ICMI RECERTIFICATION SUMMARY REPORT

Minera Barrick Misquichilca, Lagunas Norte Mine, Peru

Número de Informe: 139-415-2023
Distribución:
Barrick Gold Corporation - 2 copies (1 pdf)
Golder Associates Perú S.A. - 1 copy (pdf)
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1.0 SUMMARY AUDIT REPORT FOR GOLD MINING OPERATIONS

- **Name of Mine**: Lagunas Norte Gold Mine.
- **Name of Mine Owner**: Minera Barrick Misquichilca SA.
- **Name of Mine Operator**: Minera Barrick Misquichilca SA.
- **Name of Responsible Manager**: Hugo Román, Operations General Manager.
- **Address**: Mina Lagunas Norte.
- **State/Province**: Province of Santiago de Chuco, District of Quiruvilca, Department of the Libertad.
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2.0 LOCATION DETAIL AND DESCRIPTION OF OPERATION

The Lagunas Norte Mine, operated by Barrick Gold Corporation's Peruvian wholly owned subsidiary Minera Barrick Misquichilca S.A. (MBM), is located in the Alto Chicama Mining District in north-central Peru (Province of Santiago de Chuco, District of Quiruvilca, Department of the Libertad), 140 kilometers east of the coastal city of Trujillo. The property is situated in the Peruvian Andes Mountains at an elevation of 4,000 to 4,260 meters above sea level and straddles the continental divide. The area is considered to have a mountainous climate, and the vegetation consists of small shrubs and grass. The mine is accessed year round by road from Trujillo and Huamachuco. The climate in the project area is characterized by defined rainy and dry seasons. The rainy season extends from November to April when approximately 1 meter (m) of rainfall occurs.

Lagunas Norte comprises an open pit mine, two waste rock storage areas, a geomembrane-lined heap leaching facility, process and storm water pond system, acid rock drainage treatment plant, barren solution treatment plant using the INCO SO₂ process, a Carbon in Column plant and a Merrill Crowe processing plant to recover gold, silver and mercury as a by-product. The open pit has been developed by conventional mining methods using trucks and loaders to extract gold-bearing ore. The waste is transported by trucks to either the west or east storage areas designed specifically for this purpose. Ore is placed on the heap leach facility by truck. The heap leach facility is fully lined with geomembrane and drains by gravity to a Pregnant Leach Solution (PLS) Pond with an emergency overflow to the Process Overflow Pond (POP) that provides storage for extreme storms and drain down. The PLS Pond is covered with bird balls to prevent wildlife access. The heap leach facility has a “dynamic” pad area where carbon ore and/or ore with high fines content is placed for a one-time leach cycle. The dynamic pad ore, after a 60-day leach cycle, is loaded and hauled to another portion of the heap leach facility for permanent storage. The dynamic pad drains pregnant solution to a series of netted sediment ponds that flow to the PLS Pond. Gold is recovered using conventional methods of heap leaching with dilute sodium cyanide solution for a 45-day leach cycle. Understanding and managing the process water balance is a critical function at Lagunas Norte because of the relatively high precipitation occurring in a well-defined rainy season. Lagunas Norte has developed and implemented a comprehensive process water balance program that includes monitoring and regular updates to track and plan water management activities. Lagunas Norte uses “raincoats” on the heap leach facility to minimize infiltration of rainfall on inactive portions of the heap. The raincoats are high-density polyethylene (HDPE) geomembrane covers that convey clean precipitation to the storm water management system. The auxiliary facilities required for the mining operation include administration offices and buildings, laboratories, warehouses, maintenance shops, emergency facilities, electric power distribution, water supply, roads, fuel and reagent storage tanks, drainage structures, and explosive storage areas. Once the ore has been extracted and processed, all the Lagunas Norte facilities except those necessary for continuous environmental protection will be closed and rehabilitated.
Lagunas Norte uses a Merrill Crowe process to recover the gold and silver from the pregnant leach solution. Lagunas Norte has two secure cyanide storage areas: 1) solid sodium cyanide box warehouse, and 2) liquid mixing and storage area within the Merrill Crowe building. Lagunas Norte has developed and implemented a number of operational procedures for the safe storage, handling and mixing of solid sodium cyanide briquettes into high-strength cyanide solution. The cyanide storage mixing and storage tanks are under a roof and within concrete containments with spill collection sumps. The area has appropriate ventilation and hydrogen cyanide (HCN) monitoring, and high-level alarms to prevent overfilling. pH levels are controlled by adding lime at the barren solution tank located outside in the Tank Farm area and by adding lime to the heap leach ore at the crushing facility. Lagunas Norte stores and manages sodium cyanide in engineered tanks, pipelines and lined ponds constructed under appropriate quality control and quality assurance programs. All pipelines are color coded to identify the content with the flow directions marked. A new carbon in Column circuit has been added to the plant, to enrich the pregnant solution before it is sent to the Merrill Crowe circuit. Lagunas Norte employees are trained in cyanide hazards and first aid, first response, emergency response, and specific operational tasks. Lagunas Norte has a perimeter chain link fence with razor wire to prevent wildlife, livestock and unauthorized personnel access to the property. Within the property, key facilities are fenced to preclude wildlife and livestock from entering cyanide process areas. Lagunas Norte employs comprehensive inspection and preventive maintenance programs to assure that all cyanide equipment and facilities are functioning as designed and to monitor process solutions. Lagunas Norte has developed closure and reclamation plans and procedures to complete the appropriate management of cyanide solutions and solids, and the decontamination of cyanide pipelines and equipment. Peru has established financial assurance requirements for closure. Lagunas Norte has submitted a closure plan and cost estimate for the decommissioning and reclamation of the facilities which has been approved by the Peruvian authorities.

