



STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

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C.L. "Butch" Otter, Governor
Curt Fransen, Director

June 12, 2015

Katy Bergholm
Agrium Conda Phosphate Operations
Mine Permitting Manager
PO Box 758
Soda Springs, ID 83276

Re: Point of Compliance Determination for Lanes Creek Mine

Dear Ms. Bergholm:

Enclosed please find the Idaho Department of Environmental Quality's (DEQ) Point of Compliance (POC) determination for the Lanes Creek Mine. DEQ is setting this POC, in response to the request submitted by Agrium Conda Phosphate Operations (Agrium), to establish the outer boundary at which the mine operator shall protect current and projected future beneficial uses of ground water and meet Idaho's Ground Water Quality Standards.

The enclosed determination is divided into four parts. The introduction gives general background information along with an explanation of state authority for regulating ground water. The second part discusses the POC and indicator wells proposed as part of the original application. The third part speaks to additional POC wells DEQ has determined necessary to assure there is no injury to current or projected future beneficial uses of ground water or violation of surface water standards. The final section discusses the monitoring plan for the ground water wells.

The Ground Water Quality Rule allows for changes in point(s) of compliance based on new information or a change in mining activities (IDAPA 58.01.11.401.08). Possible sources of this new information include data from the required ground water monitoring, data from newly installed wells, and any changes to the mine's operation and reclamation plan.

Please let me know if you have any questions. You may also contact Scott Miller to discuss POC implementation.

Sincerely,

A handwritten signature in blue ink that reads "Barry N. Burnell".

Barry N. Burnell
Water Quality Division Administrator

Attachment

BNB:dls

c: Bruce Olenick - DEQ
Douglas Tanner - DEQ
Scott Miller - DEQ
Matthew Wilson - U.S. Forest Service

**Idaho Department of Environmental Quality
Point of Compliance (POC) Determination
Lanes Creek Mine
June 12, 2015**

Introduction

The historic Lanes Creek Mine (LCM) lease was initially patented in 1888. Active mining occurred in the late 1970s into the late 1980s under the ownership of the Alumet Company and others. The J.R. Simplot Company acquired the lease in 1998 and conducted minor reclamation/stabilization of the existing waste rock pile and maintained the mines inactive status. Agrium has recently obtained the lease and conducted additional site stabilization activities in preparation to reopen the mine. The mine will be operated solely on privately owned land. Expected mine life, from the reopening to reclamation, is 6 years.

The Idaho Ground Water Quality Rule (IDAPA 58.01.11.401) allows a mine operator of a new or expanding mine to request the Department of Environmental Quality (DEQ) set point(s) of compliance (POC) at which the mine operator must meet ground water quality standards as described in IDAPA 58.01.11.200. Agrium submitted a POC application for LCM on March 12, 2015. The application was determined to be complete by DEQ as expressed in a letter to Agrium dated April 10, 2015.

In their application, Agrium's ground water modeling predicts the following:

Model Results-COPC Concentration Increases Greater than GWQS						
Mine Area	COPC	GWQS (mg/L)	Alluvial Aquifer		Wells Aquifer	
			Maximum Estimated Concentration (mg/L)	Maximum Estimated Transport Distance to Less than GWQS (ft)	Maximum Estimated Concentration (mg/L)	Maximum Estimated Transport Distance to less than GWQS (ft)
North Overburden Storage Area	N/A	N/A	-	-	-	-
South Overburden Storage Area	Cadmium	0.005	0.010	198	-	-
	Manganese	0.05	0.410	211	0.06	1,175
	Selenium	0.05	0.347	297	0.053	1,050
	TDS	500	583	103	-	-
Ore-Storage Area	Manganese	0.05	0.200	82	-	-
	Selenium	0.05	0.085	175	-	-
Backfilled Pit	N/A	N/A	-	-	-	-

Source: Lanes Creek Mine Groundwater Modeling Results TM (BC, 2015b).

Notes:

mg/L = milligrams per liter.

ft = feet.

N/A = not applicable (no COPCs are estimated to exceed ground water quality standards).

N-OSA = North Overburden Storage Area (Low selenium waste material).

