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INTERNATIONAL MINING NEWS™

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Metals Watch (02/15/19): Gold $1,321.40 • Silver $15.76 • Copper $2.80 • Lead $.93 • Zinc $1.20 • Platinum $805.00 • Palladium $1,415.00 • Molybdenum $11.79 • Lithium $112.41

KINROSS GOLD CORPORATION

Bald Mountain Mine Achieves Record Full-Year Production

Bald Mountain holds more than three million ounces of estimated gold resource, and a significant pipeline of high-quality targets. Kinross is exploring further opportunities for additional resource conversions and exploration success.

TORONTO, ON - J. Paul Rollinson, President and CEO of Kinross Gold Corporation said, "Bald Mountain Mine in Nevada, continued to perform well, achieving record full-year production in 2018. Production in Q4 2018 was lower compared with Q3 2018 mainly as a result of timing of recoveries from the heap leach pads. Cost of sales per ounce for 2018 was lower than full-year 2017 mainly as a result of less operating waste mined and the timing of gold equivalent ounces sold. Cost of sales per ounce in Q4 2018 increased compared with the previous quarter mainly due to fewer ounces recovered from the heap leach pads.

The company once again delivered on commitments in 2018, as it met production, cost and capital guidance for the seventh consecutive year. Our portfolio of mines produced solid results, with standout performances from Paracatu in Brazil, and Bald Mountain both of which delivered record annual production.

Following successful completion of the Tasiast Phase One expansion in West Africa, the mine achieved record production in the fourth quarter, with throughput and recoveries exceeding expectations. Kinross also generated approximately $790 million in operating cash flow and maintained its strong balance sheet, with $1.9 billion in liquidity and no debt maturities until 2021.

We expect to deliver another strong year in 2019, producing approximately 2.5 million gold equivalent ounces at costs similar to 2018. Our development projects are proceeding well, and we look forward to a number of milestones this year, including: the start of commissioning of the Bald Mountain Vantage Complex processing circuit and completion of the Lobo-Marte in Chile, scoping study in the first quarter; the start of commissioning in Nevada, of the Round Mountain Phase W processing circuit in the second quarter; and, the completion in Chile, of the La Coipa Restart feasibility study and in Alaska, the start of stripping at Fort Knox Gilmore in the third quarter. At Tasiast, we continue to evaluate alternative approaches to further increase throughput and reduce capital while preserving the overall value of the project. The project financing is progressing well and we are targeting completion mid-year."

Kinross produced 610,152 attributable Au eq. oz. in the fourth quarter of 2018, compared with 652,710 in the fourth quarter of 2017, mainly due to lower production at Fort Knox and Bald Mountain, partially offset by record production at Tasiast and Paracatu. The company produced 2,452,398 attributable Au eq. oz. for full-year 2018, which was in line with the Company's 2018 guidance range. This compares with production of 2,673,533 Au eq. oz. for full-year 2017.

The company's revenue from metal sales was $786.5 million in the fourth quarter of 2018, compared with $810.3 million during the same period in 2017.

Revenue was $3,212.6 million for full-year 2018, which was largely in line with revenue of $3,303.0 million for full-year 2017. The Americas region, which represented 61% of Kinross' 2018 production, delivered strong results during the year. Paracatu and Bald Mountain achieved record annual production, while Round Mountain continued to perform well.

Paracatu performed strongly in 2018, with production increasing 45% compared with full-year 2017. The record annual production was mainly as a result of record recoveries in Plant 2, and significant increases in tonnes of ore mined and processed. Production in Q4 2018 was higher compared with the previous quarter mainly due to an increase in grades and higher recoveries. Cost of sales per ounce in 2018 was lower compared with 2017 primarily as a result of lower power costs due to the acquisition of the power plants in the third quarter and favourable foreign exchange movements. Higher grades also contributed to the lower cost of sales per ounce in Q4 2018 versus the previous quarter.

