



# REPORT

**FEBRUARY 2014**

## **ICMC RECERTIFICATION SUMMARY AUDIT REPORT**

### **LOS FILOS MINE MEZCALA, MEXICO**

**Submitted to:**

International Cyanide Management Institute  
1400 I Street, NW, Suite 550  
Washington, DC 20005 USA

Desarrollos Mineros San Luis SA de CV  
Goldcorp Mexico Los Filos  
Domicilio Conocido S/N  
Mezcala, Guerrero, Mexico CP 40191

**Submitted by:**

Golder Associates Inc.  
4730 North Oracle Road, Suite 210  
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**Project No. 1300897**

**Distribution:**

ICMI – 1 pdf and 1 hard copy  
Los Filos – 1 pdf





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**1.0 SUMMARY AUDIT REPORT FOR GOLD MINING OPERATIONS**

**Name of Mine:** Los Filos Mine  
**Name of Mine Owner:** Goldcorp Inc.  
**Name of Mine Operator:** Desarrollos Mineros San Luis SA de CV  
**Name of Responsible Manager:** Francisco de Jesus Ballesteros Corrales  
**Address:** Goldcorp Mexico Los Filos  
Domicilio Conocido S/N  
Mezcala, Guerrero, Mexico CP 40191  
**State/Province:** Guerrero  
**Country:** Mexico  
**Telephone:** +7333339400  
**Fax:** N/A  
**E-Mail:** francisco.ballestero@goldcorp.com



## 2.0 LOCATION DETAIL AND DESCRIPTION OF OPERATION

### 2.1 Mine Location

Los Filos is located near the city of Mezcala in the state of Guerrero between Acapulco and Mexico City (Figure 1). Los Filos carries out mining and beneficiation of gold and silver from two open pits (Los Filos and El Bermejil) and an underground mine. Overburden is transported on run-of-mine (ROM) roads to four overburden stockpiles.



Figure 1: Regional Location Map

### 2.2 Background

Low grade ore from both pits is transported on the ROM roads and, after addition of lime from silos during haulage, is deposited on the Pad 1. High grade ore from the Los Filos open pit and the underground mine is crushed and then placed on the Pad 1. The crushing operation includes primary crushing with a jaw crusher and secondary crushing with two cone crushers. The crushed ore is transported by conveyor where cement is added for agglomeration before placement on the Pad 1. Note that Pad 2 was under construction but not yet in operation at the time of the site visit for this recertification audit.



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Fresh water used in the leaching process is pumped from a deep well in Mezcala to a storage tank for redistribution to different parts of the operation, including the cyanide mixing tank (T-100). The sodium cyanide is transported in solid briquettes in an 18-ton isotainer truck. The isotainer is connected to the T-100 tank, freshwater is added, and recirculated between the isotainer and tank until the solid cyanide is completely dissolved. After dissolution of the solid cyanide, the solution is transferred to a storage tank (T-200) for dosification to different process points (barren tank, recirculation tank, activated carbon circuit). This solution has a concentration of approximately 30 percent sodium cyanide.

The cyanide solution is added to the barren solution at the outlets of the barren and recirculation tanks and subsequently pumped to the booster station for repumping to the heap leach pad. The average concentration is 280 to 310 parts per million (ppm) of free cyanide. When the solution contacts the ore, the cyanide reacts with the gold and silver and converts to a pregnant solution that reports to two gravel-covered ponds at the toe of the heap leach pad (i.e., North Pregnant Pond and South Pregnant Pond). Each pond is equipped with two pumps to pump the solution to the Adsorption, Desorption and Recovery (ADR) Plant.

The carbon adsorption plant consists of four parallel trains of activated carbon columns, with a new fifth train added in 2013. The function of the carbon is to absorb the gold and silver in the pregnant solution. The pregnant solution enters at the base of the column, flows upward through a fluidized bed of carbon, and then passes by gravity to the next column. Upon leaving the last column, the solutions has left its gold and silver in the carbon and been converted to barren solution. Each train has a nominal capacity of 950 to 1,000 cubic meters per hour. At the end of each train there is a screening system to retain carbon fines and avoid sending them to the heap leach pad.

The barren solution that leaves the carbon trains with low concentrations of free cyanide is returned to the barren and recirculation tanks. To maintain the water balance in the rainy season, it is sometimes necessary to neutralize part of the sterile solution coming from the carbon columns. Los Filos has two neutralization tanks where hydrogen peroxide is added to react with the cyanide in solution. The neutralized solution is sent to the Excess Pond for storage and subsequent use in the dry season by returning the solution to the recirculation pond.

The carbon is transferred from column to column with counter current flow of the rich solution until all gold and silver are absorbed. Then, the carbon is transferred from the first column in each train to the stripping column. The regenerated carbon, the new carbon, or both, are transferred to the last column in each train, as required, to replace the carbon transferred to the stripping column. In the stripping circuit, the gold is desorbed from the carbon using a hot caustic solution.

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The stripping circuit consists of two columns operated independently in parallel. The stripping solutions contain caustic soda with an average temperature of 120 to 130 °C. As the stripping solution passes through the carbon, the gold is desorbed to produce a pregnant solution. The hot pregnant solution passes through heat exchangers to be cooled to 85 °C and then passes to the electrowinning circuit. The gold-poor electrowinning solution is recirculated to the stripping column. The stripping of gold and silver from each carbon batch takes approximately 16 hours to complete. The stripped carbon is transferred to the acid wash circuit.

The carbon regeneration is composed of two processes: chemical regeneration and thermic regeneration. The regenerated carbon is screened to retain carbon fines created during the handling and then sent to the carbon storage tank to be returned to the absorption columns.

The carbon fines product from the screening process is recovered in the carbon fines tank and then sent to the filter press. After filtration, the carbon fines are partially air-dried and loaded in supersacks to be sent to the warehouse for later offsite shipment as a by-product with low values of gold and silver.

The pregnant solution from the stripping columns is fed to four electrowinning cells. The sludge that deposits in the bottom of the cell is pumped to the filter press where 80 percent of the water is removed. The rest of the water content is eliminated in a retort oven before being sent to the induction oven. The loads are smelted at approximately 1,200 °C. At this temperature, the load in the oven has reached a liquid state composed of two phases. In the upper phase is slag. The gold and silver, both heavier, are in the lower phase in the bottom of the crucible. When the separation is complete, the crucible is tipped to remove the cap of slag and later the valuable metals are poured into molds in the shape of bars. The dore bars are transported to an offsite refinery. The slag is crushed, milled, and treated in a concentrator to recover the valuable metals. The concentrate is returned to the induction oven to re-smelt while the slag with low levels of valuable metals is stored for sale.

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## 3.0 SUMMARY AUDIT REPORT

### Auditors Findings

Los Filos Mine is:  in full compliance with **The International Cyanide Management Code**

in substantial compliance with

not in compliance with

No significant cyanide incidents or cyanide exposure incidents were noted as occurring during the audit period.

**Audit Company:** Golder Associates  
**Audit Team Leader:** Kent Johnejack, Lead Auditor and Technical Specialist  
**Email:** kjohnejack@golder.com

### Name of Other Auditors

Name, Position	Signature
Rick Frechette of Knight Piesold Inc. participated as a second auditor on selected aspects of Standards of Practice 4.1.2, 4.8.1, 4.8.2, 4.8.3, and 4.8.4 to avoid a Golder conflict of interest	

### Dates of Audit

The Recertification Audit was undertaken within 7 days from August 16 to 22, 2013.

I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader, established by the International Cyanide Management Institute and that all members of the audit team meet the applicable criteria established by the International Cyanide Management Institute for Code Verification Auditors.

