TOXIC SUBSTANCE REDUCTION PLAN SUMMARY

This Toxic Substance Reduction Plan Summary has been prepared in accordance with Section 8(2) of the *Toxics Reduction Act* and satisfies the minimum Plan Summary content requirements stipulated in Section 24 of Ontario Regulation (O.Reg.) 455/09.

Basic Facility Information

Mandatory Basic Facility Information Item	Details
Substance Name and Chemical Abstracts Service (CAS) Registry Number for the Substance(s) whose Toxic Substance Reduction Plans are summarized by this this Plan Summary	This Plan Summary applies to the Toxic Substance Reduction Plan for the prescribed Toxic Substance "Ammonia (Total)" (Per O.Reg. 455/09; no single CAS numbers apply to this substance)
National Pollutant Release Inventory (NPRI) and O.Reg.127/01 Identification Numbers	NPRI ID: 5656 O.Reg.127/01 ID: N/A
The legal and trade names of the owner and the operator of the facility, the street address of the facility and the mailing address of the facility, if different	Musselwhite Mine Goldcorp Canada Ltd. Kenora District, Ontario, Canada P0V 1C0
The number of full time employee equivalents at the facility	569
The two- and four-digit North American Industry Classification System (NAICS) codes and the six-digit NAICS Canada code	21 – Mining & Oil & Gas Extraction 2122 – Metal Ore Mining 212220 – Gold & Silver Ore Mining
Public contact	Shane Matson Sr. Environmental Coordinator Goldcorp Canada Ltd. Musselwhite Mine P.O. Box 7500 Thunder Bay Ontario P7B 6S8 (807) 928-2200 Extension 6243
The spatial coordinates of the facility expressed in Universal Transverse Mercator (UTM) within a North American Datum 83 (NAD83) datum	UTM Zone 15 678336 E, 5831032 N
Parent Company Information	Goldcorp Inc. Suite 3400-666 Burrard Street, Park Place Vancouver, BC V6C 2X8 (604) 696-3000

List of All Substances for which Toxic Substance Reduction Plans Have Been Prepared at the Facility

The Facility has prepared Toxic Substance Reduction Plans for the following prescribed Toxic Substances:

Arsenic*

Cadmium*

Chromium*

Cobalt*

Copper*

Lead*

Manganese*

Nickel*

Phosphorus*

Zinc*

Vanadium [CAS number 7440-62-2]

Cyanides (Ionic)*

Hydrochloric Acid [CAS number 7647-01-0]

Particulate Matter*

PM10*

PM2.5*

Nitrogen Oxides [CAS number 11104-93-1]

Carbon Monoxide [CAS number 630-08-0]

Ammonia (Total)*

Nitrate Ion*

*Per O.Reg. 455/09, "no single CAS numbers apply to these substances"

Statement of Intent

As required by s.4(1) of the TRA, a Plan must include either a statement of the Facility's intent to reduce the use and/or creation of the Toxic Substance at the Facility, or the reasons for not including this statement.

A statement of the Facility's intent to reduce the "creation" of the Toxic Substance has not been included as a part of this Plan. The Toxic Substance is not used within the Facility's process and therefore no statement with respect to intent to reduce use of the Toxic Substance is required.

The Toxic Substance has triggered reporting under the TRA and O.Reg.455/09 due to two activities at the Facility which are interpreted as "creations" of the Toxic Substance under the TRA framework. The first activity that has been classified as a "creation" of the Toxic Substance for the purpose of the required TRA Quantification, Accounting and Reporting exercise for the Toxic Substances is the generation of the Toxic Substance as a dissolved residue in effluent which is a by-product of explosives detonation within the underground mining operations at the Facility.

The Facility is of the opinion that it has previously optimized its use of explosives to greatest extent that can reasonably be expected. Furthermore, the use of explosives is directly linked to the Facility's production and therefore, given the previously optimized use of explosives, the use of explosives cannot be reduced without negatively impacting Facility production.