2018 production at Round Mountain met expectations but was lower compared with 2017 primarily due to fewer ounces recovered from the heap leach pads, partially offset by the timing of ounces processed through the mill. Production in Q4 2018 was largely consistent compared with the previous quarter. Full-year cost of sales per ounce was higher year-over-year mainly due to lower heap leach grades and higher fuel and power costs. Cost of sales per ounce increased in Q4 2018 compared with the previous quarter mainly due to higher processing costs.

The Round Mountain Phase W project continues to progress on schedule and on budget, with pre-stripping advancing well. Initial low grade Phase W ore has been

Continued On Page 16

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Corvus Gold Continues Western Expansion Of Mother Lode Deposit

VANCOUVER - Corvus Gold Inc. has received latest results from the initial three, western resource expansion holes from Phase III drilling at the Mother Lode deposit. Results continue to show high potential for expanding the deposit to the west and north along the Fluorspar Canyon Fault Zone (FCF).

As with earlier holes in the western part of the deposit, gold mineralization generally extends to the bottom of the holes, which the Company believes suggests additional potential at depth.

Gold mineralization in hole ML18-087 (41.1m @ 1.32 g/t Au & 47.3m @ 2.15 g/t Au) and the up-dip intersection in hole ML18-083 (65.5m @ 1.53 g/t Au, NR18-17) and northern hole ML18-093 (115.8m @ 1.83 g/t Au, NR19-01) continue to define what appears to be a new center of mineralization to the north.

Additionally, results from ML18-087 continues to support the target for the corresponding down dropped West Mother Lode zone at depth to the west of the FCF. This area remains open in all directions.

Additional follow-up holes have been completed to the southwest along the FCF with results pending and further drilling in progress. The Phase III, western deep core drilling program is scheduled to start in the coming months, targeting what could be the other half of the Mother Lode deposit west along the FCF. If this exploration is successful the Company believes that the potential deposit expansion could be extensive.

Jeff Pontius, President and CEO said, "These western holes are very encouraging for the continued expansion of the Mother Lode deposit and strongly support our initial deep western exploration. The potential of finding another Mother Lode deposit to the west at depth is exciting and continues to point to the opportunity the exploration program offers to the Corvus shareholders. Given the style of mineralization at Mother Lode and our continued drilling success, the ultimate potential of the system could be much larger than our initial expectations."

Corvus controls 100% of its North Bullfrog Project, which covers approximately 86.6 km2 in southern Nevada. The property package is made up of a number of private mineral leases of patented federal mining claims and 1,057 federal unpatented mining claims. The project has excellent infrastructure, being adjacent to a major highway and power corridor as well as a large water right.

The Company also controls 445 federal unpatented mining claims on the Mother Lode project which totals approximately 36.5 km2 which it owns 100%. The total Corvus Gold 100% land ownership now covers over 123.1 km2, hosting two major new Nevada gold discoveries.

The company's address is Suite 1750, 700 W. Pender St., Vancouver, BC V6C 1G8.

Plan Of Operations Approval For Keystone Jumbo Project

VANCOUVER - Scorpio Gold Corporation reported the approval of the Keystone Jumbo Exploration Project, Plan of Operations. The Company proposes to drill up to 29 exploration holes on public lands administered by the US Forest Service Humboldt-Toiyabe National Forest, Tonopah Ranger District (USFS). The exploration drilling plan submitted to the Forest Service required several iterations prior to its approval. The Project intends to build on historic drilling and previously reported surface sampling results within the Keystone Jumbo claim block of the Goldwedge Project.

The proposed Project and associated Goldwedge facilities are located in Nevada on the west flank of the Toquima Range, ~55 km north-northeast of the Town of Tonopah, ~4 km south-southeast of the town of Manhattan and ~16 km south of the 15 million ounce Round Mountain Mine. Historic mining in the Manhattan Mining District dates back to the 19th century, with district-wide gold production from both lode and placer deposits estimated at 566,000 ounces. The largest gold production came from the Manhattan Mine East & West pits located within a kilometer south of the Goldwedge Deposit, where Echo Bay Mines reportedly produced an estimated 236,000 ounces.