I attest that this Summary Audit Report accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the International Cyanide Management Code Verification Protocol for Cyanide Gold Mine Operations and using standard and accepted practices for health, safety and environmental audits.

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December 4, 2013  
 Date

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December 4, 2013  
 Date





PRINCIPLE 1 – PRODUCTION

Encourage Responsible Cyanide Manufacturing by Purchasing from Manufacturers that Operate in a Safe and Environmentally Protective Manner

Standard of Practice 1.1: Purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide, and to prevent releases of cyanide to the environment

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 1.1

not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 1.1, requiring the operation purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide and to prevent releases of cyanide to the environment.

Los Filos bought cyanide only from E.I. DuPont De Nemours and Co. (DuPont) during the recertification period from late 2010 to late 2013. Two contracts with DuPont covered the recertification period. Clause 13 of both contracts states that the supplier be certified under the Code. DuPont’s Memphis Plant (Tennessee, USA) has been certified as compliant by the ICMI continuously since 2006, as shown at the ICMI website. In addition, the transloading of bulk cyanide into Flobins and isotainers at Dupont’s San Luis Potosi warehouse is considered a production activity. This warehouse was certified in 2010 and the recertification process is presumably underway, but the recertification was not posted on the ICMI website at the time the Los Filos report was prepared. The auditors reviewed bills of lading to confirm that Los Filos received cyanide only from DuPont during the recertification period.



PRINCIPLE 2 – TRANSPORTATION

Protect Communities and the Environment during Cyanide Transport

Standard of Practice 2.1: Establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 2.1

[ ] not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 2.1, requiring that the operation establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.

Los Filos buys cyanide from E.I. DuPont De Nemours & Co., Inc. (DuPont) who is responsible for transport of cyanide from the plant in Memphis (Tennessee, USA) to the site. Los Filos held two contracts with DuPont during the 3-year recertification period from late 2010 through late 2013. The first contract period covered 2010 to 2012, while the second contract period covered 2013 to 2015. Clause 13 of both contracts designates, in accordance with the Code, the responsibilities for packaging, labeling, interim storage, security, safety, maintenance, training, and emergency response. Clauses 13 (a) and (d) of both contracts specifically state that the designated responsibilities extend to all parties in the cyanide supply chain.

Standard of Practice 2.2: Require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 2.2

[ ] not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 2.2, requiring that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.

Clauses 13 (a) and (d) of the cyanide supply contract between Los Filos and DuPont require that transporters be certified under the Code. Los Filos held two contracts with DuPont during the 3-year



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recertification period from late 2010 through late 2013. The first contract period covered 2010 to 2012, while the second contract period covered 2013 to 2015. DuPont's Mexico supply chain was certified by the ICMI in August 2010. The 2013 recertification process is presumably underway, but the summary report was not posted on the ICMI website at the time the Los Filos report was prepared. Transportes Especializados Segutal SA de CV Segutal (Segutal) is the truck transporter identified in the supply chain audit. The auditors reviewed delivery records showing that Segutal was the only cyanide transporter to Los Filos during the recertification period.

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PRINCIPLE 3 – HANDLING AND STORAGE

Protect Workers and the Environment during Cyanide Handling and Storage

Standard of Practice 3.1: Design and construct unloading, storage and mixing facilities consistent with sound, accepted engineering practices, quality control/quality assurance procedures, spill prevention and spill containment measures.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 3.1

[ ] not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Handling and Storage Practice 3.1, requiring that cyanide handling and storage facilities are designed and constructed consistent with sound, accepted engineering practices, quality assurance/quality control (QA/QC) procedures, spill prevention and spill containment measures.

Los Filos has designed and constructed the cyanide offload facilities in accordance with accepted engineering practices. The offload area (Area 800) at the ADR plant consists of a mixing tank (T-100), a storage tank (T-200), and the various pumps, pipelines, valves and appurtenances. Los Filos receives cyanide as solid briquettes via isotainer such that there is no liquid cyanide until the offload procedure starts; no solid cyanide is stored at site.

Los Filos has undertaken modifications to Area 800 since the initial audit, but the auditor considers them to be minor upgrades more similar to maintenance than to changes that would require design and construction quality assurance. For example, Los Filos installed a second level alarm in each tank ("high-high alarm) to reduce the potential for tank overflows.

Area 800 is not located near any surface water bodies or places where people may congregate. The nearest arroyo (Arroyo Carrizalillo) is located several hundred meters to the west of Area 800 with no path for concentrated flow between them. Area 800 is also located away from the other process areas and buildings at the ADR plant.

The concrete offload pad at Area 800 is designed to contain leakage from the isotainer and convey it to the nearby recirculation pond. The auditor observed the concrete pad and sump to be in good condition to contain and recover leaked solution.

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The mixing tank (T-100) and storage tank (T-200) have automatic ultrasonic level indicators and two level alarms (“high” and “high-high”) which prevent the overfilling of the tanks. The tank levels are monitored from the display at the offload area, as well as in the control room. The alarms are both audible and visual. The auditor reviewed the quarterly calibration forms to verify that the level sensors and switches were maintained and calibrated throughout the recertification period.

The mixing and storage tanks are installed on structural concrete bases within curbed structural concrete containment underlain by HDPE liner. Solution reporting to the secondary containment sump is pumped to either the recirculation pond or the T-200 Tank in accordance with a written procedure for sump operation. The auditor observed the concrete bases, secondary containment, and sump to be in good condition, indicating they continue to serve as a barrier to seepage.

Los Filos stores liquid cyanide to prevent HCN gas buildup, to prevent contact with water, to prevent public access, and to prevent mixing with incompatible materials. The cyanide mixing and storage tanks are located outdoors with natural ventilation. The tanks themselves prevent contact between water and cyanide solution. Area 800 is located within the fenced, gated, and patrolled area for the ADR plant. The offload area and the reagent storage areas are separated such that cyanide is located away from incompatible chemicals like acids, oxidizers and explosives. Secondary containments are designed to prevent cyanide spills from mixing with incompatible materials, as verified by following potential flow paths.

**Standard of Practice 3.2: Operate unloading storage and mixing facilities using inspections, preventative maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.**

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 3.2**

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Handling and Storage Practice 3.2 requiring that cyanide handling and storage facilities are operated using inspections, preventive maintenance, and contingency plans to prevent or contain releases and control and respond to worker exposures.

Los Filos receives cyanide only as briquettes in isotainers. Therefore the Code provisions with respect to empty cyanide containers and the management of drums, bags, boxes, etc. do not apply. However, the Los Filos offload procedure requires that the isotainer be inspected for leakage and that the isotainer

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connections be rinsed after an offload is complete. The auditor observed an offload disconnect to confirm the driver followed this procedure.

Los Filos has developed procedures and work instructions for receiving the truck at the main gate, escorting it to the ADR plant, and offloading the cyanide from the isotainer. The work instructions detail the step-by-step actions connections, operation, and disconnections during offloading, including operation of all truck and tank valves. A checklist is used to verify the tank level and pH are acceptable to start the offload process. The procedures and work instructions also detail the personal protective equipment required for offloading. The offload procedure requires that a second observer and a paramedic watch the offload connections and disconnections, although the observer and paramedic may leave during the 3 to 4 hours it takes to empty the isotainer. During that period, the control room operator observes via video camera. The auditor observed an offload connection on one day of the site visit and the offload disconnections on another day of the site visit to verify that the procedures and work instructions are followed.

