

INTERNATIONAL CYANIDE MANAGEMENT CODE
GOLD MINING OPERATION RECERTIFICATION AUDIT
NEVADA GOLD MINES – CORTEZ DISTRICT
SUMMARY REPORT

Submitted to:

*Nevada Gold Mines
Cortez District
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Nevada USA
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and

*International Cyanide Management Institute
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Submitted by:



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Revision: October 20, 2020

**NEVADA GOLD MINES – CORTEZ DISTRICT
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1. INTRODUCTION, SUMMARY, AND ATTESTATION

This summary report has been prepared to meet the requirements and intentions of the International Cyanide Management Institute (ICMI) to demonstrate that following named project has met the obligations in implementing the International Cyanide Management Code (Code).

Name of Project: Cortez District

Project Owner / Operator: Nevada Gold Mines

Name of Responsible Manager: Henri Gonin, General Manager

Address and Contact Information: Nevada Gold Mines
Cortez District
HC66 Box 1250
Crescent Valley
Nevada USA

Audit Company: Environmental Resources Management (ERM)

Audit Team:

Lead Auditor: Glenn Keays, MSc, EP(EMSLA)
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Gold Mining Technical Expert Auditor: Joe Driscoll
Email: joe.driscoll@erm.com

Date of Audit: This recertification audit was conducted February 10 -12, 2020.

Auditors Findings:

	<input checked="" type="checkbox"/>	in full compliance with	
NGM Cortez is	<input type="checkbox"/>	in substantial compliance with	International Cyanide Management Code
	<input type="checkbox"/>	not in compliance with	

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

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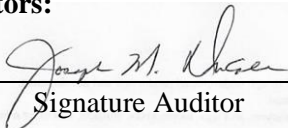
Attestation:

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 Mine Operations and using standard and accepted practices for health, safety and environmental audits.

<u>Glenn Keays</u> Name of Lead Auditor	<u></u> Signature of Lead Auditor	<u>Oct. 20, 2020</u> Date
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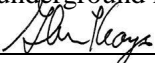
Name and Signature of Other Auditors:

<u>Joe Driscoll</u> Name of Auditor	<u></u> Signature Auditor	<u>Oct. 20, 2020</u> Date
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2. LOCATION AND DESCRIPTION OF MINING AND MILLING OPERATION

The Nevada Gold Mines Cortez (NGM or Cortez) gold mine is located 78 kilometers southwest of Elko, Lander County, Nevada; and approximately 30 air-miles southeast of Battle Mountain, Nevada. More specifically, the mine is within Sections 28, 29, 30, 31, 32, and 33, Township 28 North, Range 47 East; and Sections 4, 5, and 6, Township 27 North, Range 47 East, Mount Diablo Baseline and Meridian. The Cortez Pipeline property is 11 kilometers northwest, and the Cortez Pediment property (which includes the Cortez Hills deposit) is 4 kilometers southeast of the original Cortez milling complex. The Pipeline and South Pipeline deposits are mined by conventional open-pit methods. The Cortez property covers approximately 2,800 square kilometers on one of the world’s most highly prospective mineral trends. In 2016, Cortez purchased the Robertson Mine which is located 4 miles north of the Pipeline Mill. The intent is to develop a shallow open pit property with production to commence 2022 to approximately 2029.

Cortez employs three different metallurgical processes to recover gold. Lower-grade oxide ore is heap leached, while higher-grade non-refractory ore is treated in a conventional mill using cyanidation and a carbon-in-leach (“CIL”) process. In addition, minor amounts of refractory ore is stockpiled and transported off-site for processing. Heap leached ore is hauled directly to leach pads for gold recovery. Carbonaceous mill ore is mined intermittently during the mining of the Pipeline and South Pipeline deposits. The Cortez Hills underground mine is accessed by twin declines that portal in the old Cortez Gold F canyon pit. The breccia ore zone employs underhand cut and fill mining methods with cemented rock fill as backfill. The top cut of the underground mine will eventually be the bottom bench of the

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Cortez Hills open pit. In the first eleven months of 2016 (up to November 28, 2016), the mine had produced 938,761 ounces of gold. Typical amounts produced in 2015 and 2014 were 1.0 million ounces of gold per annum.

The Cortez Mine’s ore bodies extend beneath the pre-mining water tables; therefore, dewatering of the host rock and alluvium must be performed in advance of mining. The pit is currently dewatered at rates of approximately 22,000 to 27,000 gallons per minute (gpm), with a peak permitted rate of 34,500 gpm, by a system of ten deep bedrock wells, and seven alluvium wells, with an average cased depth of 1818 feet and 904 feet, respectively. The Cortez pit/UG is currently dewatered at rates of 9,000 to 12,000 gpm by a system of 25 pumping wells in a variety of hydrogeological formations of varying depths. As a whole, Cortez dewatering has a peak permitted pumping rate of 36,100 gpm. The wells discharge to a collection pipeline systems that connect to the Pipeline Infiltration Project infiltration-sites where water percolates into unsaturated alluvium, which is subject to Water Pollution Control Permits. Water quality monitoring has confirmed that the dewatering circuit is separate and distinct from the cyanide processing circuit.

The Cortez Mine Pipeline project consists of an open pit with an associated dewatering system, waste rock dumps, two heap leach facilities, two carbon-in-column (“CIC”) facilities, a CIL facility (Mill #2), refinery, and a tailings impoundment. The heap leach and tailings disposal facilities are located in two areas known as Area 28 and 30.

Area 28 facilities consisted of a CIC facility, a pregnant solution pond, a reclaim/barren solution pond, a storm water event pond, and out of service ancillary support facilities to process heap solutions. This area was decommissioned in 2018 and all cyanide related equipment removed. The Area 28 ponds are maintained for water management whereby there is a constant drain down from formerly active Cells 1 and 2 and water pumped from Cell 4. The leach pond now serves as an evaporative pond and contributes to the overall site water management. The decant water pipeline from the tailings decant pond continues to report back to Mill #2 for reuse. In addition, the tailings internal underdrain system collects and manages solution from the consolidating pond, a storm water event pond, and a CIC recovery facility.

All the heap leach and tailings facilities have been constructed with composite HDPE geomembrane and compacted low permeability soil liners. The process water ponds all are constructed with double HDPE geomembrane liners, and leak collection and recovery systems. The Mill #2 facility employs a CIL process, storage tanks, thickeners, a refinery, mercury scrubber, secondary containment systems, associated appurtenances, and all sumps, pumps and piping necessary to interconnect the components. The Mill #2 facility also includes the Plant Spill Pond (PSP) for spill control. Loaded carbon from the two CIC units is hauled to the Mill #2 facilities for processing. Although the bulk of the processing is done on-site, a relatively small amount of carbonaceous ore is shipped off-site for processing at NGM’s Goldstrike Mine. The operations are designed, permitted, and operated as zero-discharge facilities. Approximately 1250 workers are employed at the Cortez mine.