Since 01 January 2009 Lagunas Norte has purchased sodium cyanide from Orica, manufactured at the Yarwun plant in Queensland, Australia. This plant was initially certified as Code compliant on 28 November 2006 and recertified as Code compliant on 17 March 2010 and again on November 2013. Lagunas Norte has an emergency response team that is trained to respond to onsite fires, chemical spills and worker exposures to cyanide. Lagunas Norte works with local community emergency responders to assure that adequate resources are available to address both offsite and onsite emergencies.

In the last three years Lagunas Norte had two cyanide incidents. The first incident occurred on 06 August 2011, A contractor slipped into the pregnant solution sedimentation pond while trying to remove a flexible drain pipe, wetting his calf and foot in cyanide solution. The second incident occurred on 22 June 2013, When the contractor was performing some piping installation work inside the Merryl Crowe plant, cyanide solution sprayed through a failure in an adjacent pipeline, splashing on the faces of 2 workers. Both were using full PPE. Both incidents were documented in an Incident Report and Investigation form and the Barrick’s tap root system was used to investigate the events.
3.0 SUMMARY AUDIT REPORT

Auditors' Findings

This operation is:

☑ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

This operation has not experienced compliance problems during the previous three-year audit cycle.

With the International Cyanide Management Code.

Audit Company: Golder Associates
Audit Team Leader: Alistair Cadden, Lead Auditor and Gold Mining Technical Specialist
Email: acadden@golder.com

Name of Other Auditors
Adolfo Mesones, Golder (Certified ISO 9001, 14001 and OSHA 18001 auditor)

Dates of Audit
The Certification Gold Mining Operations Verification Audit was undertaken within three days (six person-days) between 21 and 23 October 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 Gold Mining Operations and using standard and accepted practices for health, safety and environmental audits.

Lagunas Norte Gold Mines                ___________________________ June 16, 2013
Name of Facility Signature of Lead Auditor 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 ☐ not in compliance with Standard of Practice 1.1

Summarise the basis for this Finding/Deficiencies Identified:

Lagunas Norte is in full compliance with Standard of Practice 1.1 which requires that the site 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.

From 01 January 2009, Lagunas Norte has bought cyanide from Orica, which was certified as fully compliant with the code 28 November 2006 and recertified as code compliant on 17 March 2010. Orica’s Yarwun plant was recertified as fully compliant again in 29 October 2013. Pierina has bought cyanide from a Code compliant manufacturer for the duration of this 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.

☑ in full compliance with

The operation is
☐ in substantial compliance with Standard of Practice 2.1
☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

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

Since 01 January 2009, Lagunas Norte has bought its cyanide from Orica under a cyanide purchase contract which requires that the entire supply chain is fully Code compliant.