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PRINCIPLE 4 – OPERATIONS

Manage Cyanide Process Solutions and Waste Streams to Protect Human Health and the Environment

Standard of Practice 4.1: Implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventative maintenance procedures.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 4.1

[ ] not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 4.1, requiring that the operation implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventive maintenance procedures.

Los Filos has developed written management and operating plans, as well as procedures, for the safe management of the cyanide facilities. Most of the existing documents were reviewed during the previous audit cycle. The cyanide facilities new to this audit cycle include Stages 3, 4, and 5 of Pad 1, the 5th Train at the ADR Plant, and the Booster Station. Note that Pad 2 was under construction, but not in operation, at the time of the site visit and therefore is not included in this audit cycle. To avoid a conflict of interest, Knight-Piesold provided a letter for this audit cycle (dated November 20, 2013) to Los Filos summarizing their review of the documents prepared by Golder.

Los Filos has plans and procedures that identify the design criteria for safe management of cyanide. The 2006 Feasibility Study is the most complete statement of assumptions and parameters, including regulatory requirements. The various design reports for the pad and ponds that were evaluated in the previous audit cycle also contain design assumptions and parameters. Since that time, however, Los Filos has developed other operational procedures that reiterate the assumptions and parameters. Los Filos has a set of 75 standard operating procedures and work instructions covering all aspects of safe operation of the cyanide facilities.

Los Filos has developed a change management procedure that includes sections for the change details, risk assessment, approval, implementation, and followup. The procedure is accompanied by a form that must be completed and signed by the plant (superintendent and manager), maintenance, safety, and environmental. The auditors obtained 24 completed change management forms from throughout the



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recertification period to verify that Los Filos diligently addresses change management. The completed forms were signed off by environmental and safety staff.

Los Filos has developed contingency procedures specific to each process area at the ADR Plant (Areas 800, 420, and 250), as well as for operation of emergency generators and management of the excess pond. The area-specific contingency procedures for the ADR Plant cover tank collapse, pipe ruptures, and leaks from the pipelines, tanks, and columns. The contingency procedure of the excess water pond covers failure of the neutralization system and measure to avoid or manage overtopping. The Emergency Response Plan for the mine contains procedures for other traffic, exposure, stability, earthquake and spill scenarios. Contingency plans for temporary closure or cessation of operations are covered in Section 10 of the Los Filos Closure Plan.

Los Filos inspects the cyanide facilities at a reasonable frequency for each type of inspection. The frequencies vary from shift to monthly. A pre-offload inspection is conducted each time an offload occurs. Wildlife inspections take place daily at the pad and ponds. Los Filos inspects pipelines, pumps, valves, and secondary containments via the weekly inspections at the ADR Plant, as well as via the weekly pad inspections (which include the Booster Station). Los Filos inspects the pond leak detection system and the pad underdrains on a daily basis. Los Filos inspects the process ponds on a weekly basis for the condition of the liner. Daily surveys document the water levels and freeboard for use in the water balance. Los Filos inspects the diversions around the pad and process ponds on a monthly basis. Los Filos documents inspections, including the date of the inspection and the name of the inspector. The inspection forms have a section for observations and corrective actions.

Los Filos conducted non-destructive testing on the high-strength cyanide tanks (T-100 and T-200) in 2008. Los Filos reconducted the ultrasonic testing of the wall thickness on tanks T-100 and T-200 in 2011. In both cases, the findings showed adequate remaining life for these two tanks. In mid-2013 Los Filos developed a tank monitoring program of visual and formal (non-destructive) testing that includes all columns and tanks containing cyanide solutions. This program was based on the Steel Tank Institute (STI) guidance and is an example of continuous improvement at Los Filos.

Los Filos has organized their maintenance program according to three functional areas: mechanical, instrumentation, and electrical. Los Filos completes both proactive (scheduled) and reactive (unscheduled) maintenance in each of the functional areas. Proactive maintenance is scheduled weekly, biweekly, and monthly, respectively, by the mechanical, electrical, and instrumentation staff. Reactive maintenance is scheduled based on problems observed by staff during rounds and inspections. The auditor observed examples of closed work orders from throughout the recertification period to verify that

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reactive maintenance is completed. The auditor also observed that Los Filos has redundant (standby) pumps installed and ready to run for certain critical functions.

Los Filos has two emergency generators of 2 MW each to operate the critical pumps in the plant, ponds, and the booster station. The auditor reviewed monthly startup records and quarterly preventative maintenance records to verify that the generators were operable throughout the recertification period. The auditor also observed the generator room to confirm that the generators were visually in good condition.

**Standard of Practice 4.2: Introduce management and operating systems to minimize cyanide use, thereby limiting concentrations of cyanide in mill tailings.**

in full compliance with

The operation is

in substantial compliance with

**Standard of Practice 4.2**

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Standard of Practice 4.2, requiring that the operation limit the use of cyanide to that optimal for economic recovery of gold so that the waste tailings material has as low a cyanide concentration as practical.

Standard of Practice 4.2 is inapplicable because Los Filos does not have a mill or generate tailings.

**Standard of Practice 4.3: Implement a comprehensive water management program to protect against unintentional releases.**

in full compliance with

The operation is

in substantial compliance with

**Standard of Practice 4.3**

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Standard of Practice 4.3, requiring the operation to implement a comprehensive water management program to protect against unintentional releases.

Los Filos has developed a comprehensive, probabilistic water balance model as an Excel spreadsheet. Use of the model is described in two written procedures. The spreadsheet is comprehensive in that it includes the applicable cyanide facilities and the appropriate factors. Solution application rates are back calculated from actual pumping rates. Precipitation and evaporation data from the onsite meteorological station are used as input. Run-on from natural areas uphill from the pad is not included because all such

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areas are diverted. Freezing and thawing are inapplicable for the climate in central Mexico. Potential power outages can be considered by zeroing out the pumping rates. Los Filos has evaporation machines at the excess pond that are included in the water balance. Seepage return flow to from the pad underdrain system to the excess pond is included in the model. The model is probabilistic in that it can evaluate scenarios for single large storms (e.g., the 100-year, 24-hour event of 135 mm), wet periods, or power outages. During the site visit, the auditor observed the Los Filos staff entering different scenarios into the spreadsheet to confirm that it can be used in a probabilistic, predictive manner to make decisions regarding additional irrigation in inactive pond areas or use of the treatment and/or evaporation systems at the excess pond. The auditor reviewed monthly water balance spreadsheets from throughout the recertification period to confirm the model has been used regularly.

Los Filos implements monitoring and inspections as part of managing the water balance. Los Filos surveys the water levels in the recirculation pond and excess pond on a daily basis for input into the water balance spreadsheet. The auditors reviewed these spreadsheets for the recertification period to verify compliance. Los Filos inspects the pad and the run-on diversions to ensure conformance with the water balance. The auditor reviewed inspections forms from throughout the recertification period to verify compliance.

Los Filos has developed a written procedure for managing excess water in the process ponds. The pregnant ponds spill automatically to the recirculation pond via a spillway, as does the recirculation pond spills to the excess pond. The freeboard in the excess pond is 2 meters (m). Los Filos provided a graph showing the water levels in the excess pond throughout the recertification period. This graph showed that the freeboard of 2 m was maintained throughout the recertification period except for a brief period in 2011 when the freeboard decreased to 1.7 m. The auditor considers the designated freeboard of 2 m to be conservative and therefore does not consider a short, minor deviation to be a deficiency in this case.