Scorpio Gold's President, Chris Zerga, said, "Receiving this plan of operations approval is a key step to unlocking the mineral potential in the Keystone Jumbo project area and we look forward to advancing the project's development with continued exploration drilling. Scorpio Gold has maintained an exceptional working collaboration with the USFS and Nevada regulatory agencies."

Scorpio Gold holds a 70% interest in the producing Mineral Ridge gold mining operation located in Esmeralda County, Nevada with joint venture partner Elevon, LLC (30%). Mineral Ridge is a conventional open pit mining and heap leach operation. The company holds a 100% interest in the advanced exploration-stage Goldwedge property in Manhattan, Nevada with a fully permitted underground mine and 400 ton per day mill facility.

The company's address is 506-595 Howe St., Vancouver, BC V6C 2T5, (604) 678-9639, www.scorpiogold.com.

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FCX Reports 841 Million Pounds Of Cu-Au Production

PHOENIX, AZ - Freeport-McMoRan Inc. (FCX) President and Chief Executive Officer Richard C. Adkerson said, "During 2018, our global team achieved strong operating results with an ongoing focus on safety, productivity, cost management and capital discipline. We were successful in establishing a new partnership with the Indonesian government, which protects our long-term value at Grasberg. We continued to strengthen our balance sheet, commenced development of an exciting new copper project at Lone Star in Eastern Arizona, completed important construction projects to support long-term underground mining at Grasberg and added new reserves to our portfolio to extend mine lives and enhance future growth options. As we enter 2019, our priorities are focused on achieving important milestones to ramp-up production from our large-scale underground assets in the Grasberg minerals district, continuing our focus on productivity and cost management, advancing the Lone Star project and defining future growth options from our large portfolio of reserves and resources. We remain confident in the fundamentals and long-term outlook for copper and the opportunities to deliver substantial value to shareholders from our premier portfolio of geographically diverse long-lived copper assets."

Through exploration drilling, the company has identified a significant resource at its wholly owned Lone Star project located near the Safford operation in eastern Arizona. An initial project to develop the Lone Star oxide ores commenced in first-quarter 2018, with first production expected by the end of 2020. Total capital costs, including mine equipment and pre-production stripping, are expected to approximate $850 million and will benefit from the utilization of existing infrastructure at the adjacent Safford operation. As of December 31, 2018, approximately $290 million has been incurred for this project. Initial production from the Lone Star oxide ores is expected to average approximately 200 million pounds of copper per year. The project also advances exposure to a significant sulfide resource. FCX expects to incorporate recent positive drilling and ongoing results in its future development plans.

The company reported net income attributable to common stock of $140 million in fourth-quarter 2018 and $2.3 billion for the year 2018. Fourth-quarter 2018 copper and gold production of 841 million pounds and 334 thousand ounces exceeded October 2018 sales estimates. Fourth-quarter 2018 copper and gold sales were lower than production, primarily reflecting adjustments to shipping schedules in Indonesia as a result of unscheduled maintenance at PT Smelting (PT-FI's 25-percent owned smelter and refinery in Gresik, Indonesia). Fourth-quarter 2018 copper and gold sales of 785 million pounds and 266 thousand ounces were lower than fourth-quarter 2017 sales of 1.0 billion pounds and 593 thousand ounces, primarily reflecting anticipated lower ore grades and mill rates in Indonesia.

The company operates seven open-pit copper mines in North America: Morenci, Bagdad, Safford, Sierrita and Miami in Arizona, and Chino and Tyrone in New Mexico. In addition to copper, certain of Freeport-McMoRan's North America copper mines produce molybdenum concentrate, gold and silver. All of the North America mining operations are wholly owned, except for Morenci. The company records its 72 percent undivided joint venture interest in Morenci using the proportionate consolidation method.