Cortez has three cyanide unloading and storage tank areas: (1) Mill Building; (2) Area 30 Leach; and (3) Area 34 Leach, which was constructed in 2012. The Mill cyanide storage tank is 15 feet in diameter and 20 feet high; Area 30 has two cyanide storage tanks each 12 feet in diameter and 20 feet high; and Area 34 has two cyanide storage tanks each 13 feet by 20 feet. The unloading and storage areas are located away from public access and no surface water bodies are nearby. The storage tank areas and the cyanide

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unload areas are designed and constructed to contain and recover any leakage from the tanks and the tanker trucks.

Cortez receives liquid sodium cyanide in specially engineered tanker trucks from Cyanco located in Winnemucca, Nevada. Sodium cyanide is delivered by TransWood. Both Cyanco and TransWood are signatories to the Code and have been certified as compliant with the Code by third-party auditors.

Cortez stores and manages sodium cyanide in engineered tanks, pipelines, and lined ponds that have had appropriate quality control and quality assurance. Cortez workers are trained in cyanide hazards and first aid, first response, emergency response, and specific operational task training. Cortez facilities are fenced to preclude wildlife and livestock from entering cyanide process areas. Cortez conducts daily, weekly, and monthly inspections to ensure that facilities are functioning as designed and to monitor process solutions. Preventive maintenance programs are in place to assure continuous operations. Cortez has approved closure and reclamation plans along with financial assurance to complete the appropriate management of cyanide solutions and solids, and the decontamination of cyanide pipelines and equipment.

Cortez has a comprehensive environmental monitoring program to evaluate the performance of the ore processing facilities and containments. The monitoring program includes daily monitoring of pond leak collection systems, quarterly sampling and analysis of groundwater and surface water, and quarterly sampling and analysis of tailings supernatant ponds. Wildlife monitoring is conducted per shift by the operators during facility inspections.

Cortez has an emergency response team that is trained to respond to on-site fires, chemical spills, and worker exposures to cyanide. Cortez works with local community emergency services to assure that adequate resources are available to address both off-site and on-site emergencies.

Upgrades to Cortez’s cyanide management facilities since the 2017 recertification include:

- Decommissioning and removal of Area 28 cyanide unloading and storage facility;
- Replaced open collection ditches with enclosed piping at Area 30 heap leach facility (eliminates the need for bird netting and uses a percolation system) and
- Mill 2 Cyanide pump and valve change project completed in 2018.

The Cortez operation was found to be in Full Compliance with the International Cyanide Management Code; and this operation has not experienced compliance problems during the previous three-year audit cycle.

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3. SUMMARY AUDIT REPORT

PRINCIPLE 1 - PRODUCTION

Encourage responsible cyanide manufacturing by purchasing from manufacturers who 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

Basis for Audit Finding:

Cyanco, located in Winnemucca, Nevada, has been the cyanide producer and supplier for Cortez for the term of the 2020 Recertification Audit – 2017 through 2019. The contract between Barrick Gold of North America (Barrick), which includes the Cortez operation by reference, and Cyanco was signed in May 2008 and became effective January 1, 2009. The contract states that Cyanco shall comply with ICMC's "Principles and Standards of Practice" during the manufacture, transportation, storage, use, and disposal of the product (cyanide) and the supplier shall only deliver product (cyanide) produced in an ICMI Code certified facility."

Cyanco's Winnemucca Production Plant is a Code certified operation as reported on the ICMI website: originally certified October 11, 2006, and has maintained certification through to the most recent recertification in 2019.

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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.*

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

Basis for Audit Finding:

Cyanco's production facility was certified as compliant by the IMCI on October 11, 2006, and has maintained certification through to its most recent recertification in 2019.

Cyanco uses TransWood as the only transporter of cyanide from their production operation to Cortez. TransWood is a signatory to the Code and Code certified TransWood was originally certified in October 11, 2006, has maintained certification through to 2019 and is considered a fully certified transporter.

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


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

Basis for Audit Finding:

The cyanide supply contract with Cyanco requires Cyanco to comply with the "Principles and Standards of Practice" of the International Cyanide Management Code during the manufacture, transportation, storage, use and disposal of Product (cyanide). Compliance with the Code requires that the supplier and transporter to conform to specific compliance matters set out in the Code's Cyanide Production and Cyanide Transportation Verification Protocols. These Verification Protocols specifically address packing, labeling, storage, transportation routes, unloading and other requirements transportation requirements.

The NGM (Cortez)-Cyanco contract requires that Cyanco, the Seller, to ensure there are written agreement(s) with Subcontractor(s) that clearly designate specific responsibilities for safety, security, release prevention, training and emergency response in transporting and handling cyanide between Cortez and Cyanco.

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The cyanide supply contract between NGM and Cyanco specifies that NGM takes ownership of the product at the time the liquid cyanide is delivered into the cyanide storage tank at the mine site. Cortez has Bills of Lading showing that Cyanco and TransWood are the sole suppliers and transporters of the cyanide.

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.*


The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 3.1**
 not in compliance with

Basis for Audit Finding

Cortez has three cyanide unloading and storage tank areas: Mill Building (Mill); Heap Leach Area 30 (Area 30); and Heap Leach Area 34 (Area 34). Since the 2016 Recertification Audit, Area 28 has been decommissioned and the cyanide storage system has been removed.

Cyanide storage tanks include one 26,400 gallon tank at the Mill; two 15,000 gallon tanks at Area 30; and two 20,000 gallon tanks at Area 34. The Mill cyanide storage area concrete containment is measured at less than 110 percent; however, the tank is maintained at the 96 percent level that provides assurance there is 110 percent storage capacity in the secondary containment. The Area 30, and Area 34 cyanide storage tank containment areas drain to adjacent barren ponds and are therefore sized appropriately for 110 percent containment. The Area 30, and Area 34 containments drain to adjacent ponds. These unload pads are adequate barriers to prevent seepage to the subsurface. The containments were all inspected for integrity during the 2020 Recertification Audit, and all appeared to be in fair condition. Some minor cracking was noted at the containment transfer areas, and these have been slated for repair when the weather permits.

The facilities for the unload and storage of cyanide have been designed and constructed in accordance with sound and acceptable engineering practices. The design and construction of the cyanide unload and storage facilities including piping have been completed appropriately as documented in final design and construction drawings prepared and stamped by a licensed engineer. The drawings include concrete and reinforcing layout, concrete elevations and section, steel fabrication details, liquid cyanide storage fabrication details, equipment and piping layout and elevations, piping details, and cyanide supply piping

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to barren strip area and are maintained on site.

Cyanide storage tanks have level indicators and high level alarms that prevent overfilling.

Cyanide storage tanks are located on concrete pads and within concrete curbed containment that prevent seepage to the subsurface. Cortez has an inspection and preventative maintenance program for identification and patching of cracks. Inspection records and repair work were reviewed and found to be in order. A recent inspection identified some cracking of the concrete and the repair work was completed once the weather permitted.