Los Filos has an official meteorological station adjacent to the recirculation pond, as well as two unofficial rain gages at the ADR Plant and the pad. The official site station has records starting in 2010. Los Filos prepared a series of graphs comparing the official data to the unofficial data and concluded the data were similar, but the period of record was too short for a rigorous conclusion. Similarly, Los Filos compared the site data to the regional data from government weather stations at Mezcala, Zumpango, and Chichihualco, but concluded there was an insufficient period of record for the site data to draw meaningful conclusions; the auditor concurred with the conclusion after reviewing the comparison graphs.

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**Standard of Practice 4.4: Implement measures to protect birds, other wildlife, and livestock from adverse effects of cyanide process solutions.**

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 4.4**

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Standard of Practice 4.4, requiring the operation implement measures to protect birds, other wildlife, and livestock from adverse effects of cyanide process solutions.

Los Filos has implemented measures to restrict access by wildlife and livestock to the cyanide facilities. The perimeter of the pad is fenced, as are the process ponds and the ADR Plant. In addition, the north and south pregnant ponds are gravel-filled such that there is no exposed solution. The auditor observed that the fencing generally was in good condition.

Los Filos maintained WAD cyanide concentrations below 50 ppm in the recirculation and excess ponds throughout the recertification period. A graph of both external and internal laboratory data demonstrated that WAD cyanide concentrations in the recirculation pond were below 50 ppm with some minor and isolated exceptions. There were three 1-day periods, one 5-day period, and one 9-day period with high concentrations of WAD cyanide in the recirculation pond. The longer periods of high concentrations were due to maintenance rather than underlying programmatic causes. There was no wildlife mortality in the recirculation pond during the periods of high concentrations, as demonstrated by the records of the daily wildlife inspections. Los Filos took reasonable immediate corrective measures, as well as preventive measures to prevent reoccurrence of the conditions that caused the high concentrations in the recirculation pond. For the excess pond, Los Filos provided a graph of both external and internal laboratory data to demonstrate that WAD cyanide concentrations in the excess pond were no higher than approximately 12 ppm.

The auditor reviewed registers of wildlife mortality to verify that the physical measures and maintaining WAD concentrations below 50 ppm were effective in preventing significant wildlife mortality during the recertification period. There were a small number of mortalities in the recertification period that represent isolated incidents.

Los Filos has prepared a written procedure and work instruction to prevent significant ponding on the pad surface. Los Filos documents the presence or absence of ponding on their pad inspection forms. The auditor reviewed completed forms from throughout the recertification period that showed the inspectors

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occasionally noted ponding on the pad surface. When ponding was noted, the form also described the reason for the ponding and the action taken to mitigate the ponding. The auditor inspected the active cells during the site visit and did not observe significant ponding even though it was the rainy season and had been raining most nights. Los Filos applies solution to the pad by drip irrigation; therefore overspray is not an issue.

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**Standard of Practice 4.5: Implement measures to protect fish and wildlife from direct or indirect discharges of cyanide process solutions to surface water.**

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 4.5**

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Standard of Practice 4.5, requiring the operation implement measures to protect fish and wildlife from direct or indirect discharges of cyanide process solutions to surface water.

Los Filos does not have any direct discharges to surface water. Los Filos does not have any indirect discharges to surface water because they control the indirect discharges with the potential to affect surface water. Los Filos installed underdrains beneath the heap leach pads to collect water from pre-existing springs and convey this water to Arroyo Carrizalillo downgradient of the cyanide facilities. The underdrain outlets discharge into a small open-topped concrete tank and are then pumped back to the excess pond. Los Filos presented sampling data that showed the seepage solutions had free cyanide concentrations less than 0.022 ppm, indicating negligible potential for impact to surface water even if the seepage was not collected and returned to the excess pond. It should be noted that Arroyo Carrizalillo is normally dry and therefore surface water in this context means occasional runoff.

**Standard of Practice 4.6: Implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater.**

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 4.6**

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Standard of Practice 4.6, requiring the operation implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater.

Los Filos has implemented measures to protect groundwater and these measures are unchanged from the 2010 audit, except for the two new facilities (i.e., the 5<sup>th</sup> train at the ADR Plant and the booster station). The heap leach pad has a composite liner system consisting of geomembrane liner placed on a clay or clayey-soil liner above compacted subgrade. An underdrain piping system was installed beneath

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the pad and the process ponds to control water from natural springs in the area, but in effect can serve as a secondary leak detection system. The pregnant ponds and the recirculation pond are double-lined with leak detection system, whereas the excess pond is single lined. The ADR Plant, including the cyanide offload (Area 800), is constructed with a concrete pad underlain by 60 mil HDPE liner. The 5<sup>th</sup> train, which was constructed in 2013), is also underlain by an extension of the concrete pad and liner. The booster station, which was built in 2012, is constructed with a concrete pad underlain by a 60 mil HDPE liner.

The beneficial use for groundwater in the vicinity of the mine is human consumption and the SEMARNAT standard is 2 ppm total cyanide. Los Filos currently conducts quarterly sampling at two monitoring wells downgradient of the cyanide facilities but there was a third well that was abandoned partway through the recertification period to accommodate construction of the new Pad 2 and replaced by one of the two current wells. Los Filos provided spreadsheets of groundwater sampling results for these wells that showed most results were non-detect and no results were higher than the 2 ppm total cyanide threshold for groundwater protection.

Los Filos does not have a mill or produce tailings. Los Filos has not caused cyanide concentrations in groundwater to exceed levels that protect beneficial use, and therefore no remedial activity is required.

**Standard of Practice 4.7: Provide spill prevention or containment measures for process tanks and pipelines.**

in full compliance with

The operation is

in substantial compliance with

**Standard of Practice 4.7**

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Standard of Practice 4.7 requiring that the operation provide spill prevention or containment measures for process tanks and pipelines.

Los Filos has secondary containments for Areas 800, 420, and 250 at the ADR Plant. The containments and their capacities were reviewed during the 2010 audit and those findings are still valid. During the 2013 site visit, the auditor observed that these containments were in good condition and that no materials were stored within them to compromise their capacities.

The 5<sup>th</sup> train at the ADR Plant and the booster station are new cyanide facilities since the 2010 audit. The auditors confirmed by observation and review of design drawings that both facilities have concrete

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secondary containment. The columns of the 5<sup>th</sup> train are installed over concrete containment with a sump and pump, as well as gravity flow to the original train area. The tank at the booster station was installed on a solid structural concrete base. The secondary containment of the booster station drains by gravity to the lined heap leach pad. Los Filos provided a design document for the 5<sup>th</sup> train indicating 165 percent capacity greater than a single column. Los Filos provided a letter from the designer that indicated the booster station secondary containment was designed to flow by gravity to the heap leach pad at a rate that would accommodate a catastrophic tank failure.

Solutions within the secondary containments for Areas 800, 420 (including the 5<sup>th</sup> train), and 250 are returned to the process circuit, either directly by pumping to columns or tanks, or by gravity flow to the recirculation pond. Solutions within the secondary containment for the booster station drain by gravity to the lined heap leach pad, thereby returning them to the process circuit. In no cases are solutions within secondary containment discharged to the environment.

Los Filos does not have any tanks without secondary containment. Nonetheless, Los Filos has developed procedures for remediation of impacted soils.

Los Filos has provided secondary containment for all cyanide-bearing pipelines. In some cases, the pipelines are contained within other pipes or within lined ditches. In other cases, the pipelines are routed over the lined heap leach pad so that the pad itself provides secondary containment. The auditor observed the containments to be in functioning condition.

Los Filos has located facilities in areas that do not pose any undue risks to surface water that would require special protection. There is no risk to surface water in the area of the process facilities, because no perennial surface water streams or water bodies are present.