Freeport-McMoRan has significant undeveloped reserves and resources in North America and a portfolio of potential long-term development projects.

North America's consolidated copper sales volumes was 333 million pounds in fourth-quarter. The North America copper sales are estimated to approximate 1.4 billion pounds for the year 2019, similar to the year 2018. Fourth-quarter 2018 molybdenum sales of 24 million pounds approximated both the October 2018 estimate and fourth-quarter 2017 sales.

South America's consolidated copper sales volumes of 325 million pounds in fourth-quarter 2018 were higher than fourth-quarter 2017 sales of 312 million pounds, primarily reflecting timing of shipments. Sales from South America mining are expected to approximate 1.3 billion pounds of copper for the year 2019, compared with 1.25 billion pounds of copper in 2018.

Freeport-McMoRan operates PT-FI's mining operations, in which FCX owns a 48.76 percent interest. PT-FI's assets include one of the world's largest copper and gold deposits at the Grasberg minerals district in Papua, Indonesia. The company completed the transaction with the Indonesian government regarding PT-FI's long-term mining rights and share ownership.

PT-FI is currently mining the final phase of the Grasberg open pit and expects to transition to the Grasberg Block Cave (GBC) underground mine in the first half of 2019. It continues to advance several projects in the Grasberg minerals district related to the development of its large-scale, long-lived, high-grade underground ore bodies.

Indonesia's consolidated sales of 127 million pounds of copper and 261 thousand ounces of gold in fourth-quarter 2018 were lower than fourth-quarter 2017 sales of 351 million pounds of copper and 584 thousand ounces of gold. As PT-FI transitions mining from the open pit to underground, production is expected to be significantly lower in 2019 and 2020, compared to 2018.

Freeport-McMoRan has two wholly owned molybdenum mines: the Henderson underground mine and the Climax open-pit mine, that are both in Colorado. Production from the Molybdenum mines totaled 9 million pounds of molybdenum in fourth-quarter 2018 and 8 million pounds in fourth-quarter 2017.

The company's address is 333 N. Central Ave., Phoenix, AZ 85004, www.fcx.com.

Increase In Silver And Gold Production At Rochester

CHICAGO, IL - Coeur Mining, Inc. reported that the Rochester Mine, in Nevada, had an increase in silver and gold production during the fourth quarter. Production increased 14% and 8%, respectively, to 1.5 million and 15,926 ounces compared to the prior quarter. Silver equivalent production during the period was 12% higher quarter-over-quarter at 2.4 million ounces . For the full year, silver production was 5.0 million ounces while gold production was 54,388 ounces, both 7% higher than 2017, with silver equivalent production totaling 8.3 million ounces.

Production was positively impacted by the continued strong performance of both the Stage IV and Stage III leach pads. These positive results outweighed the impact of lower crushing rates during the fourth quarter, which were anticipated following the decommissioning of the 15,000 ton per day (tpd) in-pit crusher. Installation of an initial high-pressure grinding roll (HPGR) unit remains on schedule and budget. The concrete foundation for the HPGR is complete and structural erection on shedule. Ore production utilizing the HPGR unit is

anticipated to commence in the second quarter, with silver recoveries expected to increase beginning mid-year. Installation of the HPGR unit and a new secondary crusher is expected to result in higher production during the second half of the year compared to the first half.

In addition, the Kensington Mine, in Alaska, reported fourth quarter gold production of 35,335 ounces represented a 32% increase quarter-over-quarter and was slightly higher compared to the same period the prior year, largely driven by additional production from Jualin. Approximately 23,000 tons of development ore and 3,000 tons of stope ore were mined from Jualin during the fourth quarter, yielding production of nearly 10,500 ounces of gold at a grade of 0.40 ounces per ton, demonstrating the impact that high-grade mill feed can have on the overall production profile of Kensington.