In their application, Agrium proposed the use of existing and new monitoring wells to monitor any off-site releases of contaminants in the alluvial and Wells Formation ground water flow systems. Four existing and five new wells were proposed as POCs for these two ground water flow systems. Since submittal of the POC application, alluvial wells LC-MW-AL8 and -AL9 have been installed and alluvial well LC-MW-AL10 is awaiting suitable conditions for drilling. These wells were approved for construction prior to the POC determination to facilitate Agrium's Infrastructure Plan which was approved by the Idaho Department of Lands (IDL) with DEQ's condition that the three referenced alluvial wells be installed and sampled prior to Agrium conducting pre-mining activities. Additionally, Agrium will continue to sample all existing wells to monitor baseline water quality in the respective ground water flow systems. Two existing monitoring wells (LC-MW-1W and LC-MW-3R) are slated for abandonment shortly after the start of mining.

Proposed Points of Compliance and Indicator Wells

From Agrium's POC application, DEQ accepts the following proposed locations as POC and indicator wells, except as noted:

- LC-MW-AL1 - DEQ agrees with this location and the use of the existing well as an alluvial POC.
- LC-MW-AL3 - DEQ agrees with this location and the use of the existing well as an alluvial POC.
- LC-MW-AL4 - DEQ agrees with this location and the use of the existing well as an alluvial POC.
- LC-MW-AL5 - DEQ agrees with this location and the use of the existing well as an alluvial POC.
- LC-MW-AL7 - DEQ agrees with this location and the use of the existing well as an alluvial indicator well.
- LC-MW-AL8 - DEQ agrees with this location and the use of the existing well as an alluvial POC.
- LC-MW-AL9 - DEQ agrees with this location and the use of the existing well as an alluvial POC.
- LC-MW-AL10 - DEQ agrees with use of this proposed new well as an alluvial POC; however, DEQ has deemed the location be moved approximately 100 to 350 feet to the west or southwest of the proposed location to monitor the center line and down hydraulic gradient of the predicted ore stockpile area.
- LC-MW-5W - DEQ agrees with this location for a new Wells Formation POC well.

DEQ has determined the following on the proposed use of these wells.

- LC-MW-AL2 - DEQ agrees with the use of this well, but has determined it will serve as a POC; it is down hydraulic gradient of the pit, outside of the mining area, and beyond any predicted ground water impacts above Ground Water Quality standards (GWQS).
- LC-MW-AL11 - DEQ does not see the need for this proposed POC. The proposed location is over 1,600 feet from any up hydraulic gradient mining activity and is well outside of any predicted mining related ground water impacts above the GWQS.

DEQ has determined additional wells are necessary to adequately monitor the ground water flow systems at LCM. These wells and their approximate proposed locations (Figure 1) are as follows.

- LC-MW-AL6 - This well currently exists approximately 400 feet south of pond 1a and shows impacts from historic mine operations. This well is deemed an indicator well to monitor the effectiveness of mine best management practices and track any additional impacts from proposed mine operations.
- LC-MW-1D - This POC well is to be located adjacent to LC-MW-AL2 and is to be completed in the first encountered water in the Dinwoody formation. As there is very little known about the

Dinwoody or Rex Chert aquifers in this area the well will be designed to detect any off-site impacts to the Dinwoody ground water flow system from the pit backfill.

- LC-MW-4W – This existing well located between the south overburden storage area and the ore storage area will be used as an indicator well in the regional aquifer. The well will monitor the effectiveness of site best management practices in conjunction with LC-MW-1W (until abandoned), -5W, and -6W to verify and monitor ground water flow directions in the regional aquifer.
- LC-MW-6W - This POC well is to be located down the assumed hydraulic gradient from the South Overburden Storage Area and near the property boundary with public lands. The well will be used in conjunction with LC-MW-1W (until abandoned), -4W, and -5W to verify and monitor ground water flow direction in the regional aquifer and assure ground water quality beneath public lands.

Exact well locations will be approved by DEQ in the new POC well installation work plan and schedule (see below).

New POC Well Work Plan and Installation Schedule

A well installation work plan and schedule for the new POC wells shall be provided to DEQ no later than July 10, 2015 for approval. It is the intent of DEQ that all wells will be installed by December 31, 2015. The work plan will specify well location, installation, completion, and development procedures. Following installation of the wells, Agrium shall provide a well completion report (well construction details, well completion logs, well sampling/development record, etc.) for inclusion in the annual report following installation of the well(s).