The auditor observed that all tanks and pipelines at Los Filos are constructed of materials compatible for cyanide and high pH, such as HDPE, mild steel, stainless steel, and YeloMine PVC.

**Standard of Practice 4.8: Implement quality control/quality assurance procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.**

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 4.8

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

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The operation is in full compliance with Standard of Practice 4.8 requiring that operations implement QA/QC procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

Los Filos has implemented QA/QC procedures that confirm cyanide facilities were constructed properly. Because the 2010 audit evaluated the construction quality assurance (CQA) programs for the following facilities, they did not need to be re-evaluated for the recertification audit:

- The ADR Plant (Areas 800, 420, and 250)
- Stages 1 and 2 of the heap leach pad
- The buttress to stabilize the heap leach pad
- The ponds for pregnant solution (north and south), the recirculation pond, and the excess pond

Golder, via its affiliate in Mexico (Geomex), has been involved in certain types, but not all types, of the CQA for the new or expanded cyanide facilities at Los Filos during the recertification period. Golder provided earthwork, liner, and piping CQA services for Stages 3, 4, and 5 of the heap leach pad. Golder provided the CQA for the earthworks, concrete, and liner for the booster station and the 5<sup>th</sup> train. In addition, Golder provided CQA services for repairs made to the liner for the excess pond in 2013. Consequently, a conflict of interest exists and Los Filos retained an independent auditor (i.e., Mr. Rick Frechette, PE of Knight Piesold). However, no conflict exists for Golder to review the CQA evidence for components unrelated to earthworks, liner, pad piping, or concrete.

### Golder Review

The auditor reviewed the documentation for the booster station constructed in 2011, as well as the 5<sup>th</sup> train of the ADR Plant constructed in 2013, to confirm the existence of CQA programs. In general, the programs for these facilities addressed the suitability of materials and consisted of welding certifications; non-destructive testing (ultrasound) of welds; weekly reports; photographs; manufacturer's certificates; and materials certifications. As evidence for final review of the completed project by a qualified person, Los Filos provided the acceptance records signed by the Los Filos engineers in charge of the projects (i.e., Ing. Freddy Hernandez Valdez for the 5<sup>th</sup> train and Ing. Ulises Razo for the booster station).

The auditor observed that Los Filos has retained the CQA records referenced in the 2010 audit in bookshelves in the ADR plant conference room. Los Filos has also prepared an inventory of these documents.

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### Knight Piesold Review

KP reviewed the CQA documentation for Stages 3, 4, and 5 of Pad 1; the earthworks, concrete, and liner for the booster station; the earthworks, concrete, and liner for the 5<sup>th</sup> train; and repairs to the liner for the excess pond. The final page of the KP letter summarizes as follows:

*“On the basis of the project documents made available to us, it can be concluded that a reasonable level of construction quality assurance has been carried out for the various leach pad Stage 3, 4, and 5 expansions, pond repairs and associated booster station and ADR installations conducted at Los Filos during 2010 to 2013. This does not provide or imply any warranty concerning the work, but simply states that on the basis of the existence of pertinent documentation, an auditor can express with reasonable confidence that the work was conducted under a CQA program that meets the general intent of ICMC as specified in Standard of Practice 4.8.”*

**Standard of Practice 4.9: Implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and groundwater quality.**

in full compliance with

The operation is

in substantial compliance with

**Standard of Practice 4.9**

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Standard of Practice 4.9 requiring that operations implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and groundwater quality.

Los Filos has a written plan for its water quality monitoring program, as well as for wildlife monitoring. Both program documents are accompanied by detailed procedures. The water quality monitoring program is currently implemented and updated by a chemical engineer in the environment department. Similarly, the wildlife monitoring program is currently implemented and updated by a biologist in the environment department. The analytical program is carried out by three certified laboratories. The program plans themselves contain tables and figures showing sampling locations and frequencies, while the accompanying procedures contain details on sampling methods, preservation, sample containers, chain-of-custody, and handling/shipping. The auditor obtained these program documents, interviewed environmental staff, and confirmed laboratory certifications to verify compliance.

Los Filos monitors groundwater downgradient of the cyanide facilities in two wells, springs downgradient of the cyanide facilities via five underdrains, and surface water downstream of the cyanide facilities at one station. The auditor visited each of these locations to verify they are adequate to spatially represent the medium being monitored and the site.

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Los Filos documents sampling conditions on field sheets. The auditors noted examples from the recertification period where the weather, general water appearance, and anthropogenic activities were noted.

Los Filos documents wildlife sightings and mortalities at the pad, plant, and ponds on separate forms. The auditors reviewed completed forms from throughout the recertification period to verify compliance.

Los Filos monitors surface water, groundwater, and wildlife at frequencies appropriate for each medium. For analysis by external laboratories and depending on the species and station, groundwater and surface water are sampled weekly, monthly, bimonthly, quarterly, or annual. For analysis by the internal laboratory, only key stations (e.g., ponds) are sampled, but on a more frequent basis (i.e., daily, weekly, biweekly). Wildlife is monitored daily at the pad, plant, and ponds.

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PRINCIPLE 5 – DECOMMISSIONING

Protect Communities and the Environment from Cyanide through Development and Implementation of Decommissioning Plans for Cyanide Facilities.

Standard of Practice 5.1: Plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 5.1

[ ] not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 5.1 requiring that the site plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.

Los Filos provided the auditors with a 2013 decommissioning plan for cyanide facilities. This plan includes all of the cyanide facilities, as well as describes the activities for draindown of the heap leach pad; conversion of the process ponds to evapotranspiration cells; use of remaining reagent-grade cyanide; decontamination of cyanide equipment, structures, and foundations; disposal of any cyanide-contaminated sludge; and dismantlement and demolition of equipment, structures, and foundations. Los Filos has developed a decommissioning schedule in text format for the cyanide facilities and activities in terms of years after mine closure. The auditors observed that the introduction to the decommissioning plan calls for annual review and revision as needed. Although Los Filos has not retained the versions from previous years, by interview the auditors are satisfied that the annual updates occurred throughout the recertification period.

Standard of Practice 5.2: Establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 5.2

[ ] not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with the Standard of Practice 5.2 requiring that the site establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.



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Los Filos has developed a closure cost model that includes decommissioning of the cyanide facilities. The auditors confirmed that the cost estimate includes the applicable facilities and activities. The closure cost model uses third party rates based on quotes from Mexican vendors and contractors. The associated decommissioning plan states that closure costs are to be updated annually and the auditors observed past versions of the cost model confirming that this occurs. The Mexican government does not require financial assurance and therefore Los Filos has selected self-guarantee as the method of financial assurance. The auditors reviewed a 2011 letter from a Chartered Accountant (Deloitte & Touche) verifying Goldcorp Inc.'s conformance with the financial tests for a self-guarantee mechanism. Deloitte & Touche used an amount of \$7.0M for Los Filos, which is slightly more than the 2013 decommissioning estimate of \$6.3M, implying the 2011 conclusion is still valid.

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PRINCIPLE 6 – WORKER SAFETY

Protect Workers’ Health and Safety from Exposure to Cyanide

Standard of Practice 6.1: Identify potential cyanide exposure scenarios and take measures as necessary to eliminated, reduce, and control them.

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 6.1

not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 6.1 requiring that the site identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce, and control them.

Los Filos has a complete set of procedures and work instructions that identify potential cyanide risks and measures to control those risks. The auditor reviewed these procedure and work instructions to confirm that they cover the work objective, scope, responsible persons, definitions, materials, equipment, tools, PPE, precautions, waste management, procedural steps, security measures, and environmental protection.