Through mining engineering practices and industry best practices, explosives usage at the facility is continually being optimized. Specifically, the use of emulsion or gasified emulsion has been implemented as this product is much less soluble in water. The product is used in bulk which minimizes spillage than traditional dry bagged explosives (ANFO). Several explosives handling procedures have also been implemented to ensure that no parts of the blasting products are being wasted. Explosives usage is a vital component of the Facility's mining operations and therefore has a direct impact on production. In addition to optimizing use of products which result in the presence of the Toxic Substance in effluent, the Facility also implements measures to minimize the release of the Toxic Substances to the environment, which include a polishing pond and treatment wetland system to assist in minimizing nitrate releases. Treatment wetland systems are effective in destroying the Toxic Substance prior to final discharge, since nitrogen species in constructed and natural wetlands can be transformed by five possible processes; nitrification, denitrification, volatilization, adsorption, and plant uptake.

The second activity that has been classified as a "creation" of the Toxic Substance is the generation and subsequent release to air of the Toxic Substance as a by-product of the cyanide destruction process. This process is responsible for the destruction of cyanide (another prescribed toxic substance) within the Facility's detox system; a process component which is dedicated to cyanide destruction. The Facility feels that the generation of the toxic substance in the cyanide destruction process is an unavoidable by-product of this process, however the destruction of cyanide is extremely important from an environmental standpoint, and therefore the environmental benefits of this process far outweigh the relatively minor potential effects of the generation of this Toxic Substance in this case.

Furthermore, as noted in the document entitled "Toxic Substance Reduction Plan Cyanides (Ionic)" (Version 1.0, dated December 18, 2012 and prepared for the TRA prescribed substance "Cyanides Ionic"), the implementation of the toxic substance reduction options that were identified for the purpose of that Plan will result in a situation in which the Facility is of the opinion that it has optimized its use of the cyanide product, whose breakdown results in the "creation" of the Toxic Substance, using the best available technology and practices that are economically achievable at this time. In light of this, no further toxic substance reduction options in addition to those identified for implementation were identified for the purposes of that Plan. There is currently insufficient information to determine whether or not the toxic substance reduction options that were identified in the Plan for the substance "Cyanides (Ionic)" will result in a reduction in a reduction in the "creation" of the Toxic Substance, and therefore those options are not discussed any further for the purposes of this Plan.

It should also be noted that Facility currently meets and/or exceeds all regulatory requirements which are designed to control the release of the Toxic Substance and minimize potential off-site impacts resulting from the release of the Toxic Substance.

Objectives of the Toxic Substance Reduction Plan

The Objectives of the Plan are as follows:

- provide the reader with information on measures currently in place at the Facility which control the "creation" of the Toxic Substance;
- provide support for the Facility's position with respect to the Statement of Intent of this Plan; and
- document how the Facility has fulfilled the applicable requirements under the TRA and O.Reg.455/09 with respect to the Toxic Substance.

Description of Why the Toxic Substance Is Used or Created

The Toxic Substance has triggered reporting under the TRA and O.Reg.455/09 due to two activities at the Facility which are defined as "creations" of the Toxic Substance under the TRA framework. The first activity that has been classified as a "creation" of the Toxic Substance for the purpose of the required TRA Quantification, Accounting and Reporting exercise for the Toxic Substance is the generation of the Toxic Substance as a dissolved residue in effluent which results from explosives detonation within the mining operations.

The second activity that has been classified as a "creation" of the Toxic Substance is the generation and subsequent release to air of the Toxic Substance as a by-product the cyanide destruction process.

The Toxic Substance is never used at the Facility.

Rationale for Not Implementing Toxic Substance Reduction Options

As required by s.18(4) of O.Reg.455/09 (as amended by s.9(3) of O.Reg.214/11), a Plan must contain an explanation of why no toxic substance reduction options will be implemented.

Facility personnel have considered each of the seven categories for toxic substance reduction options, and, in light of the information provided in the Statement of Intent section of this Plan, the Facility feels that no toxic substance reduction options can be identified in any of the seven toxic substance reduction categories.

Therefore the rationale for not implementing toxic substance reduction options is that no toxic substance reduction options could be identified.

Statement that the Plan Summary Accurately Reflects the Current Version of the Plan

As required by s.24(1)8 of O.Reg.455/09 this Plan Summary accurately reflects the current version of the Plan.