The three cyanide unloading and storage tank areas (at the Mill, Area 30, and Area 34) are located away from public access and no surface water bodies are nearby. No food is allowed in the vicinity and smoking is 100% prohibited in these areas. All areas are properly signed and all personnel are required to remove their PPE before entering into any lunch room area and to wash their hands before eating. There are no other tankage in the associated areas such as acid that would pose any concerns.


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

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 3.2**
 not in compliance with

Basis for Audit Finding:

Cortez and the cyanide supplier have developed standard operating procedures (SOPs) to prevent exposures and releases during cyanide unloading. The procedures cover the responsibilities for the transporter and the Cortez operator. The “Cyanco Sodium Cyanide Delivery” SOP includes detailed information on the operation of valves and couplings during an off-loading procedure.

Cortez’s cyanide offload procedures describes requirements for video monitoring from the Mill control room (or use of a designated person when the video system is not working), continual radio contact, checking the beginning tank levels, referencing the MSDS, and conducting a field level risk assessment prior to commencing work. Requirements for PPE are also listed in the procedure. Cortez only receives liquid cyanide in tank trucks, and therefore waste management of used packaging or empty drums is not a concern. There are no mixing facilities on-site.

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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 utilizing contingency planning and inspection and preventive maintenance procedures.

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 4.1**
 not in compliance with

Basis for Audit Finding:

Cortez has developed a series of SOPs and Operating Plans that defines the policies, procedures and responsibilities for compliance with the Code, including inspection and preventive maintenance requirements. Plans and SOPs cover the safe operation of the entire cyanide management facilities including detail for the specific task operating procedures.

Cortez has a Management of Change (MOC) Procedure. The procedure includes minimum standards to ensure changes that potential impact to safety, health, and environment or productivity are identified, assessed, managed, and appropriately communicated to all affected personnel. Prior to a change implementation, notification of the approved change is communicated allowing necessary training.

Cortez conducts inspections on a daily shift and weekly basis. These inspections are documented in shift log books and on inspection forms. The documentation includes the name of the inspector, date, and observed deficiencies. Identified deficiencies are flagged by shift supervisors for work orders through the maintenance program. These inspections cover all the cyanide facilities (including freeboard monitoring in ponds and TSF) and are sufficient to assure and document that they are functioning within the design parameters. Cortez utilizes a computer based system (Oracle®) for identifying, assigning responsibility, scheduling, and tracking the completion of the preventive maintenance activities. The Oracle® system identifies future activities for regular preventive maintenance and includes information on the task requirements and completion. The preventive maintenance program includes all elements necessary for cyanide safety at Cortez (e.g., HCN monitors, pH probes, cyanide pumps, back-up generators, storage tanks, level indicator alarms, secondary containment cracks and others).

Cortez has prepared process fluid and tailings management plans in conjunction with the applications for Nevada Water Pollution Control Permit (WPCP) NEV93109 and NEV 2007106 permits. Operating strategies to cover normal, emergency and upset operating conditions for the heap leach operations and the tailing facilities are incorporated in the permits and attendant documents.

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Cortez has emergency power generators to operate critical functions during power outages for the Mill, Area 28 (pumping systems), Area 30, and Area 34. Operating plans have been developed that include specific instructions on the critical components to be maintained during power outages. Three 1.6 MW diesel generators are located at the Mill Building. Area 34 has three 2500 KW standby generators. The generators are tested monthly and maintained as required. The preventative maintenance schedule and requirements for the generators are tracked through the Oracle® system and include annual oil changes and maintenance.

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

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 4.2**
 not in compliance with

Basis for Audit Finding:

Cortez operates automatic titration at the Mill CIL, Area 34 and Detox, and routinely conducts manual titrations to verify the accuracy of the systems. Cyanide is added in the grind surge tank at a specific target rate to achieve a sodium cyanide value of less than 0.15 pounds NaCN per ton of solution at the tailings outflow from CIL tank #8 (the last tank in the circuit). Differing ore types are evaluated prior to processing, usually at least one year ahead of processing to assess consumption rates. The mill is notified by the Geology Department of upcoming host rock changes to initiate grind recovery and cyanide consumption tests. These tests are column leach tests and 48-hour bottle rolls, where cyanide consumption in pounds per ton (lbs/ton) is calculated along with grind time and size. In general, all of the Cortez ores are similar in chemistry and amounts of potential cyanide consuming parameters such as copper and sulfur. As long as the new ore type falls within the general operating parameters then no changes are required. Cortez targets a cyanide concentration rate of 0.3 to 0.5 pounds per ton ore (lbs/ton) sodium cyanide in the grind surge tank. The daily target fluctuates depending on the actual consumption rate as determined by measurements from the CIL tank #8. Establishing optimal operational parameters was reviewed with metallurgy personnel during the 2020 Recertification.

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

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 4.3**
 not in compliance with

Basis for Audit Finding:

Cortez has developed a comprehensive water balance for the Plant Site, including the Pipeline Tailings Impoundment, Area 28, and Area 30, and 34 Heap Leach facilities, and associated pond network. The original model was developed in 2015 for the Tailings Storage Facility (TSF) / Area 28 with separate models for the heap leach facilities. This was combined into a single model for the entire site in 2016 (Golder Associates). The water balance is a probabilistic model calibrated to actual site conditions, and set up to evaluate “what if” scenarios, including probabilistic analysis of the precipitation and ore moisture content. The model is set up to evaluate the 24-hour drain-down event, and the 100-year and 24-hour storm event.

There is also a scenario component to the model that was added which allows process scenarios such as process changes, pump failures etc. to be modelled which adds usefulness for operational decisions.

The 24-hour 100-year flood model was run during Recertification and also reviewed the data input sheets to assess the models applicability to Cortez.

The Cortez inspection and monitoring programs require daily measurement of water levels in the process ponds. The Area 34 operations consist of two solution ponds designed with a 2 foot freeboard. Pond solution levels are monitored daily by operating personnel to ensure the pond levels do not exceed specified freeboard limits. Additionally, the solution level is tracked through a telemetry system monitored in the control room at the Mill. Area 30 has three process ponds that are monitored by telemetry at the Mill. In addition, Cortez presents piezometer data for the Tailings Storage Facility in quarterly reports to NDEP. The water balances are updated on an ‘as needed basis’ to support tracking and evaluation of the system to prevent overtopping and discharge.

The Cortez tailings and heap leach facilities are designed and operated with adequate freeboard above the operating levels and contain sufficient design storm containment capacity. The process ponds are operated with a freeboard sufficient capacity to provide for the flows from a 100 year storm and a total power outage. This results in an operational freeboard of 6 to 8 feet in the ponds.