Los Filos has a management of change procedure and regularly uses it to evaluate changes with respect to cyanide releases and exposures. The auditors reviewed 14 management of change forms from throughout the recertification period to confirm regular use of the procedure.

Los Filos regularly solicits worker input via management interactions with workers. The PROSE program has five required elements where the 20-member management team must regularly interact with workers, thus providing opportunities for input. The auditor observed database entries tracking these interactions throughout the recertification period. Los Filos solicits worker input to improve procedures via direct communication between supervisors and workers, via daily safety meetings and monthly Code committee meetings. For example, Los Filos provided a list of daily safety meetings from the PROSE database that showed cyanide-related topics were regularly discussed during the recertification period, thus allowing worker input.



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**Standard of Practice 6.2: Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.**

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 6.2**

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Standard of Practice 6.2 requiring that the site operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.

The Los Filos procedures specify a minimum pH of 9.7 standard units (su) for the ADR Plant and the pad, and a minimum pH of 10.5 su for the offloading area. Los Filos has conducted site-specific risk assessments that include data showing these minimum pH values are effective in controlling HCN formation given their ore characteristics. The auditor reviewed data that showed, in general, that Los Filos actually maintained pH levels at values higher than the minimum values prescribed in the procedures.

Los Filos has installed four fixed HCN monitors at the ADR Plant and one fixed HCN monitor at the booster station. Los Filos has 27 portable HCN monitors for use by plant, pad, emergency response brigade, and environmental staff. The auditors observed that staff were using these portable monitors in the field as required by procedures. Los Filos presented records demonstrating the fixed and portable HCN monitors have been maintained, tested, and calibrated.

Los Filos has identified areas and activities where workers may be exposed to high levels of HCN gas. The fixed HCN monitors have been installed in these areas and staff use portable HCN monitors when working in these areas. Los Filos has also installed signs alerting staff to limit their time in areas known to have high HCN gas levels (e.g., the carbon screens).

Los Filos has installed signs at the ADR Plant, booster station, pad, and stacker advising staff that cyanide solutions are present. As appropriate in the plant, the signs prohibit smoking, eating, and drinking; signs also describe appropriate PPE. Los Filos has also installed signs on all cyanide tanks and pipelines, including flow direction arrows on the pipelines.

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Los Filos has installed showers and eyewashes throughout the plant, the booster station, and the pad. The auditors reviewed inspection records that cover the 3-year recertification period and randomly tested them in the field to confirm that they function properly.

Los Filos has installed dry powder fire extinguishers throughout the plant and as needed at other cyanide facilities. The auditors reviewed inspection records that cover the 3-year recertification period and randomly inspected the fire extinguisher tags in the field to confirm their proper condition.

Los Filos has placed first aid information and MSDS for cyanide in Spanish at strategic locations. Each cyanide kit contains first aid information and an MSDS, as well as the clinic and each ambulance. In addition, the MSDS is posted on the window of the plant control room.

Los Filos has developed written procedures for releases and exposures that require investigation of incidents and non-conformities, completion of corrective actions, and development of preventative actions. The auditor confirmed that incidents are being reported and investigated by review of investigation reports for 16 cyanide-related incidents that occurred in the recertification period. The majority of these incidents were minor, related to equipment failure, took place in 2011 and 2012, and occurred at Area 250. A number of them occurred during maintenance activities. There did not appear to be programmatic issues with inspections or preventative maintenance during this period. Inspections, alarms, and observers did identify some of the incidents, indicating Los Filos actively seeks to comply. The duration of each spill was short; in all cases, the incident investigations were thorough and the responses were rapid and effective, indicating good faith in controlling the incidents.

**Standard of Practice 6.3: Develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.**

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 6.3**

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Standard of Practice 6.3 which requires that the site develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

Los Filos has antidote kits and communication systems readily available for use at multiple locations at the plant and heap leach pad, as well as at the onsite clinic. Five cyanide antidote kits with oxygen tanks and amyl nitrate ampules are kept at the clinic. Three kits are located at or near the ADR Plant, one kit is



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located at the stacker control cabin on the pad, and one kit is located at the booster station. Los Filos has a dedicated radio channel for the paramedics (i.e., Channel 911) as well as dedicated land line extensions for the paramedics and security. The brigade has portable radios and each ambulance is equipped with radios. The auditor tested the alarm button and verified that the siren worked and that the paramedics radioed immediately.

Los Filos inspects the cyanide kits, the emergency equipment, and the ambulances regularly to ensure that equipment and supplies are present and functioning. The doctors at Los Filos inspect the cyanide antidote kits and oxygen cylinders weekly at the plant, pad, and clinic and document these inspections in bound notebooks. The brigade coordinator inspects the emergency equipment on a monthly basis and the ambulances on a weekly basis.

Los Filos has developed two emergency response plans. The Master Plan for Emergency Response is general to all types of emergencies, but also contains guidance on cyanide-related emergencies with reference to the Emergency Response Plan for Sodium Cyanide. The Emergency Response Plan for Sodium Cyanide is specific to cyanide-related emergencies.

Los Filos has on-site capability to respond to cyanide exposures. In terms of equipment, Los Filos has three ambulances and a rescue pickup for the brigade. The brigade has equipment staged at the clinic, as well as a trailer at the ADR Plant. The plant first responders have a separate shed near the plant guard gate for their equipment. In terms of staffing, Los Filos has 7 paramedics, 4 doctors, and 1 nurse such that at least doctors and paramedics are scheduled for each shift.

Los Filos has developed a written procedure to transport workers exposed to cyanide to qualified off-site hospitals (i.e., the IMSS hospitals in Iguala and Chilpancingo). This procedure is applicable to either land transport by ambulance or air transport by airplane or helicopter. Los Filos has agreements with the IMSS Hospital in Chilpancingo and the IMSS Hospital in Iguala, as evidenced by letters sent from these hospitals in 2012. The letters state that these hospitals are qualified to treat workers with cyanide intoxication.

Los Filos has conducted three mock drills during the 3-year recertification period. The mock drills in 2010 and 2012 covered worker exposure to cyanide, while the mock drill in 2013 involved a spill scenario. Corrective actions were identified during each mock drill and incorporated into response planning. The auditor reviewed mock drill reports and followup records for confirmation.

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PRINCIPLE 7 – EMERGENCY RESPONSE

Protect Communities and the Environment through the Development of Emergency Response Strategies and Capabilities

Standard of Practice 7.1: Prepare detailed emergency response plans for potential cyanide releases.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 7.1

[ ] not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 7.1 which requires that the site prepare detailed emergency response plans for potential cyanide releases.

Los Filos has developed two emergency response plans. The Master Plan is general to all types of emergencies. The Emergency Response Plan (ERP) for Sodium Cyanide is specific to cyanide-related emergencies. The Master Plan covers catastrophic releases in general, while the ERP for Sodium Cyanide has sections dealing specifically with transportation accidents: releases during unloading, releases during fires and explosions, ruptures of tanks, pipes, and valves, overtopping of ponds, power outages and pump failures, uncontrolled seepage, treatment system failure, and slope failures for the heap leach pad.

The ERP also addresses transportation accidents specific to isotainers within the Los Filos mine. The isotainer is escorted at all times within the mine property to ensure that the truck driver operates the safely for the conditions present. The auditors observed the isotainers being escorted from the gate to the ADR Plant.

The Master Plan describes actions for evacuation of the site and coordination with surrounding communities. The ERP describes first aid measures for cyanide exposure, medical treatment, and use of antidotes. The control of cyanide releases is covered in the ERP, as well as assessment and cleanup of cyanide releases. Procedure LF-P-PT-05 is for measures specific to neutralization of cyanide in soils.