Clause 13.1 Orica is responsible for itself and its subcontractors, including transportation, for Code compliance

Clause 13.2 of the NaCN supply contract specifies the requirements for manufacturing, handling, storing, packaging labelling, transporting and emergency response to be compliant with the Code.

Stiglich Transportes S.A. has been fully Code compliant for the duration of this recertification period.

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

☑ in full compliance with

The operation is
☐ in substantial compliance with Standard of Practice 2.2
☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

Lagunas Norte is in full compliance with Standard of Practice 2.2 which requires that the operation require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.

Since 01 January 2009 the cyanide supply contract for the mine has been with Orica. The cyanide supply contract requires that the supply chain be certified as fully compliant under the Code.

Transport from Yarwun to the Port of Brisbane is covered under Orica’s Australia supply chain certification dated 05 October 2010. Stiglich Transportes SA was certified as code compliant 27 May 2010 and recertified 25 November 2013.

The procurement department at Lagunas Norte keeps copies of the relevant documentation of the supply chain from Yarwun to the mine site which demonstrates that cyanide is delivered to site via a Code certified supply chain and this documentation was made available to the auditors.
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.

☑ in full compliance with

☐ in substantial compliance with Handling and Storage Practice 3.1
☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 3.1. The unloading, storage, and mixing areas were designed and constructed with sound engineering practices, as determined by the initial certification audit in 2007, and there have been no changes since that time. The unloading, storage, and mixing facilities are located well inside the secure mine area and away from any occupied offices for mine staff. These facilities have been maintained in good working and order as verified by auditors inspection. Likewise, these facilities are located away from surface water. Lagunas Norte does not receive liquid cyanide and thus there is no possibility of leakage from tanker trucks and subsequent seepage. The mixing and storage tanks have automatic level indicators and shutoffs, and the mine provided graphical examples of their performance. The mixing and storage tanks are located on a concrete floor with curbs, both in good condition, that provide a barrier to leakage and seepage. The solid cyanide is stored in a warehouse that prevents water entry and allows for passive ventilation via windows. Likewise, the mixing and storage room in the plant protects against water entry and is actively ventilated by a blower and wall fan. Both the warehouse and mixing/storage room are within the secured area of the mine and are kept locked. No incompatible materials are stored near these the unloading, storage, and mixing areas.

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

☐ in substantial compliance with Handling and Storage Practice 3.2
☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 3.2. Cyanide containers are rinsed and then incinerated with procedures governing these operations, and completed forms showing their continuous use. Lagunas Norte has developed procedures for operating valves, handling boxes, stacking boxes, cleaning up spills, observing mixing, and using PPE, and has completed forms showing their continuous use.
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.

☐ in full compliance with

☐ in substantial compliance with

☐ not in compliance with

The operation is

Standard of Practice 4.1

Summarise the basis for this Finding/Deficiencies Identified:
The operation is fully compliant with Standard of Practice 4.1. Cyanide solutions and waste streams are managed to protect human health and the environment. Lagunas Norte has numerous reports and standard operating procedures for its cyanide facilities, and these documents identify key design criteria and operating parameters. Lagunas Norte has developed, and used, a change management procedure that also includes formal risk assessment. Lagunas Norte has a set of contingency plans for upset or temporary conditions, including power outages. These documents have been reviewed and updated annually and after the review of any incidents. Lagunas Norte has a set of inspection forms and checklists and completes them on a daily, weekly, and monthly basis, depending on the nature of the inspection. Specifically, the pad, ponds, leak detection sumps, channels, pipes, tanks, valves, and appurtenances are inspected.

Preventative maintenance consists of reactive maintenance, based on items identified in the inspections, and proactive maintenance based on an annual schedule. Lagunas Norte has a new 7.5 MW emergency generating station with a 100 m$^3$ dedicated fuel tank. The generators are inspected and tested regularly.

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

☐ in full compliance with

☐ in substantial compliance with

☐ not in compliance with

The operation is

Standard of Practice 4.2

Summarise 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.