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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.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 4.4**
 not in compliance with

Basis for Audit Finding:

Cortez has implemented several different measures to restrict access by wildlife and livestock to open solutions containing cyanide. These measures consist of: (1) Perimeter fencing around operation areas; (2) Netting on heap leach solution conveyance ditches at Area 30 (partially converted to pipe—project ongoing; Area 34 conveyance is per a pipe); (3) Bird ball floating covers on all process ponds; (4) Eight foot high chain link fencing around the process areas; and (5) Cyanide destruction of the tailing slurry discharge to keep weak acid dissociable (WAD) cyanide concentrations below 50 mg/L in the spigot discharge and the decant pond area.

The 2020 Recertification Audit included review of 2017-2019 inspection reports showing that CN concentrations from the Detox operation were below 50 mg/l. A visual inspection of all facilities confirmed that protection measures were maintained.

Cortez’s cyanide detoxification practices are effective in preventing wildlife mortality on the open water in the spigot discharge and supernatant pond and there were no mortalities related to cyanide facilities during the recertification period.

The Cortez operation applies leach solutions in a manner designed to prevent ponding, overspray, and runoff. Cortez has changed its spray system to a drip system to reduce ponding in the leach cells. In addition, Cortez has developed SOPs to address potential ponding on the heap leach pads and ramp drainage. The SOP “Ponding on Leach Pad” provides a definition of significant ponding, outlines operational requirements to maintain dripping within the lined area (permitted up to 0.05 gallons per hour), and inspection requirements of ramp for drainage inside and outside the ditched lined facility. Additionally, this SOP includes corrective measures if ponding is discovered. Water bars (to prevent leach solution run off) constructed on haul roads to the heap leach pads were observed during inspections of the heap leach areas during the 2020 Re-certification Audit. Excessive ponding was not observed during the Recertification.

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

- The operation is**
- in full compliance with**
 - in substantial compliance with **Standard of Practice 4.5**
 - not in compliance with

Basis for Audit Finding:

Cortez does not have any indirect discharge of cyanide solutions to surface waters. Cortez operates with zero discharge of process solutions. Cortez conducts monitoring of the seepage collection systems and leak detection systems to evaluate the integrity of these systems.

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

- The operation is**
- in full compliance with**
 - in substantial compliance with **Standard of Practice 4.6**
 - not in compliance with


Basis for Audit Finding:

Cortez has implemented solution management and seepage control systems to protect groundwater below and down gradient of the operation. There are also groundwater monitoring wells surrounding the ponds which are reviewed on a quarterly basis and reports sent to the regulatory Agency. The review of monitoring data for 2017-2019 indicates Cortez has not caused cyanide concentrations in groundwater to rise above levels protective of beneficial use. Cortez uses 0.2 ppm WAD cyanide as a reference standard for groundwater based on federal drinking water standards.

The beneficial uses of groundwater in the region around the mine are irrigated agriculture, ranching, industrial (i.e., mining), and drinking water. However, the beneficial uses of groundwater at the mine is as a water supply for processing.

The cyanide facilities are designed for zero discharge to both surface water and groundwater in accordance with NDEP regulations and Department of Interior Bureau of Land Management (BLM) Cyanide Management Policy and have all been constructed with impermeable containment systems or liners to prevent seepage.

All pipes, tanks, and other facilities at the Mill which convey process fluids containing cyanide are located within containment areas. Sumps within containment areas collect any spilled solution for return to the

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process.

The tailings impoundment is a fully lined facility with a liner system comprising of smooth, 60-mil HDPE synthetic primary liner placed over a minimum of 24 inches of clayey, second liner material.

Area 28 heap leach facility has a liner system consisting of a 60-mil HDPE synthetic primary liner placed over a 12-inch thick low hydraulic conductivity soil layer secondary liner. This Area has not been used as a Heap Leach facility during the recertification period and is considered inactive. Associate Cyanide equipment have been decommissioned, but the area is still use for water management.

The Area 30 heap leach facility is constructed of either 60-mil or 80-mil HDPE liner placed over 12-inch thick low hydraulic conductivity soil layer (the 60-mil HDPE liner is used where the heap leach stacking height will not exceed 150 feet; and the 80-mil liner is used where the heap leach stacking height is approved for 300 feet.)

Area 34 Heap leach pads are constructed with a composite liner system comprised of a single layer of 80-mil double-textured HDPE geomembrane placed on a 12-inch thick Low Hydraulic Conductivity Soil Layer (LHCSL).

Process components are equipped with leak detection systems. Leak detection systems are monitored on a regular basis.

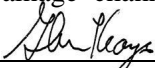
Review of the Cortez environmental monitoring data (2017-2019 Quarterly Reports for WPCP NEV93109) indicates that the operation had either no detectable WAD cyanide (i.e. <0.01 mg/L) or very low concentrations (i.e. less than 0.05 mg/L).

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

- The operation is**
- in full compliance with**
 - in substantial compliance with **Standard of Practice 4.7**
 - not in compliance with

Basis for Audit Finding

Cortez has spill prevention and control systems for the cyanide offload areas, the associated storage tanks, and CIL and CIC tank process areas. Area 30, Mill, and Area 34 offloading pads are constructed of cast-in-place reinforced concrete with curbed containments that report to sumps for return to the process. The Mill cyanide storage tank secondary containment system consists of concrete walls, approximately 7 feet high. Area 30 has two cyanide storage tanks that are located on a concrete curb and a drainage channel is provided to the barren pond for tertiary containment. The CIL/CIC/DETOX tank process areas have containment areas constructed of reinforced concrete. Area 34 has two cyanide storage tanks located in a reinforced concrete containment area with a drainage channel that allows for any excessive spillage (spillage

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exceeding the capacity of the sump pump) to flow through the process building to the barren pond. Cortez has automated pumps with level controls within the containments to pump collected solutions into the process circuits.

The secondary containment for the three cyanide storage areas are constructed of cast-in-place reinforced concrete constructed with sumps that report to the process facilities. Additionally, the Mill 2 cyanide storage containment drains into the CIL containment and is an open air facility; and, the Area 30 and Area 34 containments drain to adjacent ponds. Design and quality control and quality assurance (QC/QA) documentation was reviewed during the Initial Certification Audit to verify the adequacy of the concrete pads. No changes or modifications have been made to the unloading facilities since the last re certification Audit (other than the removal of the Area 28 offloading and storage infrastructure). Spill containment pads for all three locations were resurfaced in 2019.

Cortez has constructed all pipelines with spill prevention and containment measures to collect leaks and prevent releases. The pipelines are constructed either as pipe-in-pipe configuration and/or within lined ditches. The Mill uses a CIL circuit for primary gold extraction; and two CIC circuits are used for recovery of gold from clarified overflow solution and heap leach pregnant solution. All pipes, tanks, and other features in the Mill area which convey process fluids containing chemical reagents are located within containment areas. Sumps within containment areas collect any spilled solution for return to the circuit(s).

Tailings slurry is transported in a 14-inch diameter HDPE pipe. The pipe is placed between two earth berms, lined with HDPE, in a sloping roadway to the tailing impoundment. In the event of a tailings line failure, slurry is contained between the berms and flow is towards the tailing facility. The reclaim lines from the Area 28 Reclaim Pond to the Mill are also in doubled wall pipe or a containment system. Area 30 heap leach pad piping is either double walled HDPE pipe or is contained by lined system.