POC well background, indicator well baseline and projected water quality report

By August 1, 2015 Agrium shall submit a POC well background and indicator well baseline report to DEQ for approval. The report will outline the methodology used to develop background and baseline conditions for ground water unimpacted by the new mining activity at each well and provide derived values for pH, sulfate, TDS, turbidity, and each analyte listed under the Metals heading on Table 2-4 in the Environmental Monitoring Plan¹. Table 2-4 has been reproduced in the attachment for convenience. Development of site background and baseline water quality should follow DEQ's statistical guidance².

For the background/baseline determination please note:

- DEQ will allow for the existing POC and indicator wells to be used to establish site background/baseline water quality, determined on a well by well basis, until such a time a well is deemed by DEQ to be impacted by Agrium's mining activities.
- A minimum of 12 samples from each well, over a three year-period is expected to be collected with a sampling frequency of no greater than once a month, preferably quarterly, for the development of site background/baseline water quality.
- In addition, Agrium shall provide the maximum predicted naturally occurring contaminant concentrations that through time pass through the POCs.

¹Brown and Caldwell, 2015. Lanes Creek Mine, Environmental Monitoring Plan, February 9.

²DEQ, 2014. Statistical Guidance for Determining background Ground Water Quality and Degradation, March.

³IDL, Final Order for Reclamation Plan S00509, Docket Number PH-2014-MNR-80-001.

Once the dataset is achieved and DEQ has approved the background/baseline water quality values, sampling of these wells will then be included into the IDL-approved Environmental Monitoring Plan¹ sampling schedule.

Monitoring Data

Agrium shall provide notification to the DEQ and IDL within 10 days of Agrium receiving monitoring results from the analytical laboratory, if the data shows a violation of ground water quality standards or an increase in constituents that exceeds the levels predicted by Agrium. Agrium will submit the monitoring data with the notice in an electronic data deliverable (EDD) format.

Environmental Monitoring Plan

According to the Idaho Department of Lands, Final Order for approved Mining and Reclamation plan. Agrium will incorporate these required POC determination changes into the approved Amended Reclamation Plan and Environmental Monitoring Plan so that the approved reclamation plan conforms to the POC(s)³.

Annual Report

An annual report is due on or before March 31 of each year for the preceding calendar year. The report is to include a summary of data collected the prior year including discussion, especially of any anomalous or unexpected data, and all available validated water quality data from all POC, indicator, and baseline wells in an electronic, easily editable format such as Excel or Access files. Identification of any possible data gaps, or unanticipated changes in water quality or site conditions, should also be presented and discussed. DEQ will determine based upon the information submitted, Agrium’s compliance with ground water quality standards and the effectiveness of the best management practices for the mine activities. The report shall identify proposed or approved baseline/background concentrations for constituents identified as water analysis parameters using IDEQ’s Statistical Guidance for Determining Background Ground Water Quality and Degradation². Agrium shall also include a well completion report for all wells drilled during the reporting cycle.

Constituents to monitor

The analytes listed in the Environmental Monitoring Plan, Table 2-4¹ will be monitored for and reported each sampling event. Analytes may be removed or added to the list after a written request from Agrium or DEQ and agreement between both parties. Table 2-4 has been reproduced in the attachment for convenience.

Monitoring schedule

Below is the initial monitoring schedule based on type of well and amount of data previously collected.

Well	Type	Completion (hydro stratigraphic unit)	Sampling events* (through 2014)	Monitoring schedule
LC-MW-AL1	Baseline/POC	Alluvium	16	Semiannual
LC-MW-AL2	Baseline/POC	Alluvium	16	Semiannual
LC-MW-AL3	Baseline/POC	Alluvium	16	Semiannual
LC-MW-AL4	Baseline/POC	Alluvium	12	Semiannual

LC-MW-AL5	Baseline/POC	Alluvium	13	Semiannual
LC-MW-AL6	Baseline/Indicator	Alluvium	13	Semiannual
LC-MW-AL7	Baseline/ Indicator	Alluvium	12	Semiannual
LC-MW-AL8	Baseline/POC	Alluvium	0	Quarterly
LC-MW-AL9	Baseline/POC	Alluvium	0	Quarterly
LC-MW-AL10	Baseline/POC	Alluvium	0	Quarterly
LC-MW-1D	Baseline/POC	Dinwoody	0	Quarterly
LC-MW-1W	Baseline	Wells	15	Semiannual
LC-MW-4W	Baseline/Indicator	Wells	14	Semiannual
LC-MW-5W	Baseline/POC	Wells	0	Quarterly
LC-MW-6W	Baseline/POC	Wells	0	Quarterly

*Constituents sampled may have varied by sampling event.