This Standard of Practice is inapplicable because Lagunas Norte uses only heap leach processing.
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Standard of Practice 4.3: Implement a comprehensive water management programme to protect against unintentional releases.

☐ in full compliance with

☐ in substantial compliance with

☐ not in compliance with

The operation is

Standard of Practice 4.3

Summarise the basis for this Finding/Deficiencies Identified:

The operation is in Full Compliance with Standard of Practice 4.3 which requires that the operation implement a comprehensive water management programme to protect against unintentional releases.

Lagunas Norte has developed a comprehensive water balance model that tracks water flow throughout the site-wide engineered water management structures, including water conveyance channels, pipelines, holding ponds, water treatment facilities, and sedimentation ponds.

Lagunas Norte has updated and modified the water balance as the operations have changed. The water balance model is updated every week using data collected onsite. The model is regularly calibrated against actual data and shows a very close correlation.

The leach ponds are generally operated at around 40% capacity. The control systems have intervention triggers when the ponds reach a certain capacity. The pregnant leach solution (PLS) and Process Overflow Pond (POP), have both been extended to 400,000 m$^3$ and 1,015,000 m$^3$ respectively. The cyanide destruction system has a capacity of 600 m$^3$/hr.

Lagunas Norte monitors and inspects a number of key parameters and facilities to ensure the safe management of the water balance at the site. Such installations include flow meters for irrigation of the leach pile and pond level indicators, which have readouts and alarms in the plant central control room.

Lagunas Norte actively manages the site water balance, updating it each week with site collected rainfall data. The Goldsim model is run to predict pond volumes based on historic data to enable the operation of the pond levels and solution application rates to be managed safely. This is done in 2 parts:

- Short term pond level prediction on a weekly basis for operational control.
- Medium term done monthly.
- Long term for future rainy season 2013/14 – when pond overflow is indicated by the model the strategy for directing flows to different ponds or recirculating to the leach pad is discussed.

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

☐ in substantial compliance with

☐ not in compliance with

The operation is

Standard of Practice 4.4

Summarise the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 4.4. Lagunas Norte has implemented measures to protect birds, wildlife and livestock. The mine has restricted livestock and wildlife access to the mine with fencing, and has restricted access to open cyanide solutions with closed conduits, bird balls, and netting. Monitoring data for the period from 2011 to 2013 indicated WAD concentrations higher than 50 mg/L, but only in facilities where restrictive measures are present. A single cyanide-related wildlife mortality of a fox

June, 2014

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that fell into the PLS pond was recorded in the period from 2010 to 2013 was reported. The expert system with continuous monitoring of PLS application rates effectively prevents ponding on the active portion of the leach pad, and geomembrane “raincoats” prevent ponding on the inactive portion of the leach pad. Overspray is not an issue because Lagunas Norte uses drip irrigation.

**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
- in substantial compliance with
- not in compliance with

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

The operation is fully compliant with Standard of Practice 4.5. Lagunas Norte has implemented measures to protect fish and wildlife from discharges to surface water. Lagunas Norte has a direct discharge to surface water in the Quebrada Laguna Negra. On six occasions in 2011 and 2012 levels of CN- were detected in samples from compliance monitoring point SWCH-38 in excess of 0.022 mg/L; in each of the cases the sampling records show both previous and subsequent samples to be below the guideline level. Sampling is performed weekly. In 2013 this limit has not been exceeded. The water quality in the receiving waters meets the requirements of the Peruvian General Law on water for a category 3 watercourse, from which the water is suitable of irrigation of vegetables to be eaten raw, and for watering of livestock. There is no evidence of indirect discharges to surface water and therefore no remedial actions are being undertaken.