Area 34 pregnant solutions (within the heap leach pad) are collected in a series of perforated and non-perforated pipes that discharge to a main collection header located in a lined pipeline channel at the down gradient edge of the pad. The main collection header collects pregnant solution and directs it to the process area.

Cortez uses steel and, HDPE pipelines, and HDPE lined steel which are compatible materials for the conveyance of high pH, cyanide solutions and slurries. Storage tanks are fabricated with epoxy coated steel.

Cortez subscribes to the Barrick Corporate Standard for Tailings and Heap Leach Management (BGC-MI-ST-01). This standard includes criteria for the disposal of waste materials. Essentially, disposal of cyanide contaminated water into the heap leach circuit is permitted provided no other contaminants are present. Accordingly,

There is no storm water from containment areas that is not permitted to be pumped to the environment.

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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.*

- The operation is**
- in full compliance with**
 - in substantial compliance with **Standard of Practice 4.8**
 - not in compliance with

Basis for Audit Finding:

Cortez has implemented and conducted QC/QA programs for construction of all cyanide facilities including the cyanide storage facilities, pipelines, conveyance ditches, process ponds, heap leach facilities and tailings impoundment facilities. QC/QA programs have been implemented for all new cyanide facilities and modifications made to existing facilities since the Initial Certification Audit and subsequent Re-certification Audits.

Cortez has implemented QC/QA programs for all earthworks projects related to tank foundations; compacted subgrades; clay liners; geomembrane liners; and ponds, tailings and heap leach facilities. These QC/QA reports include information on subgrade preparation, grading, soil liner material properties and compaction characteristics, soil liner hydraulic conductivity, leak detection construction, solution collection piping, geomembrane liner seams and testing. The construction documentation includes copies of the field inspection reports, laboratory and field data, construction observations, drawings, and photographs.

Cortez maintains copies of all QC/QA documentation. Select QC/QA documentation was obtained and reviewed for the modifications that occurred since the 2016 Recertification Audit.

As with previous reviews of new construction documentation, review of the construction documentation during the 2020 Re-certification Audit showed that the new construction addresses the suitability of materials and adequacy of soil compaction for earthworks for tank foundations and earthen liners, the installation of synthetic membrane liners used in ponds and leach pads, and for construction of cyanide

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storage and process tanks.

Cortez has retained qualified engineering personnel to review and provide construction verification documentation. The QC/QA reports are stamped by Professional Engineers licensed in the State of Nevada. The QC/QA documents have also been reviewed and approved the NDEP.

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

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 4.9**
 not in compliance with

Basis for Audit Finding

Cortez has written procedures entitled “NGM Cortez Sampling and Monitoring Plan” prepared by the Cortez Environmental Department. This plan specifies the standard operating procedures for process solution and groundwater including sample preservation requirements. Locations of sampling sites and sample parameter lists including cyanide species are also specified. Chain of Custody procedures and shipping instructions are included.

Cortez provides training to inspect for, watch for, and prevent wildlife mortality to all employees with an annual refresher. Each employee is responsible for filing a report should they encounter wildlife mortality. In addition, wildlife mortality inspections are conducted weekly by the Environmental Department.

Cortez conducts monitoring at frequencies adequate to characterize the groundwater, seepage collection systems, leak detection systems, wildlife, and process solutions. Groundwater samples are collected and analyzed on a quarterly basis. The seepage collection systems are sampled on a quarterly basis. The leak detection systems are pumped on a weekly basis and reported as a daily average. The wildlife monitoring is continuous while employees are outside on the property. Process solutions are monitored at least daily and in many cases several times per day.

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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.*

- The operation is**
- in full compliance with**
 - in substantial compliance with **Standard of Practice 5.1**
 - not in compliance with


Basis for Audit Finding:

Cortez has prepared closure plans as part of their permitting programs for the operations that have been reviewed and approval by the US Department of Interior Bureau of Land Management (BLM) and NDEP (for permits NEV0093109 and NEV2007106). The closure plan includes “Cortez Gold Mines (NVN-067575) 2011 Amendment to Plan of Operations (APO) and Reclamation Permit Applications” prepared August 2015 (this plan has been prepared for the Cortez Hills Complex and includes the area identified by the Cortez Operations as Area 34). The current approved APO is version #3, approved September 11, 2015. The new version included extension of heap leach #30 and other non-cyanide related activities. The expansion to Area #30 had not been constructed at the time of recertification. Relevant sections of APO #3 were reviewed during the 2020 Recertification.

The plans provide seasonal, temporary, and tentative final closure plans. The tentative final closure plans presents preliminary details for final closure of all project facilities following cessation of mining, heap leaching operations, and solution processing operations.

The “Cortez Gold Mines (NVN-067575) 2015 Amendment to Plan of Operations and Reclamation Permit Applications”, version #3, includes a comprehensive reclamation and decommissioning schedule that shows ongoing current reclamation activities and proceeding through 2042. Decommissioning of the piping and tanks from the plant, leach pad areas and tailing facilities will occur in different time frames with the processing plants being decommissioned over a three year time frame. Decommissioning of the Heap Leach Pad will require longer time frames being dictated by long time frames associated with fluid inventory reduction. APO#3 also summarizes the work that has been completed for Gold Acres, East, West and 91-C Heap leach facilities which have already been closed and re-vegetated as of 2016.

Cortez is required by Nevada State and BLM regulations and their permit requirements to review and update the Reclamation Plan at least every three years, or more frequently if changes occur. Cortez is also required to update the reclamation and closure bonds with every operational modification. Additional financial reporting requirements by the US Securities and Exchange Commission require that mine closure liabilities be reevaluated every year. The SEC estimate mimics NGM's internal requirements for estimating closure costs.

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

- The operation is** **in full compliance with**
- in substantial compliance with **Standard of Practice 5.2**
- not in compliance with

Basis for Audit Finding

Cortez has developed a cost estimate for the funding of third party implementation of the decommissioning activities defined in the reclamation and closure plans. The cost estimate is part of “Cortez Gold Mines (NVN-067575) 2015 Amendment to Plan of Operations and Reclamation Permit Applications”, prepared February 2015; and utilized the Nevada Standard Reclamation Cost Estimator (SRCE) to estimate the reclamation and closure costs. The estimated reclamation and closure cost is for the entire Cortez Gold operations. The cost estimate has been reviewed and approved by the Nevada Bureau of Mining Regulation and Reclamation and the BLM and Cortez has correspondence from the BLM dated September 30, 2019, approving the updated surety amount associated with APO#3.

Select inputs to SRCE were reviewed during the 2020 Recertification, including those associated with the process fluid cost estimation which includes the heap leach facilities. The inputs include area estimates of the heap leach pads, historically used heap leach, drain down rates, precipitation etc. There are standardized worksheets from the State that just require Cortez to input the applicable data.