Coeur reported fourth quarter 2018 production of 3.5 million ounces of silver, 99,460 ounces of gold, 3.1 million pounds of zinc and 1.7 million pounds of lead, or 9.8 million silver equivalent ounces. Silver and gold production during the fourth quarter increased 19% and 12%, respectively, compared to the prior quarter. Strong results were driven by increased production from Palmarejo in Mexico and Rochester as well as significantly higher production from Kensington Mine in Alaska.

Full-year 2018 production included 12.9 million ounces of silver, 367,728 ounces of gold, 6.8 million pounds of zinc and 3.9 million pounds of lead, or 35.6 million silver equivalent1 ounces. Silver production increased 8% during 2018 driven by strong performance at Palmarejo and Rochester. Gold production decreased 4% over the same period as positive results from Palmarejo and Rochester were outweighed by lower production at Wharf.

Coeur has five operations in North America. It's wholly-owned operations include the Palmarejo silver-gold complex in Mexico, the Silvertip silver-zinc-lead mine in British Columbia, the Rochester silver-gold mine in Nevada, the Kensington gold mine in Alaska, and the Wharf gold mine in South Dakota. In addition, the Company owns the La Preciosa project in Mexico, a silver-gold exploration stage project. Coeur also conducts numerous exploration activities in North and South America.

The company's address is 104 S. Michigan Avenue, Suite 900, Chicago, IL 60603, (312) 489-5800, www.coeur.com.

Barrick Positioned For Increased Growth And Expansion In 2019

TORONTO — Barrick Gold Corporation President and CEO Mark Bristow said, "The new Barrick has a unique ability to grow three-dimensionally: through its large and high-quality exploration portfolio and geological capability; the brownfields extension potential at its existing operations; and new projects destined to become Tier One mines."

This growth will be driven and directed by a management team with a mix of skills and experience. In the short time that we've been together, the combined team has already made great progress in applying Randgold's proven strategy to a new global group."

Barrick's production guidance for 2019 is between 5.1 and 5.6 million ounces of gold and between 375 and 430 million pounds of copper. During 2019, the reserves and resources of newly-acquired Randgold will be combined with Barrick's on the basis of common calculation criteria, and will be reported on that basis at the end of the year.

The higher cost of sales guidance for gold in 2019, of $880-$940 per ounce and all-in sustaining costs guidance of $870-$920 per ounce, primarily reflects the planned completion of mining at the comparatively high-grade, low-cost Cortez Hills open pit, in Nevada, in the first half of the year. Lower costs at Turquoise Ridge, in Nevada, as well as the addition of lower-cost production from Loulo-Gounkoto in Mali and Kibali, Democratic Republic of Congo, are expected to partially offset this impact in 2019. Higher grades, improved efficiencies, and tight cost discipline are expected to reverse this trend over the next two to three years.

Bristow said, "The Nevada assets, including Turquoise Ridge, were now being operated as a single complex, and were already delivering efficiencies. Still in Nevada, the recent Fourmile discovery has now been combined with the nearby Goldrush in a single project which has the potential to become Barrick's next Tier One gold mine. Shaft sinking and construction at Turquoise Ridge is also on track, and along with a focus on improved efficiencies and cost discipline, it too has the potential for Tier One status.

In Argentina, a concerted effort to drive Veladero back to Tier One status is under way as Barrick looks to expand its Latin American business. At Pueblo Viejo in the Dominican Republic, a scoping study and pilot plant support the expansion of what is already one of the world's largest open pit gold mines.

The Loulo-Gounkoto complex and Kibali continue to reinforce their Tier One status, and both are maintaining the grade of their reserves. The feasibility study on the Massawa project in Senegal has been completed, and an application for a mining permit has been submitted to the government. The company was continuing to engage in constructive discussions with the Tanzanian government on the impasse regarding Acacia, and noted that it was in the interest of all stakeholders, including the government, to find a solution to this issue.