**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
- in substantial compliance with
- not in compliance with

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

The operation is fully compliant with Standard of Practice 4.6. Lagunas Norte has implemented measures to manage seepage to protect groundwater. There is no designated down gradient beneficial use, nor any actual point of groundwater use, nor any applicable groundwater standard. Nonetheless, Lagunas Norte has lined (i.e., geomembranes, clay, concrete) all cyanide facilities, including the heap leach, process ponds, solution conveyances, and the plant, to reduce the potential for seepage. Groundwater monitoring data from wells down gradient of cyanide facilities indicated non-detect concentrations for all cyanide species for the period from October 2010 to October 2013. Lagunas Norte has neither a mill that produces tailings nor underground workings.
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 ☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 4.7. Lagunas Norte has implemented procedures and physical measures for spill prevention at all cyanide unloading, storage, mixing, and process solution tanks. The physical measures consist of alarms, secondary containments connected to a principal sump, and a Plant Emergency Pond. The secondary containments are sized for 110% of the single largest tank plus precipitation, and the Plant Emergency Pond provides an additional level of tertiary containment. The secondary containments flow to a principal sump that then pumps solutions back into the process circuit. There are no tanks without secondary containment. All pipelines to and from the leach pad are installed in geomembrane-lined ditches. There are no surface water bodies warranting special protection. All pipelines, tanks, and valves are constructed of materials compatible with high pH cyanide solutions, such as HDPE and stainless steel.

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 ☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 4.8 which requires that the operation implement quality control/quality assurance procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

Since the last recertification audit the following cyanide facilities works have been undertaken:

- Leach pad phase 4
- Leach pad phase 5 (in progress)
- Carbon in Column facility

Ausenco-Vector has undertaken the design, specification and construction quality assurance of the leach pad expansion works. Heap Leach Consulting SAC has undertaken the design and specifications for the new CIC plant. ADEMINSA has undertaken quality control testing of the tank and pipework welding.

Constructora Chan Chan SAC has undertaken quality control of the concrete works. EMSERCOM SAC has undertaken the quality control of the mechanical and electrical installations for the new clarifier.

The leach pad expansion has been designed by Vector Peru SAC. The detailed design documents include technical specifications which detail the requirements for the materials and workmanship to be used in construction such as low permeability soil liners, geomembrane liners, concrete and steel reinforcement.

The site retains all CQA records including field notes, sampling records, and test records. The volume of material available onsite fills several filing cabinets.
The CQA reports for the leach pad construction have been prepared by Vector Peru SAC, a respected engineering design company. The report has been signed off by Sean Currie, Technical Services Manager. Sean Currie has a BEng in Civil Engineering from McMaster University, in a registered professional engineer with the Institution of Engineers of Australia, and has 18 years professional experience in the design and construction of similar projects.

**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
- not in compliance with

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

The operation is fully compliant with Standard of Practice 4.9. Lagunas Norte has implemented monitoring programs for wildlife, surface water and groundwater. Monitoring programs are governed by standard operating procedures and monthly schedules. The protocols were prepared by properly qualified consultants and mine staff. Lagunas Norte uses a certified laboratory for chemical analysis. Sampling procedures specify field and laboratory methods, lists of constituents, chain of custody requirements and shipping protocols. Field conditions are documented on field forms by the sampler. Wildlife mortalities are observed and investigated. Surface water is sampled monthly and groundwater is sampled quarterly, and is augmented by daily monitoring of field parameters and flow rates. Additional weekly sampling is undertaken for the purpose of determination of free cyanide levels, although this is not required under their environmental permits.
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.

☑ in full compliance with

☐ in substantial compliance with Decommissioning Practice 5.1

☑ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

Lagunas Norte is fully compliant with Standard of Practice 5.1. The mine has both regulatory (external) and internal closure plans that include cyanide facilities. In addition, Lagunas Norte has a specific procedure for closure, decommissioning and demolition that is regularly updated. The regulatory closure plan contains a general schedule for the sequence and duration of closure activities. The regulatory closure plan was recently approved by the MEM and a new update is not required until 2014. The internal closure plan for Provisions for Environmental Restoration (PER) purposes has been updated annually.

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

☑ in full compliance with

☐ in substantial compliance with Decommissioning Practice 5.2

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

Lagunas Norte is fully compliant with Standard of Practice 5.2. Lagunas Norte has a closure cost estimate based on third-party contractors. This estimate was prepared in accordance with Peruvian regulations. The MEM-approved plan is not required to be updated until 2014, but Lagunas Norte annually updates their internal PER closure costs. Closure bonds have been issued by the Banco de Crédito de Perú on behalf of Lagunas Norte to a total of USD 74.4 million.
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
☐ in substantial compliance with
☐ not in compliance with Worker Safety Practice 6.1