Cortez is required by NDEP and BLM requirements to review and update the cost estimate at least every three years, or as required by changes in planned disturbances or operational modifications. Internally, NGM requires ongoing annual review and update of the Life of Mine Plan. NGM’s Accounting Policy Guide Documentation (April 2009) states that each active operating site as part of its annual Life of Mine planning and budgeting activities will include a review of the closure cost estimate resulting from such LOM/budgeting activities.

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 eliminate, reduce and control them.*

- in full compliance with**

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The operation is in substantial compliance with **Standard of Practice 6.1**
 not in compliance with

Basis for Audit Finding:

Cortez has procedures, Standard Operating Procedures (SOPs) and critical task procedures that describe the management and operation of the cyanide facilities, including:

- Cyanide Offloading Procedure
- Confined Space Entry Procedure
- Cyanide Off Loading check off for Mill CIL, Area 30, and Area 34
- Cyanide Decontamination Procedure
- Emergency Response Plan

These plans and procedures cover the safe operation of the entire cyanide management facilities and cover decontamination prior to maintenance work. These procedures are detailed in the evidence observed section. Task specific personal protective equipment (PPE) requirements are stated in each standard operating procedure. The ‘Process Maintenance Division Sodium Cyanide Safe Job Procedure’ and the offloading cyanide procedure clearly set out the correct PPE. Safety Critical Tasks are those tasks which includes a trigger such as the exposure to potentially toxic chemicals like cyanide. Through this process all tasks that would potentially involve cyanide exposure would have a safety critical task procedure developed. Examples include maintenance activities such as pump replacements, repairing pumps or valves associated with the cyanide system, and inspections of cyanide containment areas.

Procedures to review proposed process and operational changes and modification for their potential impact on work health and safety are controlled under corporate online Management of Change (MoC) procedure.

Worker input is actively considered during the development and roll out of new procedures.

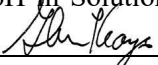
Standard of Practice 6.2: *Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 6.2**
 not in compliance with

Basis for Audit Finding:

The ‘Managing Cyanide Levels and pH in Solution’ procedure states that all process solutions contain

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cyanide and that “We need to maintain a pH over 10 and under 11.5”. The SOP details that pH can be maintained by adding lime predominantly at the #3 belt, mill surge tank, grind thickener, CIL tanks, #2 Counter Current Decantation (CCD) thickener and detox reactor tank, and ball mill launder.

Fixed HCN monitors are installed in critical locations: the detox building (above the ferrous reactor tank), in the Mill CIC, grind thickener, the elution’s area the carbon in column (CIC) area (at the high level by the door between the elution’s and the CIC), and the grind circuit (top level close to the control room). The Electrical and Instrumentation department undertake monthly calibration of the fixed monitors.

Warning signs have been placed in all areas where cyanide may be encountered, and on all cyanide facilities warning that the tanks and pipes may contain cyanide solutions.

Signs are located at the doors of the Mill 2 Building (various entrances), Area 30 and Area 34 stating that “All process solution contains cyanide”. Other areas of the facility, such as the cyanide off-load areas; include signs identifying the presence of cyanide and state “No Eating, No Drinking, No Smoking, and No Tobacco Products.”

No smoking, no open flames, and no food consumption are allowed while working around cyanide and all proper PPE must be worn at all times is posted on the warning signs as well. Showers and eyewash stations are located at the cyanide off- loading areas and throughout the process areas (in Area 30, 34 and the Mill). The showers and eye wash stations are inspected before every shift and before every off load. They are also inspected monthly as part of the preventative maintenance program and a record of the inspections are maintained.

Safety Data Sheets are available throughout the plant at any computer terminal via the site-wide. Poster boards are also posted around the workplace where cyanide is used including alarm levels, first aid, symptoms, locations of kits, cyanide storage facility locations. pH requirements in place to prevent off gassing.

The fixed monitors have warning lights at 4.7 ppm and a visible light and evacuation horn. These are alarmed in the central control room (CCR) in the Mill, and at the controls rooms in Areas 30 and 34. The Area 30 and 34 alarms are also connected to the CCR as these areas may not consistently have an operator on duty. At a 4.7 ppm alarm the area is evacuated except for the Operator on duty that will investigate the alarm; at 10 ppm a full evacuation is initiated. Based on interviews with the Operators in the mill and Areas 30 and 34 there have been no alarms over 4.7 ppm in the last three years.

Cortez also maintains handheld (MX-6 Multi-Gas monitors and Industrial Scientific GasBadge Pro monitors). These HCN monitors are used when conducting specific activities where the risk of exposure may be higher, such as during a confined space entry procedure. Employees are able to sign out the gas badges as needed.

Cortez has procedures for accident and incident investigations associated with cyanide. These procedures include actions to determine the reason why the accident/incident occurred, and identify the corrective actions and/or controls to take to prevent similar occurrences in the future. There were no cyanide related incidents that required investigation in the previous three years.

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The Emergency Response Plan and relevant pre-plans detail specific written emergency response plans to respond to cyanide exposures.

Cortez has formal arrangements with Northeastern Nevada Regional Hospital through a commitment letter. The letter states that the hospital emergency department will readily receive and treat cyanide exposed patients. It also acknowledges that they keep in stock two cyanide poisoning kit with information and instruction material. The letter has been re-authorized in 2017, 2018 and 2019 to ensure currency of this acknowledgement.

Mock emergency drills are conducted annually to test response procedures for various cyanide exposure scenarios and debriefs are conducted following the drills to review the adequacy of these plans.

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.*

	<input checked="" type="checkbox"/>	in full compliance with	
The operation is	<input type="checkbox"/>	in substantial compliance with	Standard of Practice 7.1
	<input type="checkbox"/>	not in compliance with	

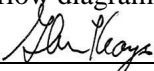
Basis for Audit Finding:

A detailed travel route for transporting 30% liquid cyanide to all three offloading areas (CIL, Area 30, Area 34) has been established. Currently all loaded TransWood trucks get loaded in Winnemucca and travel direct non-stop on I-80 to Crescent Valley Exit. They then head south directly to Cortez Operations. NGM regulates traffic speeds as well does Eureka County authorities. The trucks that TransWood use for cyanide transport are all of the same type with proper shut off valves. Planning is conducted with the Emergency Response Team at Cortez for any and all chemical releases that occur in close proximity of their operations.

The ERP includes Immediate Actions as measures to be taken in the event of an emergency. This includes securing the area, reporting to security (who then call the Environmental Department), and activation of an emergency operations center, evacuation, and, if necessary, selecting and following the Immediate Action check list for cyanide incidents or spills.

The ERP details different levels of incidents from Level 1 to Level 3. Level 1 being where the incident can be controlled within a department, Level 2 where emergency response and environmental call out procedures are initiated, and Level 3 where an incident requires resources beyond that of the responding team or the incident occurs off-site. A flow diagram in the ERP portrays the incident command system

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activation. The emergency response plan details immediate actions to be taken in the event of an emergency spill which details cyanide separately. The emergency response plans include the anticipated roles and responsibilities of the Human Resources, Safety and Health, Environment, Security and other emergency response team (ERT) members as well as an updated list of the members of the ERT.