Planner License Number

As required by s.18(2) of O.Reg.455/09 (as amended by s. 9(2) of O.Reg.214/11), the Licensed Toxic Substance Reduction Planner responsible for providing Planner Recommendations on and certification of this Plan is as follows:

Russell Polack
Air Quality Specialist
Golder Associates Ltd.
Toxic Substance Reduction Planner License Number TSRP0002

Copies of the Certification

Certification statements are provided in the following page.

December 6, 2013

Project No. 13-1192-0040

Shane Matson
Musselwhite Mine

LICENSED TOXIC SUBSTANCE REDUCTION PLANNER CERTIFICATION STATEMENT TOXIC SUBSTANCE REDUCTION PLANS FOR TRA PHASE II SUBSTANCES FOR GOLDCORP CANADA LTD. MUSSELWHITE MINE

Dear Mr. Matson:

Golder Associates Ltd. (Golder) was retained by Goldcorp Canada Ltd. Musselwhite Mine (the Facility) to provide various services pertaining to Toxic Substance Reduction Plan for Phase II Substances preparation under the *Toxics Reduction Act* (TRA), including Toxic Substance Reduction Planner (Planner) certification of Phase II Toxic Substance Reduction Plans (the Plans).

The following Planner Certification Statement which is made under s.19.1(4) of Ontario Regulation (O.Reg.) 455/09 (as amended by s.11 of O.Reg.214/11) satisfies the Planner Certification requirements for the Plans that are assembled as a single document as of the date of this Certification Statement. Furthermore, the following Certification Statement is limited to the respective versions of the Plans which are dated as indicated in the Certification Statement:

> *As of December 6, 2013, I, Russell Polack certify that I am familiar with the processes at the Goldcorp Canada Ltd. Musselwhite Mine facility that use or create the toxic substances referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4 (1) of the Toxics Reduction Act, 2009 that are set out in the toxic substance reduction plans referred to below for the toxic substances and that the plans comply with that Act and Ontario Regulation 455/09 (General) made under that Act.*

- *Particulate Matter* (December 6, 2013)
- *PM10* (December 6, 2013)
- *PM2.5* (December 6, 2013)
- *Nitrogen Oxides* (December 6, 2013)
- *Carbon Monoxide* (December 6, 2013)
- *Nitrate Ion* (December 6, 2013)
- *Ammonia* (December 6, 2013)

Russell Polack
Toxic Substance Reduction Planner
License No. TSRP0002

December 6, 2013
Date

DCC/RLP/FSC/ms

Golder Associates Ltd.
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Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

Toxic Substance Reduction Plans Certification by Highest Ranking Employee

As required by s.4(2) of the *Toxics Reduction Act* (TRA), Toxic Substance Reduction Plans must contain a certification, signed by the highest ranking employee at the Facility who has management responsibilities relating to the Facility.

The following Certification Statement is being made under s.19(2) of Ontario Regulation (O.Reg.) 455/09 (as amended by s.11 of O.Reg.214/11) and satisfies the requirements of s.4(2) of the TRA for the Toxic Substance Plans that are assembled within this single document as of the date of this Certification Statement. Furthermore, the following Certification Statement is limited to the respective versions of the Plans which are dated as indicated in the Certification Statement:

As of December 11/13, *I, (insert name)* Bill GASCON, *certify that I have read the toxic substance reduction plans for the toxic substances referred to below and am familiar with their contents, and to my knowledge the plans are factually accurate and comply with the Toxics Reduction Act,2009 and Ontario Regulation 455/09 (General) made under that Act.*

- *Particulate Matter* *(dated December 6, 2013)*
- *PM10* *(dated December 6, 2013)*
- *PM2.5* *(dated December 6, 2013)*
- *Nitrogen Oxides* *(dated December 6, 2013)*
- *Carbon Monoxide* *(dated December 6, 2013)*
- *Nitrate Ion* *(dated December 6, 2013)*
- *Ammonia* *(dated December 6, 2013)*

Signature

Dec. 11/13.

Date

Bill GASCON

Print Name