Summarise the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 6.1. Lagunas Norte has identified potential cyanide exposure scenarios and developed procedures and plans to eliminate, reduce and control exposure. Lagunas Norte’s operating plans and individual task specific SOPs provide details for safe operation of cyanide equipment, personal protective equipment requirements and inspection requirements. Lagunas Norte has successfully implemented a program where job safety assessments are completed and documented prior to every cyanide related task. Lagunas Norte has safety meetings to provide information and training to employees as well as solicit input from employees and subcontractors on worker safety issues. Lagunas Norte has a Change Management procedure that requires any proposed changes in process operations and cyanide management be formally evaluated with the area supervisors prior to implementation. All changes are communicated to the workforce and training requirements updated.

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
☐ in substantial compliance with
☐ not in compliance with Worker Safety Practice 6.2

Summarise the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 6.2. Lagunas Norte has established the minimum pH level for limiting the evolution of hydrogen cyanide gas during mixing and production activities. The pH is monitored and maintained as recommended. Lagunas Norte has established requirements for personal protective equipment at all relevant process areas and for all cyanide related activities. Fixed HCN monitors are installed in areas of potential exposure to cyanide. In addition, operators working in areas where cyanide is present are required to wear portable HCN meters to conduct their tasks. Prior to maintenance work or confined space entry, work areas are checked for HCN concentrations with a portable HCN meter. HCN sensors are set at 4.7 ppm low level alarm and 10 ppm high level alarm. HCN monitors are maintained, calibrated and inspected as recommended by the manufacturer. Warning signs are in areas where cyanide is used to alert workers that cyanide is present, that smoking, open flames, eating and drinking are not allowed and that the necessary cyanide-specific PPE must be worn. Pipes carrying cyanide are marked and the direction of flow is indicated with arrows on the pipe. Signage for confined spaces at the tank entry points has also been placed. Lagunas Norte provides the cyanide safety information (MSDS and first aid procedures) at all key process locations and on the Lagunas Norte intranet. Lagunas Norte has implemented an accident investigation process to report and investigate all cyanide related 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

Worker Safety Practice 6.3

The operation is
☐ in substantial compliance with
☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 6.3. Lagunas Norte has developed an Emergency Response Plan and implemented the Plan through training and installation of emergency response equipment. Lagunas Norte has safety equipment including safety showers with eyewash stations, first aid equipment (cyanide antidotes, medical oxygen, and resuscitator), two ambulances, and employee first aid training. Lagunas Norte has an Emergency Response Team for all shifts. The team is trained to provide first aid for cyanide exposure including oxygen and amyl nitrite administration (although amyl nitrite is no longer used as an antidote). Lagunas Norte has a program to store and replace cyanide exposure antidotes in accordance with the manufacturer’s requirements at several locations on the property. In the event of a worker exposure, Lagunas Norte will provide onsite first aid. Lagunas Norte has two onsite medical facilities that are always staffed by at least one physician and one nurse. The on-site medical physician will provide intravenous cyanide antidote for treatment of the patient if required. Lagunas Norte has conducted cyanide exposure drills, and tests the relevant emergency procedures annually.
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.

☐ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

The operation is in full compliance with Emergency Response Practice 7.1

Summarise the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 7.1. Lagunas Norte has developed plans and SOPs that address emergency response to potential accidental releases of cyanide. Lagunas Norte plans contain procedures for potential scenarios such as: 1) cyanide intoxication; 2) accidents during cyanide transportation; 3) releases during unloading and mixing; 4) release of cyanide during fires and explosions; 5) pipe, valve or tank ruptures; 6) overtopping of ponds; 7) electrical power outages and pump failures; 8) uncontrolled seepage; 9) failure of the heap leach facility; 10) cyanide spill control and clean-up; and 11) decontamination and emergency evacuation.