Additionally, the site has developed a cyanide release response pre-plan which is a comprehensive listing of all the potential types of emergencies related to cyanide, different levels of cyanide exposure and response requirements. The pre-plans are considered a supplement to the overall emergency response plan that is applicable for all emergencies across the site.

The Solid and Hazardous Waste Management Plan outlines the emergency procedures required for any situation involved hazardous waste, or the generation of hazardous waste such as the release of cyanide. It outlines emergency procedures as well as managing cyanide waste according to MSDS instructions, ensuring separation from acidic wastes and water. Preferred disposal of cyanide wastes is through the heap leach facilities to recycle the cyanide.

Plans contain procedures for potential scenarios such as: 1) catastrophic releases of cyanide; 2) accidents during cyanide transportation; 3) releases during offloading; 4) release of cyanide during fires and explosions; 5) pipe, valve or tank ruptures; 6) overtopping of ponds and impoundments; 7) power failure; 8) uncontrolled seepage; 9) tailings impoundment failure; 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

The operation is in substantial compliance with **Standard of Practice 7.2**

 not in compliance with

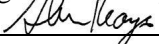
Basis for Audit Finding:

NGM Cortez Operations is within 10 miles of its closest township Crescent Valley. To keep the community informed NGM hosts occasional breakfast meetings with the local authorities at Crescent Valley to discuss issues surrounding the transport of cyanide through the town and discuss all cyanide safety issues if they occur.

Team members from the Emergency Response Team are also present to discuss general safety incidents and responses that have occurred at NGM Cortez Operations over the recent period.

Cortez workers attend meetings of the Lander County Local Emergency Planning Committee (LEPC). Through participation on the LEPC these workers have been able to inform the community that Cortez uses cyanide at the operation and that it has prepared an Emergency Response Plan (ERP) to address emergency situations.

Cortez workers participate in emergency mock drills that allow them to experience and comment on the procedures developed in the ERP. Where possible Cortez has attempted to involve LEPC in their mock drills (in the past three years scheduling issues have prevented this).

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Cortez has notified the Northeast Nevada Regional Hospital, in Elko in writing that the mine operation uses cyanide and there is the potential for cyanide exposed victims. The hospital has acknowledged that the emergency room staff does know the proper procedure for treating cyanide poisoning.

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

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 7.3**
 not in compliance with

Basis for Audit Finding:

Roles and responsibilities are clearly laid out in the ERP including responsibilities of the following departments: Human Resources, Safety and Health, Environment, and Security. These stakeholders, as well as representatives from processing are part of the review team for the ERP when revisions are made. Emergency responders are trained in Advanced Medical First Aid, HazMat and Firefighting and receive annual refresher training.


The ERP details call out procedures and 24 hour contact information for coordinators and team members.

Emergency response equipment, including Personal Protection Equipment, available on-site is detailed in the Emergency Response Equipment Needs section, this is sub divided into medical response, fire response, surface operations, fire equipment, high angle response, hazardous materials response equipment and underground operations.

The HAZMAT trailer, emergency response vehicle and the five Cyanokits are inspected monthly or quarterly to check all materials are available. This process is done by the emergency response team.

The ERP Assisting Agency Phone List includes contact numbers for Ambulance service, Clinic, Hospitals, Government agencies, MSHA, Nevada Division of Safety, Health and Training, Fire services, and Law enforcement.

NGM Cortez Operations has confirmed letters with Northeastern Nevada Regional Hospital and Humboldt Regional Hospital. Letters from Registered Nurse and ER Captain for NGM Cortez Operations have been sent to both Northeast Nevada Regional Hospital and Lander County Hospital verifying that they can take patients exposed to cyanide, with responses received.

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

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 7.4**
 not in compliance with

Basis for Audit Finding:

The NGM Cortez Operations take specific remedial measures in the event of a cyanide release, as described in their ERP. All areas are isolated and only certified emergency personnel are allowed near a cyanide release. In discussions with emergency response team the area would be suctioned with an on-site truck and the solution would be placed in the tailing impoundment where it will be diluted. Spilled liquid cyanide solutions can be decontaminated with on-site ferrous sulfate solutions located in the CIL which is used for cyanide final destruction. Appropriate concentrations required for neutralization would be based on lab analysis of the spilled liquid.

The ERP Assisting Agency Phone List includes contact numbers for Ambulance service, Clinic, Hospitals, Government agencies, MSHA, Nevada Division of Safety, Health and Training, Fire services, and Law enforcement.


The basic command structure outlined in the ERP includes identification of an External Relations Incident Command person who would be tasked in notifying the area community representatives as well as the media if required. Holding statements are typically generated by the External Relations Coordinator and Incident Command Leader to ensure only accurate information is conveyed to the public.

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

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 7.5**
 not in compliance with

Basis for Audit Finding:

The NGM Cortez Operations do take specific remedial measures in the instance of a cyanide release and this is captured in their Emergency Response Plan. All areas are isolated and only certified emergency personnel are allowed near a cyanide release. In discussions with emergency response team the area would be suctioned with an on-site truck and the solution would be placed in the tailing impoundment

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where it will be diluted. Spilled liquid cyanide solutions can be decontaminated with on-site ferrous sulfate solutions located in the CIL which is used for cyanide final destruction.

Appropriate concentrations required for neutralization would be based on lab analysis of the spilled liquid. The Solid and Hazardous Waste Management Plan details procedures for any accidents involving hazardous waste spills. The plan is designed to minimize hazards to human health or the environment from fires, explosions or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil or surface water.

Emergency containment structures to contain the cyanide solution would be constructed with available resources on site. All proper PPE would be worn in neutralizing spilled cyanide and HCN monitors would be used to ensure HCN levels are below 10 ppm. Lime can also be applied on affected areas to control the pH level if the pH levels are too low.

There are no natural surface water bodies on the property or adjacent to the property and treatment of a cyanide release to surface waters is not applicable

In the event of a cyanide spill, NGM Cortez Operations are required to do extensive soil sampling to verify that no residual cyanide remains in the affected area. This is covered in the WPCP permit which is governed by the State of Nevada.

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

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 7.6**
 not in compliance with


Basis for Audit Finding:

Mock drills are conducted annually at NGM Cortez Operations to ensure that the Emergency Response Plan is followed and necessary modifications can be made based on the post mortems from the mock inspections.

All mock inspections were documented and evaluated for effectiveness.

A review of all mock drills for 2017, 2018 and 2019 were reviewed and three events were conducted on October 1, 2019, October 3, 2019, and Dec 1, 2019 which involved a man down and the use of decontamination chamber and full deployment of all EMS systems.

There were no cyanide related incidents during the recertification period.