Standard of Practice 7.2: Involve site personnel and stakeholders in the planning process.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 7.2

[ ] not in compliance with



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### Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 7.2 which requires that the site involve site personnel and stakeholders in the planning process.

Los Filos has involved its workers by including them in review of procedures by discussions during safety meetings and training, as well as by feedback during and after mock drills. Los Filos has involved local response agencies and medical facilities to the extent necessary given their limited role in the emergency planning and response process. According to the Master Plan, outside responders would have a limited role without entering the mine property to assist with hospital arrangements, patient transport, offsite traffic control, and offsite evacuations. Nonetheless, Los Filos has involved its stakeholders in emergency response planning. Los Filos organized two workshops in April 2013 to present the ERP and Module 1 of the cyanide training to seven outside entities. Los Filos held mutual assistance meetings with outside responders Iguala and Chilpancingo in April 2013. Los Filos held meetings with community leaders in Mazapa, Mezcala, and Carrizalillo in 2013 to discuss cyanide use. In addition, Los Filos included Red Cross staff in its SCBA training in May 2013.

### Standard of Practice 7.3: Designate appropriate personnel and commit necessary equipment and resources for emergency response.

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 7.3

not in compliance with

### Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 7.3 which requires that the site designate appropriate personnel and commit necessary equipment and resources for emergency response.

The Master Plan for Emergency Response contains sections that designate an emergency committee and emergency coordinators, that identify the brigade members and their callout information, that specify duties and responsibilities for the brigade members, that lists all emergency response equipment, that describes the inspection program for emergency equipment, and describes the role of outside entities. The role of the outside responders is to assist with hospital arrangements, patient transport, offsite traffic control, and offsite evacuations; they do not have a designated onsite role. The required training for brigade members is described in a stand-alone document for the cyanide code training program. The outside entities have not participated in mock drills or implementation exercises because they do not have an onsite role. However, Los Filos has involved selected outside entities in joint classroom training, such as the DuPont Train-the-Trainer course.

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**Standard of Practice 7.4: Develop procedures for internal and external emergency notification and reporting.**

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 7.4**

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Standard of Practice 7.4 which requires that the site develop procedures for internal and external emergency notification and reporting.

Los Filos has included procedures and contact information for all notifications in the Master Plan. Section 8 describes the notification procedures. Section 11 includes contact information for mine management, Goldcorp management, federal agencies, state and local agencies, hospitals, and outside responders. Section 11, also includes contact information for potentially-affected communities in a table titled "Telephones for Neighboring Communities and Unions". Section 9, Media Control and Statements, describes the procedures for communications with the media.

**Standard of Practice 7.5: Incorporate in response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.**

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 7.5**

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Standard of Practice 7.5 which requires that the site incorporate in response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.

The ERP and related procedures address remediation measures for cyanide releases. Spill-affected materials are to be placed in designated containers and kept dry. Berms or dikes are to be constructed to prevent wider spread of spilled solutions. A separate procedure describes the neutralization of cyanide-affected soils. The remediation endpoint is defined as 0.5 ppm WAD cyanide or less. Both this procedure and the ERP prohibit the use of sodium hypochlorite, ferrous sulphate, and hydrogen peroxide to a body of water or moving runoff. The procedures specify that cyanide solutions at the plant be returned to the process circuit, that cyanide solutions outside the plant be returned to the process ponds or heap leach pad, and that cyanide-impacted soils be placed on the heap leach pad.

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Provision of an alternative drinking water supply is inapplicable for the three nearby communities. Los Filos already provides bottled drinking water to Mazapa and has done so since the community was relocated away from the Arroyo Carrizalillo as a condition of mine development. The potable water supply for Carrizalillo is upgradient of the mine and Mezcala is located in a different watershed from the mine.

The ERP describes the monitoring measures for areas affected by cyanide spills, including the spacing, depth, and volumes for soil confirmation sampling, and the required laboratory analyses. For confirmation sampling of surface and groundwater, the ERP references two work instructions for monitoring groundwater and surface/potable water.

**Standard of Practice 7.6: Periodically evaluate response procedures and capabilities and revise them as needed.**

in full compliance with

The operation is

in substantial compliance with

**Standard of Practice 7.6**

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Standard of Practice 7.6, which requires that the site periodically evaluate response procedures and capabilities and revise them as needed.

The Master Plan states that the Industrial Safety Manager must review and update the plan at least annually and when a change occurs at the mine or as a result of a mock drill. The final page of the Master Plan is document control sheet that shows six revisions during the recertification period. Los Filos also provided versions of the ERP dated December 2012 and May 2013, supporting that this document is also reviewed and updated. The Master Plan states that mock drills must be conducted at least annually. The auditors reviewed reports for three mock drills conducted during the recertification period that addressed both spills and exposures. Finally, the Master Plan states that that a review session must be held after each actual emergency or mock drill, and that the Industrial Safety Manager must submit a written report to the general manager. The auditor reviewed evidence that showed the ERP was reviewed and updated as an action item after the mock drill in May 2012.

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PRINCIPLE 8 – TRAINING

Train Workers and Emergency Response Personnel to Manage Cyanide in a Safe and Environmentally Protective Manner

Standard of Practice 8.1: Train workers to understand the hazards associated with cyanide use.

in full compliance with

The operation is

in substantial compliance with

Standard of Practice 8.1

not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 8.1 which requires that the site train workers to understand the hazards associated with cyanide use.

Los Filos has developed a written training program for all personnel who may encounter cyanide. This program details the requirements for initial and refresher training. All visitors, contractors, and mine staff are covered by this program with increasing training requirements with increasing potential for exposure to cyanide.

Initial training for visitors consists of a brief introductory presentation, while initial training for staff and contractors consists of Module 1 (2 hours) and Module 2 (4 hours). The auditor reviewed tracking spreadsheets and selected hardcopy records to verify that initial cyanide training was provided throughout the recertification period for visitors, staff, and contractors. These records were also confirmed by interview with selected site staff and contractors.

Annual refresher training for staff and contractors consists of the same Modules 1 and 2 as provided for initial training. Refresher training was not provided regularly in 2011, but has been regularly provided since an internal gap audit was completed in approximately 2012. Given that the deficiency in refresher training occurred early in the audit cycle, and given that Los Filos has demonstrated control of the refresher training for over a year, the auditor concludes that a finding of substantial compliance would be moot because Los Filos has implemented the corrective action. Therefore, the auditor finds Los Filos to be fully compliant.



## ICMC RECERTIFICATION SUMMARY REPORT

**Standard of Practice 8.2: Train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.**

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 8.2**

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Standard of Practice 8.2 which requires that the site train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.

Los Filos provides task training to staff that work with cyanide. The written training program requires that all plant and pad staff receive Module 3, which is defined as training in the procedures and work instructions. The procedures and work instructions include details on how to safely conduct each cyanide-related task. The auditors reviewed these procedures to verify they contain appropriate training elements for PPE, equipment/supplies, safety, and methods. Attachment A of the written training program lists the procedures and work instructions applicable to each department and each work area at the ADR Plant. The site paramedics, doctors, and area supervisors that provide the training have been the DuPont "Train-the-Trainer" course and are therefore qualified to teach cyanide-related procedures. By record review and interview, the auditor confirmed that staff are trained on procedures and work instructions prior to being allowed to work independently. Although the tracking spreadsheets do not distinguish between initial and refresher training, the spreadsheets do show that staff are trained on the procedures and work instructions each year. Los Filos trains staff each year on the procedures under Module 3 and the Los Filos evaluates the effectiveness of training for Modules 1, 2, and 3 by both written examinations and documented observations. The training staff at Los Filos maintain training records for each employee throughout the duration of employment, as evidenced by review of tracking spreadsheets and selected hardcopy files.