Nevada is a destination with enormous upside through brownfield extensions, new discoveries, and combination opportunities with other operators in the area. The recently-announced strategic alliance with, and additional investment in, Reunion Gold opens up a new frontier for Barrick in the Guiana Shield. Exploration continues across the group's global portfolio. Similarly, work continues on the rationalisation of the group asset portfolio. The identification and sale of non-core assets would be based on a carefully-considered and value-based process."

The company's address is 161 Bay Street, Suite 3700, Toronto, ON M5J 2S1, (416) 861-9911, www.barrick.com.

New Dixie Deposit Expanded At Railroad-Pinon Project

VANCOUVER, BC - Gold Standard Ventures Corp. reported Phase 2 results from 18 reverse-circulation (RC) drill holes and one core hole at the Dixie Deposit and the Arcturus target on its Railroad-Pinion Project in Nevada's Carlin Trend. Two RC holes at Dixie intersected thick, vertically-continuous zones of gold mineralization hosted in pervasively altered and variably oxidized Pennsylvanian-Permian (Penn-Perm) debris flow conglomerate and calcarenite, the same host section as the Dark Star deposit approximately four km to the north. DX18-19 intersected 118.9m of 0.61 g Au/t, including two higher-grade zones of 10.7m of 1.49 g Au/t and 15.2m of 1.32 g Au/t. DX18-26 intersected 137.2m of 0.53 g Au/t including 9.1m of 1.26 g Au/t. These are the thickest intercepts drilled to date at Dixie, once again confirming the host potential of the Penn-Perm carbonate rocks and the abundance of exploration opportunities in the Railroad District.

The 2018 drilling tested new targets west, north and south of Dixie where favorable Penn-Perm carbonate rocks are altered, folded and crosscut by dike-filled faults. The 26 holes completed in 2018 represent the first systematic drilling ever undertaken at Dixie, which lies within the highly prospective north-striking Dark Star Corridor. Based on Gold Standard's drilling, gold mineralization at Dixie extends for approximately 2,000m (north-south along strike) by 500m (east-west), and remains open in all directions for potential expansion of the deposit.

Jonathan Awde, CEO and Director, said, "Dixie is beginning to take shape as another valuable discovery by Gold Standard. Although more work needs to be done, the Dixie deposit is growing in size and grades appear to be improving to the north. Historically, the more we learn about deposits like Dixie, the more we find and the better they get. We also expect to make additional new discoveries in this year's program."

The Pinion deposit has a resource estimate prepared in accordance with NI 43-101 consisting of an Indicated Mineral Resource of 31.61 million tonnes grading 0.62 g/t Au, totaling 630,300 ounces of gold and an Inferred Resource of 61.08 million tonnes grading 0.55 g/t Au, totaling 1,081,300 ounces of gold, using a cut-off grade of 0.14 g/t Au. This resource will be re-estimated this year to include drill results from 2018.

The Dark Star deposit, 2.1 km to the east of Pinion, has a resource estimate prepared in accordance with NI 43-101 consisting of an Indicated Mineral Resource of 15.38 million tonnes grading 0.54 g/t Au, totaling 265,100 ounces of gold and an Inferred Resource of 17.05 million tonnes grading 1.31 g/t Au, totaling 715,800 ounces of gold, using a cut-off grade of 0.2 g Au/t.

This resource will also be re-estimated this year to include highly favourable 2018 drill results. The North Bullion deposit, 7 km to the north of Pinion, has a resource estimate prepared in accordance with NI 43-101 consisting of an Indicated Mineral Resource of 2.92 million tonnes grading 0.96 g/t Au, totaling 90,100 ounces of gold and an Inferred Resource of 10.97 million tonnes grading 2.28 g/t Au, totaling 805,800 ounces of gold, using a cut-off grade of 0.14 g Au/t for near surface oxide and 1.25 to 2.25 g Au/t for near surface sulfide and underground sulfide respectively.