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

☐ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

The operation is in full compliance with Emergency Response Practice 7.2

Summarise the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 7.2. The General Emergency Plan has been designed to be implemented entirely by trained, onsite personnel. Lagunas Norte has onsite fire-fighting capabilities, a fully equipped emergency response vehicle, a hazmat vehicle and trained First Responders, firefighters and hazmat personnel. Lagunas Norte emergency response teams are trained to respond to all potential cyanide incidents at the site. Lagunas Norte’s General Emergency Plan has been developed with the involvement and input of its workforce. Lagunas Norte’s workforce has the ability to participate in the emergency response planning process through weekly safety meetings and mock drills. Lagunas Norte involves site personnel in mock drills and revises the emergency response procedures as needed.
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 ☐ not in compliance with

Emergency Response Practice 7.3

Summarise the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 7.3. Lagunas Norte has committed, in the General Emergency Plan, Pre Plans and training SOPs, the necessary emergency response equipment and first aid to manage all cyanide incidents at the operation and to coordinate transportation to the nearest medical facilities. Lagunas Norte has certified First Responders and Brigade Members including firefighters and hazmat personnel. Lagunas Norte’s General Emergency Plan defines the primary and alternative response coordinators, including Incident Commanders and the establishment of the Incident Commander Team. The plan contains a list of onsite emergency responders, the ambulance service and the local medical providers. Lagunas Norte requires training and certification for Emergency Responders, including advanced first aid (cyanide exposure, administering antidote, locations of cyanide antidote kits, medical oxygen); Hazardous Materials Level I, II, and III; confined spaces; firefighting and others. The plan includes radio channel, office and 24 hour cell phone telephone numbers for the Emergency Response Team and Commanders. The plan has a section describing Lagunas Norte Personnel Duties and Responsibilities for the Incident Commander and Manager Succession. The plan also details the responsibilities of the Loss Control and Environmental Departments. The plan contains a list of emergency response equipment. All emergency equipment and supplies are inspected on a regular basis by safety and emergency response personnel.

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 ☐ not in compliance with

Emergency Response Practice 7.4

Summarise the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 7.4. Lagunas Norte’s General Emergency Plan and related facility plans detail the procedures (including current contact telephone numbers) for internal and external emergency notification and reporting.

The General Emergency Plan includes procedures and current contact information for notifying management, regulatory agencies (DIGESA, Ministry of Energy and Mines, Ministry of the Environment, Civil Defense, Labour and others), Cyanide supplier and transporter (Orica and Stiglich), National Police of Peru, off-site medical facilities, the media, and other stakeholders. The General Emergency Plan and the Chuyugual River Basin Evacuation Plan include communication procedures as well as contact information for community representatives in the nearby areas. Media communication procedures are also included in the plan.
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 ☐ not in compliance with Emergency Response Practice 7.5

Summarise the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 7.5. Lagunas Norte has prepared cyanide response and remediation plans that address appropriate uses and situations for cyanide treatment chemicals. All contaminated soils are to be excavated, loaded, hauled and disposed of in the heap leach facility. Liquid spills are to be contained by perimeter berms and returned to the process facilities.

Lagunas Norte prohibits the use of sodium hypochlorite or other chemicals to treat cyanide that has been released into surface waters. Sodium hypochlorite is only to be used in cases where the solution is fully contained on site and will not enter surface waters. Lagunas Norte has developed plans to sample and monitor soils and water to identify the extent and effect of a cyanide release. Spill management procedures describe what final cyanide concentration will be allowed in residual soil as evidence that the release has been completely cleaned up.

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 ☐ not in compliance with Emergency Response Practice 7.6

Summarise the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 7.6. Lagunas Norte has committed to annual evaluation and update of the General Emergency Plan, if needed based on review of the incidents and drills.

At least once per year Lagunas Norte conducts cyanide related mock drills to practice and prepare for emergencies and to provide insight into the effectiveness of its emergency response plans. Lagunas Norte has conducted three cyanide related mock drills since the 2011.
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

☐ in substantial compliance with

☐ not in compliance with

Training Practice 8.1

The operation is

Summarize the basis for this Finding/Deficiencies Identified:

Lagunas Norte 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.

Lagunas Norte provides training to all employees, contractors and visitors with the potential to be exposed to cyanide, on the hazards of cyanide and provides annual refresher training. Lagunas Norte retains all cyanide training records for employees. The cyanide related performance assessment tests are also retained in employee permanent records.