ATTACHMENT

Table 2-4. Lanes Creek Groundwater Monitoring Analyte List

Constituent	Analytical Method	Idaho Groundwater Standards (mg/l)	
		Primary	Secondary
Major Ions			
Alkalinity, bicarbonate (as CaCO3) (Total)	SM 2320B		
Alkalinity, carbonate (as CaCO3) (Total)	SM 2320B		
Alkalinity, hydroxide (as CaCO3) (Total)	SM 2320B		
Alkalinity, total (as CaCO3) (Total)	SM 2320B		
Ammonia (as N) (Total)	EPA 350.1		
Bromide (Total)	EPA 300.0		
Calcium (Dissolved)	EPA 6010B		
Chloride (Total)	EPA 300.0		250
Conductivity @25C (Total)	SM 2510B		
Fluoride (Total)	EPA 300.0	4	
Hardness (as CaCO3) (Dissolved)	Calculation		
Ion balance (Total)	Calculation		
Magnesium (Dissolved)	EPA 6010B		
Nitrate-nitrite (as N) (Total)	EPA 353.2	10	
pH (Total)*	SM 4500H+B		
Potassium (Dissolved)	SM2540C		
Sodium (Dissolved)	EPA 6010B		
Sulfate (Total)	EPA 300.0		250
Sum of Anions (Total)	Calculation		
Sum of Cations (Total)	Calculation		
Suspended solids (residue, non-filterable) (Total)	SM 2540D		
TDS (calculated) (Total)	SM 2540C		
TDS (ratio - measured/calculated) (Total)	SM 2540C		
Total dissolved solids (TDS) (Total)	SM 2540C		500
Total organic carbon (Total)	SM 5310B		
Turbidity (Total)	EPA 180.1		
Metals			
Aluminum (Dissolved)	EPA 6010B		0.2
Aluminum (Total)	EPA 6010B		0.2
Antimony (Dissolved)	EPA 6020A	0.006	
Antimony (Total)	EPA 6020A	0.006	
Arsenic (Dissolved)	EPA 6020A	0.05	
Arsenic (Total)	EPA 6020A	0.05	
Barium (Dissolved)	EPA 6010B	2	
Barium (Total)	EPA 6010B	2	

Table 2-4. Lanes Creek Groundwater Monitoring Analyte List

Constituent	Analytical Method	Idaho Groundwater Standards (mg/l)	
		Primary	Secondary
Beryllium (Dissolved)	EPA 6020A	0.004	
Beryllium (Total)	EPA 6020A	0.004	
Boron (Dissolved)	EPA 6020A		
Boron (Total)	EPA 6020A		
Cadmium (Dissolved)	EPA 6020A	0.005	
Cadmium (Total)	EPA 6020A	0.005	
Chromium (Dissolved)	EPA 6020A	0.1	
Chromium (Total)	EPA 6020A	0.1	
Copper (Dissolved)	EPA 6020A	1.3	
Copper (Total)	EPA 6020A	1.3	
Iron (Dissolved)	EPA 6010B		0.3
Iron (Total)	EPA 6010B		0.3
Lead (Dissolved)	EPA 6020A	0.015	
Lead (Total)	EPA 6020A	0.015	
Manganese (Dissolved)	EPA 6010B		0.05
Manganese (Total)	EPA 6010B		0.05
Mercury (Dissolved)	EPA 7470A	0.002	
Mercury (Total)	EPA 7470A	0.002	
Molybdenum (Dissolved)	EPA 6010B		
Molybdenum (Total)	EPA 6010B		
Nickel (Dissolved)	EPA 6010B		
Nickel (Total)	EPA 6010B		
Phosphorus, total (Dissolved)	SM4500-P-E		
Selenium (Dissolved)	EPA 6020A	0.05	
Selenium (Total)	EPA 6020A	0.05	
Silver (Dissolved)	EPA 6020A		0.1
Silver (Total)	EPA 6020A		0.1
Thallium (Dissolved)	EPA 6020A	0.002	
Thallium (Total)	EPA 6020A	0.002	
Uranium (Dissolved)	EPA 6020A		
Uranium (Total)	EPA 6020A		
Vanadium (Dissolved)	EPA 6020A		
Vanadium (Total)	EPA 6020A		
Zinc (Dissolved)	EPA 6010B		5
Zinc (Total)	EPA 6010B		5