. Will fix in September
APC	Sonde calibration	10-Aug-17	Sonde swapped and calibrated; out of water for 30 minutes
APC	Sonde calibration	7-Sep-17	Sonde swapped and calibrated; out of water for 30 minutes
APC-MTP	Sonde calibration	8-Sep-17	Sonde swapped and calibrated; out of water for 30 minutes
APC-US	Sonde calibration	8-Sep-17	Sonde swapped and calibrated; out of water for 30 minutes
PLC-DS	Sonde calibration	8-Sep-17	Sonde swapped and calibrated; out of water for 30 minutes; pH probe in calibrated sonde malfunctioning so leave original sonde at location

<b>Table 2 Data Sonde Status</b>			
<b>Site</b>	<b>Event Description</b>	<b>Date Range</b>	<b>Note</b>
PLC-DS	Sonde calibration	29-Sep-17	Sonde swapped and calibrated; out of water for 30 minutes
APC	Sonde cleaning	20-Oct-17	Sonde cleaned, out of water for 30 minutes
APC-MTP	Sonde removal	24-Oct-17	Sonde removed for season
APC-US	Sonde removal	20-Oct-17	Sonde removed for season
PLC-DS	Sonde removal	20-Oct-17	Sonde removed for season
APC	Sonde calibration	10-Nov-17	Sonde calibrated, out of water for 30 minutes

A few minor discrepancies in the November data included:

- The increase in turbidity recorded on November 8, 2017 is not related to approved instream maintenance activities (ST1 cleanout) as active in-stream works had not started at this time. The increase is likely caused by fouling from instream debris drift or wildlife activity.

## 2.5 CLAUSE 22- WILDLIFE MITIGATION PLAN

CVRI received approval of the Wildlife Mitigation Plan retroactive to April 24, 2014. Data from the 2016 season was published in conjunction with the Annual Impact Assessment Report Update, May 15<sup>th</sup>, 2017. Please see section 2.3 for additional details.

## 2.6 FISH SAMPLING AND MONITORING PLAN

The data interpretation specific to the Fish Sampling and Monitoring Plan was submitted in conjunction with the annual Impact Assessment Report Update May 15<sup>th</sup>, 2017. Please see Section 2.3 for additional details.

## 2.7 CLAUSE 27 – REMEDIATION PLAN

The Remediation Design, Conceptual Design, was submitted to the AER on February 3<sup>rd</sup>, 2017. CVRI has received SIR's from AEP, AER and DFO (GRA) and has responded. A second set of Design Drawings were submitted on June 24, 2017. Following this submission, a second round of SIRs were received from DFO (GRA) on July 12, 2017. An updated survey of the disturbance area was also requested and has since been completed. Revised design drawings for APC-1 to APC-4 as well as the corresponding GRA SIR responses were submitted on October 20, 2017. Revised design drawings for APC-5 and APC-7 as well as the corresponding GRA SIR responses were submitted on November 6, 2017.

## 2.8 HUMAN HEALTH RISK ASSESSMENT (“HHRA”)

The Human Health Risk Assessment (HHRA) was updated and submitted on May 15<sup>th</sup>, 2017 in conjunction with the submission of the Annual Impact Assessment Update.

The HHRA Variance Report focused on the 2016 data and compared the results with the August 2015 HHRA. No major changes or significant trends were identified. The HHRA Variance Report confirmed that the current data supports the conclusions of the most recent version of the HHRA.

## 3.0 PLANNED EPO ACTIVITIES Q4 2017

Table 3 outlines the work plan for Q4, October – December 2017. The schedule will be updated and expanded on a monthly basis and then reviewed on the Monthly EPO call.

<b>Table 3 Planned EPO Activities</b>		
<b>TOPIC</b>	<b>Description / Comments</b>	<b>Status</b>
Approval Renewals	Renewals, amendments and establishment of required approvals.	A line list of applications, approvals and renewals has been established and submissions to complete have been initiated.
Remediation Design	The second round of SIR’s as well as the related update to the Design Drawings have been completed. Response and feedback from GRA and the regulators has yet to be received.	<p>First SIR responses were submitted on April 3, 2017.</p> <p>DFO SIR’s received last week of April. Response to DFO / GRA May 30<sup>th</sup>.</p> <p>Second set of Design Drawings submitted on June 24<sup>th</sup>.</p> <p>Second round of DFO (GRA) SIR’s received July 12, 2017. Design drawings of APC-1 to APC-4 as</p>



<b>Table 3 Planned EPO Activities</b>		
<b>TOPIC</b>	<b>Description / Comments</b>	<b>Status</b>
		well as SIR responses were submitted on October 20, 2017. Design drawings of APC-5 and APC-7 as well as SIR responses were submitted on November 6, 2017.
Road / Access	Access plan and storage location for Remediation Design activities and materials.	Intent to use existing areas and minimize new disturbance. Access plan and staging areas are currently under internal review.
Wastewater Management / Pumping Plan Clause 37	The pumping plan which supports the Remediation Design is under review.	Amendments, if required will be submitted after the review of the Remediation Design (Clause 39) has been completed by the regulators.
Gravel	Gravel processing commenced in late January. Storage locations will be communicated and approvals requested when necessary.	Ongoing.
Sediment Trap Inspections & Sonde Inspections	As required under the EPO approved plans.	Ongoing. Status / data is reported monthly. Trap inspections have stopped due to ice. Data sondes were removed end of October based on weather conditions.
Sediment Trap Maintenance	ST1 requires to be cleaned out. ST3 will require annual winterization to occur prior to ice being present.	The ST3 winterization and abandonment plan was accepted by the AER on October 23, 2017.

Table 3 Planned EPO Activities		
TOPIC	Description / Comments	Status
		<p>The isolation, fish salvage, dewatering and backfill/contouring was completed from October 30<sup>th</sup> to November 1, 2017.</p> <p>Cleanout of ST1 was completed (November 7-19, 2017) after a successful fish salvage. All removed sediment was placed at the approved disposal location on-site at Pond A.</p> <p>Supporting reports for both ST3 and ST1 are in the works.</p>

## CONTACT INFORMATION

If you have questions regarding the information published, require data, information or would like to submit comments or questions please contact:

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The Obed website was updated monthly. The website includes copies of all plans, data and reports published to date and can be accessed at [www.Obed.ca](http://www.Obed.ca).

**Appendix 1: November 2017 Data Sonde Data**