Module 3 training was not provided in 2011, but has been regularly provided since an internal gap audit was completed in approximately 2012. Given that the deficiency in this training occurred early in the audit cycle, and given that Los Filos has demonstrated control of the refresher training for over a year, the auditor concludes that a finding of substantial compliance would be moot because Los Filos has implemented the corrective action. Therefore, the auditor finds Los Filos to be fully compliant.

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## ICMC RECERTIFICATION SUMMARY REPORT

**Standard of Practice 8.3: Train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.**

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 8.3**

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Standard of Practice 8.3 which requires that the site train appropriate workers and personnel to respond to exposures and environmental releases of cyanide.

As a first level of defense to respond to worker exposures and environmental releases of cyanide, Los Filos trains all process staff, including unloading, mixing, and maintenance workers, in decontamination and first aid procedures. This training is accomplished via Modules 1 and 2 of the cyanide training program. The auditor reviewed training spreadsheets to confirm staff received Module 1 and 2 refresher training during the recertification period. Los Filos generally completed refresher training with the exception of in 2011. This deficiency occurred early in the audit cycle and Los Filos has demonstrated control of the refresher training for over a year, leading the auditor to conclude that a finding of substantial compliance would be moot because Los Filos has implemented the corrective action.

Los Filos developed a second level of defense part way through the recertification period – a team of first responders at the ADR Plant and pad. Los Filos developed this team in mid-2012 to be a bridge between the time when an emergency occurred and the time when the brigade arrived (i.e., approximately 15-20 minutes). This team is comprised of supervisors and consists of 25 of the 63 staff at the plant and pad. They have their own equipment in a shed at the ADR Plant; this equipment is separate from, and more basic than, that of the brigade. The first responders train in the classroom and the field. Classroom training consists of reviewing the procedures for attacking contingencies, isotainer operation, and the MSDS for cyanide. The auditor reviewed a training spreadsheet to verify that initial and refresher training has been completed.

Los Filos has established a brigade that is trained in emergency response procedures and equipment. The brigade is capable of responding to all types of mine emergencies (including in the underground mine), not just cyanide-related emergencies. Before May 2012, the brigade consisted of 17 non-supervisor members. Due to a union dispute, the brigade resigned in May 2012; however the former brigade members still worked at Los Filos and their equipment still remained. Los Filos reorganized the brigade between July 2012 and January 2013 to its current size of 25 members, all of them supervisors. The auditor reviewed training records that showed the former brigade was trained and annual refreshers

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consistently given in late 2010, 2011, and early 2012. All members of the reorganized brigade have received all of the required training by mid-2013 and therefore refreshers will not be applicable until 2014. Despite the gap in brigade membership and training in mid-2012, that in part can be attributed to forces outside the mine's control (i.e., a union dispute), the auditor concludes that Los Filos acted in a timely manner and in good faith to reorganize the brigade.

Los Filos has coordinated with local hospitals in Chilpancingo and Iguala; civil protection, Red Cross, and fire departments in Chilpancingo and Iguala, and community leaders in Mezcala, Carrizalillo, and Mazapa. The auditors reviewed letters, contracts, meeting reports, and certificates of completion to confirm that the coordination occurred.

Los Filos conducts mock drills approximately annually. Two of the mock drills during the recertification period covered exposures and one covered a release to soil. Los Filos has evaluated the mock drills with respect to training needs. For example, the action plan resulting from the 2012 mock drill included action items for updating the training program for the brigade and additional training in appropriate PPE for the brigade. Another example from the 2013 mock drill was an action item to train more plant staff in the use of the SCBA equipment. The auditor reviewed supporting documentation provided by Los Filos to verify that action items were implemented.

The training staff at Los Filos maintain training records for each employee throughout the duration of employment, as evidenced by review of tracking spreadsheets and selected hardcopy files.

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PRINCIPLE 9 – DIALOGUE

Engage in Public Consultation and Disclosure

Standard of Practice 9.1: Provide stakeholders the opportunity to communicate issues of concern.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 9.1

[ ] not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 9.1 which requires that the site Provide stakeholders the opportunity to communicate issues of concern.

Los Filos provides opportunities for stakeholder engagement by its open door policy and a written procedure for documenting and resolving concerns and complaints. Los Filos did not receive any complaints during the recertification period. Los Filos led seven tours during the recertification period and holds an annual fair each November that draws up to 4,000 local community members. The auditor observed written reports for these activities.

Standard of Practice 9.2: Initiate dialogue describing cyanide management procedures and responsively address identified concerns.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 9.2

[ ] not in compliance with

Summarize the basis for this Finding/Deficiencies Identified:

The operation is in full compliance with Standard of Practice 9.2 which requires that the site initiate dialogue describing cyanide management procedures and actively address identified concerns.

Los Filos creates opportunities for stakeholder engagement via its open door policy, tours, and the annual fair. More recently, Los Filos added to those opportunities by actively reaching out to community leaders in 2013 via meetings specifically to discuss cyanide-related topics. Los Filos held four meetings with community leaders in Mazapa, Mezcala, and Carrizalillo to create opportunities for stakeholder input on cyanide management and emergency response plans. The auditor reviewed written reports for each of these meetings.



## ICMC RECERTIFICATION SUMMARY REPORT

**Standard of Practice 9.3: Make appropriate operational and environmental information regarding cyanide available to stakeholders.**

**in full compliance with**

**The operation is**

in substantial compliance with

**Standard of Practice 9.3**

not in compliance with

**Summarize the basis for this Finding/Deficiencies Identified:**

The operation is in full compliance with Standard of Practice 9.3 which requires that the site make appropriate operational and environmental information regarding cyanide available to stakeholders.

Los Filos provides written and verbal information to stakeholders regarding cyanide use, management, potential health effects, and potential environmental impacts. Los Filos staff stated that the majority of the local population (approximately 70 percent) are literate. The written information on cyanide use (in Spanish) consists of three trifold pamphlets and a PowerPoint presentation. Verbal information is provided by explanation of dioramas of the mining process, including cyanide leaching, at the annual mine fair. Los Filos also has its own radio station "La Filosita" that periodically plays eight announcements regarding cyanide use and management.

Los Filos will report cyanide exposures or releases to regulatory agencies, as required, within the corresponding regulatory timeframe. Regulatory agencies include the Work and Social Prevention Secretary (STPS) for exposures and PROFEPA for releases. This information would be available to the public via the agencies. Los Filos staff stated that they have not experienced any spills or exposures during the recertification period that would have required reporting to regulatory agencies.

The Los Filos Master Plan for Emergency Response contains procedures for disseminating information to the media in the case of spills or exposures. Depending on the type of incident, the public statements would cover spills, onsite chemical releases, and accidents (which would include cyanide exposures). The statement about onsite chemical releases includes discussion of solution retention, soil remediation measures, and disposition of affected materials.

The annual sustainability reports posted on the Goldcorp website contain information on spills, including cyanide spills, but generally not by individual mine. However, the auditors reviewed the 2012 sustainability report that discussed a cyanide solution spill at Los Filos, thus providing evidence that this information is made available to the public.

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## Report Signature Page

**GOLDER ASSOCIATES INC.**

A handwritten signature in black ink, appearing to read "Kent R. Johnejack".

Kent R. Johnejack  
Senior Consultant/Associate

Date: February 26, 2014

KJ/IA/sj

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