Gold Standard has district scale property positions on both the Carlin Trend and Battle Mountain Trend, the most productive gold trends in Nevada. The Company's flagship project is the Railroad Project, located on the Carlin Trend, while the recently acquired Lewis Project is located on the Battle Mountain Trend.

The company's address is Suite 610, 815 West Hastings St., Vancouver, BC V6C 1B4, (604) 687-2766, www.goldstandardv.com.

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Gold Mineralization North Of Golden Chest

COEUR D'ALENE, ID - New Jersey Mining Company reported that recent core drilling intercepted a large interval of potentially bulk-mineable gold mineralization adjacent to the open pit. Informally referred to as the "layback" hole, core drill hole GC 18-175 was recently completed to 96.1 meters. With the open pit previously drilled on 25-meter centers, the layback hole was designed to fill in a gap in previous core drilling to evaluate the potential for pit expansion to the north.

Rob Morgan, VP of Exploration, said, "The layback drill results show a remarkable pervasiveness and consistency of low-grade gold mineralization, perfect for bulk-mineable, open pit mining. This demonstrates the potential for open pit expansion – just as the structural characteristics and narrower, high-grade mineralization in the Paymaster holes announced recently are supportive of future underground mining in that area."

The layback hole had a run of continuous sampling starting at 40.7 meters, in which 32 of the 34 samples contained anomalous gold. The drilling successfully encountered the Idaho Fault at 62.5 meters and banded, massive and brecciated quartz veins were found in the favorable quartzite host rock in the first 10 meters below the fault. Galena and visible gold were both seen in the core.

CEO and President John Swallow said, "The results of the layback hole and the Paymaster holes continue to show the strength of the Golden Chest's mineralizing system. Our drill programs are focused largely on pre-development and development drilling at the Golden Chest, in support of current production at the open pit and ahead of production underground'. The flexibility of our approach and accuracy of hole placement would not be possible without the hands-on experience of mining on the surface and underground. I cannot overestimate the skillsets of our team, including what the drill brings to this business."

Results from the layback hole, the previous core drilling, and trenching information from 2017 will be combined with the open pit bench assays to evaluate possible expansion of the pit to the north.

This engineering study is expected to be completed in the coming months as well as metallurgical testing.

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Hecla Reports Highest Ag-Au-Pb Reserves In 128 Year History

COEUR D'ALENE, ID - Hecla Mining Company reported the highest silver, gold and lead reserves in its 128-year history and provided an update on its exploration programs during the fourth quarter of 2018. "Reserves in stable jurisdictions are a mining company's most important asset. Hecla now has the largest reserve in its 128-year history and its largest single year increase because of exploration. The increase reflects the quality of the districts we control; our long-term, consistent strategy; and the capturing and use of all the data that long-lived mines have," said Phillips S. Baker, Jr., President and CEO. "We have achieved this while the industry has generally seen declining reserves and we were able to use among the most conservative price assumptions in the industry because of the strong economics of these deposits. It is particularly important that this growth comes at Greens Creek and Casa Berardi, who generate approximately 85% of our revenue and most of our operations' free cash flow. These mines are Hecla's best. We expect our other mines to do the same over the next few years. We are working hard at San Sebastian to extend the oxide mine life and to put the sulfides into production. We are just starting our work in Nevada, reducing the reserve to better reflect the geology, with the goal of building a solid base for consistent production."

"The 2018 exploration program was very successful at not only our mines but at some of our exploration properties. However, for 2019 the focus will be on San Sebastian, Casa Berardi and Nevada, of which Nevada is estimated to be about half of the budget," said Baker. "We believe that after a few years of committed exploration there, we could see results similar to what was achieved in 2018."

Hecla more than replaced gold production in 2018 (318,901 gold ounces contained) as reserves increased by 26%. Silver production in 2018 (12.9 million silver ounces contained) was also more than replaced as reserves increased by 8%. In the last 11 years, Hecla has not only replaced silver production but added another 200 million ounces through exploration. Both zinc and lead production were replaced and reserves increased by 11% and 5%, respectively.