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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.*

- The operation is**
- in full compliance with**
 - in substantial compliance with **Standard of Practice 8.1**
 - not in compliance with

Basis for Audit Finding:

All site personnel are trained in cyanide safety as part of Cortez’s four day New Hire Training which includes a PowerPoint presentation called Cyanide Training. Cortez requires all workers to have an annual refresher training (ART) that includes cyanide training. The site retains records related to cyanide training in the Emergency Response office.

Workers who are assigned to specific areas of operations where cyanide is an integral part of the process (i.e. all mill employees, leach pad operators etc.) are given 20 hours ‘onboarding’ training which includes the safe use and handling of cyanide with on the job departmental training. For example, mill workers are trained for a job, including instruction related to cyanide use and handling, before beginning work in the designated area. Detailed training manuals exist for operation in detox, grind CIL and elutions. The manuals are detailed and have clear instructions with pictures and annotations.

In addition, the visitor and contractor inductions required before any person can access the site, includes a component on cyanide awareness.

Cortez uses an online Learning Management System (LMS) to record and track training. In addition to print out from the LMS outlining completed training, a review of the LMS was conducted during the audit by requesting certain employees training records and then backtracking through the system to ensure that annual requirements were met. The LMS proved effective in tracking these records.

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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.*

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 8.2**
 not in compliance with

Basis for Audit Finding:


Workers assigned to specific areas where cyanide is an integral part of the operation, such as unloading, processing, and maintenance activities, are trained on the safe use and handling of cyanide.

The Cortez training program includes training manuals and SOPs for specific tasks. Workers are trained on the equipment and required to demonstrate competency prior to unsupervised assignment to a job. Training manuals exist for the mill processing areas - CIL, Detox, Grinding, and Elutions operations. The manuals outline task specific details.

Following the new hire training and job departmental training, the primary training method is on-the-job training and is provided by a competent person. The employee is instructed on the proper use of the equipment and related safety issues. The level of competency is tracked via the progression policy, which requires certain competencies to advance to the next level. There are progression booklets that are required to be completed by the Supervisor and then uploaded into the LMS. Only qualified personnel at NGM Cortez Operations provide task training to all operators and mechanics working with cyanide.

Cortez requires all workers to have an annual refresher training (ART) that includes cyanide training. All training record sheets have been maintained with the applicable information and maintained in hard copy since at least 2010 and in soft copy within the LMS. Effectiveness of training is managed through testing of employees who work with cyanide in both written and verbal formats. All training records are maintained throughout an employee's employment at NGM Cortez Operations.

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

- The operation is**
- in full compliance with**
 - in substantial compliance with **Standard of Practice 8.3**
 - not in compliance with

Basis for Audit Finding

Workers involved in the use and handling of cyanide, such as unloading, mill operations, and maintenance, are trained on the risks and proper handling techniques including decontamination and first aid procedures. The training uses process training manuals and SOPs and includes instruction on decontamination and first aid procedures for cyanide release incidents. Mill workers receive annual cyanide refresher training that demonstrates procedures to follow in the event of cyanide release. First aid and CPR and oxygen training is provided to any Cortez employee that requests it and on a voluntary basis. This is a continuous process and includes Mill employees.


Cortez has provided a copy of the Emergency Response Plan to the Lander County LEPC. Additionally, Cortez has formal arrangements with the Northeast Nevada Regional Hospital to provide assistance in the event of a cyanide related incident.

Emergency Response Coordinators and members of the ERT (First Responders) are trained on the procedures and guidelines outlined in the ERP such as the response to a cyanide spill, release, or emergency. Training also includes the use of the, SCBA, and other PPE necessary to respond to a cyanide emergency. In addition there are Advanced EMTs on each shift that are able to administer the Cyanokit.

The site also holds annual mock emergency drills which cover both worker exposure and environmental releases. The drills are evaluated to review the adequacy of these plans and a training perspective to determine if personnel have the knowledge and skills required for effective response and training procedures are updated where needed. Documentation of the debriefs are retained on site. . The records of completed training are maintained in the LMS database.

NGM Cortez Operations requires and provides annual refresher training for cyanide management to all of its employees to include responding to incidents that occur. The training includes emergency communication, signage, alarm systems, cyanide safety awareness, HAZCOM, travel routes, SDS, and other topics.

Mock drills for a hazmat incident (typically cyanide related) are held annually for training purposes and cover both worker exposure and environmental releases. Revisions to procedures are made when improvement opportunities are identified.

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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.*

- The operation is** **in full compliance with** **Standard of Practice 9.1**
 in substantial compliance with
 not in compliance with

Basis for Audit Finding:

Members of Cortez’s management participate in periodic Town of Crescent Valley and Pine Valley community meetings and also attend Local Emergency Planning Committee (LEPC) meetings. They and workers attend civic activities where they interact with the general public and public officials. Based on the minutes of the meetings that were reviewed cyanide was not a specific topic of discussion, as there were no members that have brought this issue up as a concern.

Landowners and local tribes do have the ability to participate in any of the public tours that are offered. . In the past three years a variety of groups had received tours, including the Nevada Mining Association, Elementary Schools, and Government bodies.

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

- The operation is** **in full compliance with** **Standard of Practice 9.2**
 in substantial compliance with
 not in compliance with

Basis for Audit Finding:

Community Relations assists with scheduling site tours. Numerous visits to Cortez by a variety of entities have occurred in the past three years including the Nevada Mining Association, Elementary Schools, and Government bodies.

Visitor information includes an explanation about the Cyanide Code and requires a cyanide training induction prior to participating in a tour. These visits present visitors with the opportunity to ask questions about the use of cyanide; and provide the company with the opportunity to explain the use of cyanide at the operation.

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Information on use of cyanide at the NGM sites is included in the Annual Barrick Responsibility Report, available on the www.barrick.com website.

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

The operation is **in full compliance with**
 in substantial compliance with **Standard of Practice 9.3**
 not in compliance with

Basis for Audit Finding:

Any incident requiring regulatory reporting as per the Solid and Hazardous Waste Management Plan or the ERP would become publicly available through freedom of information processes.

The NGM Cortez Operations Water Pollution Control Permit requires that the operation file quarterly and annual reports to the NDEP that include a report of any cyanide spills and releases. These reports are available to the public.

Additionally, Cortez Operations are required to complete MSHA reports that would include any cyanide related worker exposure or death.

The Nevada Division of Environmental Protection makes information regarding incidents publicly available but through a request process (<https://ndep.nv.gov/environmental-cleanup/all-appropriate-inquiry>). A database of open and closed cleanup activities is accessible through this website. A search of the database did not identify any incidents pertaining to this operation in the past four years.

Operational and environmental information is provided in Nevada Gold Mines corporate annual report and on NGM's website, <https://www.barrick.com/English/operations/nevada-gold-mines/default.aspx>. Lnks to the Cortez Technical Report and the Barrick Sustainability Report are available, in addition to investor presentations and other news releases. www.nevadagoldmines.com.

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