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

☐ in substantial compliance with

☐ not in compliance with

Training Practice 8.2

The operation is

Summarize the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 8.2. All personnel in job positions that involve the use of cyanide and cyanide management (including unloading, mixing, production and maintenance) receive training on how to perform their assigned tasks with minimum risk to worker health and safety. Individual training is provided for each specific task an operator will perform related to cyanide management. Task specific SOP training is provided prior to working with cyanide independently. The SOPs include the purpose of the SOP, the process description, task description, the PPE required, potential emergency scenarios, emergency communication procedures, and others.

All task-specific training is conducted by individuals that have undergone the “Effective Communications” course provided by the Pontifical Catholic University of Peru and have several years working in the process area. Lagunas Norte's training program identifies the specific cyanide management elements that each employee must be trained in to perform that specific job properly. All Lagunas Norte employees and contractors, with the potential to be exposed to cyanide, receive annual refresher training that includes cyanide safety. Lagunas Norte employees working in specific cyanide management tasks receive annual refreshers for those tasks. Lagunas Norte requires written tests to evaluate the effectiveness of cyanide training and those training records are retained throughout an individual's employment, documenting the training received. The records include the name of the employee and the trainer, the date of training; the topics covered, and test results demonstrating an understanding of the training materials.
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 Training Practice 8.3

☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:

The operation is fully compliant with Standard of Practice 8.3. Personnel responsible for unloading, mixing, production, and maintenance are trained in decontamination and first aid procedures for cyanide release incidents. Task specific SOPs, the General Emergency Plan and Pre Plans describe response procedures and first aid if a person is exposed to cyanide or if there is an environmental release. Lagunas Norte emergency response team (including Emergency Coordinators) is trained in the procedures described in the emergency response plans and the use of necessary response equipment. Lagunas Norte response personnel receive annual refresher courses in first aid for cyanide intoxication, cyanide emergency response, safety cyanide management, and decontamination and remediation procedures for cyanide related exposures and releases.

Lagunas Norte conducts mock emergency drills based on likely release/exposure scenarios. Cyanide emergency drills are evaluated from a training perspective to determine if personnel have knowledge and skills required for effective response. Training procedures are revised, if necessary.

Training records are retained throughout an individual's employment documenting the cyanide training they receive. The records include the names of the employee and the trainer, the date of training; the topics covered, and test results demonstrating an understanding of the training materials.
PRINCIPLE 9 – DIALOGUE
Engage in Public Consultation and Disclosure

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

☒ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:
Lagunas Norte is fully compliant with Standard of Practice 9.1. Lagunas Norte provides multiple opportunities to third parties and to local residents to communicate issue of concern with mine staff. Lagunas Norte manages these opportunities under an SOP with mine staff trained in its use. Lagunas Norte has documented a high level of participation in the three year period for recertification.

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

☒ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:
Lagunas Norte is fully compliant with Standard of Practice 9.2. Lagunas Norte provides multiple opportunities to interact with stakeholders and to provide them information regarding cyanide management. In addition to the opportunities listed previously under Standard of Practice 9.2.1, Lagunas Norte distributes a variety of pamphlets and bulletins to the public with information regarding cyanide management. Lagunas Norte regularly issues press releases containing general environmental information, including cyanide use. In 2012 Lagunas Norte implemented an information service via Radio Shulcahuana, ‘Comunicándonos’.

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

☒ in full compliance with
☐ in substantial compliance with
☐ not in compliance with

Summarise the basis for this Finding/Deficiencies Identified:
Lagunas Norte is fully compliant with Standard of Practice 9.3. Lagunas Norte continuously makes information regarding cyanide activities available in a variety of written, verbal, and visual formats for different levels of education and ages. Specific information on exposures and releases is required to be reported to the Ministry of Energy and Mining, and is publically available at the MEM website. Barrick also voluntarily makes this information available at their website.
Como una organización global, de propiedad de sus empleados y con más de 50 años de experiencia, Golder Associates se guía por nuestro propósito de aplicar la ingeniería para el desarrollo del mundo preservando la integridad de la Tierra. Ofrecemos soluciones que ayudan a nuestros clientes a alcanzar sus objetivos de desarrollo sostenible, brindándoles una amplia gama de servicios independientes de consultoría, diseño y construcción en las áreas de especialización del terreno, el medio ambiente y la energía.
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