Measured and indicated gold ounces increased 44% to 7.0 million ounces due to increases at Greens Creek and the acquisition of the Nevada properties. Measured and indicated silver ounces increased 65% to a record 208 million ounces, an increase of 82 million ounces, due to a large increase at Greens Creek, San Sebastian and the addition of the Nevada properties. Inferred gold resources increased 96% to 3.6 million ounces and a gain of 1.8 million ounces primarily due to the acquisition of the Nevada properties. Inferred silver resources increased 4% to 465 million ounces, a gain of 17 million ounces due to increases at San Sebastian, Greens Creek, and the acquisition of Nevada properties.

The current silver reserve of 107.1 million ounces is the highest since 2008, the year Hecla acquired 100% of the mine. The current gold reserve of 840k ounces is the highest since 2009. Increases in silver and gold reserves at the 200 South, Gallagher, West, 9A, and Southwest zones were partially offset by reductions of silver and gold reserves in the 5250 Zone caused by mine depletion.

The company's address is 6500 North Mineral Drive, Coeur d'Alene, ID 83815, (208) 769-4100, www.hecla-mining.com.

Tonogold To Expand Comstock Lode Position

LA JOLLA, CA - Tonogold Resources has entered into a comprehensive and binding agreement with Comstock Mining Inc which, on completion will provide Tonogold with, amongst other matters, 100% of the Lucerne project (including the Lucerne gold/silver deposit) in Storey County, Nevada. This New Agreement leverages off the agreement entered into in October 2017.

The provisions in respect of Tonogold's Expanded Land Position of the New Agreement enables Tonogold to initiate and roll-out a significant new leg to its regional strategy, which will be the focus of a systematic and aggressive exploration program commencing as soon as possible. Comstock will be granted a Net Smelter Return royalty of 3% from production from the Tonogold Expanded Land Position Area, reducing to 1.5% after the first year of production.

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"Our Clients are First,
the Team is Second
and I am third."

TAILINGS & HEAP LEACH STEWARDS

Tierra Group sends our sincerest sympathies, thoughts and prayers to those affected by the Feijão tailings dam failure near Brumadinho, Brazil. May Peace be with them all.

Tierra Group envia nossas simpatias, pensamentos e orações mais sinceras aos afetados pela falha da barragem de rejeitos de Feijão perto de Brumadinho, Brasil. A paz esteja com todos eles

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Royal Gold To Advance Peak Gold Project In Alaska

DENVER, CO - Tony Jensen, President and CEO of Royal Gold, Inc., said, "We took our first step toward realizing value for our equity interest in the Peak Gold Project near Tok, Alaska.

We believe that Peak Gold is a very attractive opportunity for an operating company that can bring additional talent to advance the project towards production.

Royal Gold will remain committed to the project over the long term through our existing royalty interests, and our considerations for any potential transfer of ownership will include a commitment to advance the project as a priority while respecting best practices for responsible development.

The results of the PEA are a significant milestone and show that the Peak Gold Project is one of the most interesting emerging gold projects in the United States.

The combination of robust grade, near-surface open-pit resource, and a large and prospective land package located close to existing infrastructure, makes the Peak Gold Project unique."

The PEA considers a conventional truck and shovel open-pit mining operation covering the North, Main and West Peak deposits, feeding a 3,500 tonne per day processing plant with two-stage crushing, grinding and a carbon in leach (CIL) recovery circuit, with production of gold-silver doré bullion on site.

Peak Gold is a joint venture between Royal Alaska and CORE Alaska, LLC, a wholly-owned subsidiary of Contango ORE, Inc. Peak Gold holds a 675,000 acre lease with the Native Village of Tetlin and an additional 175,000 acres of State of Alaska mining claims, all located near Tok, Alaska, on which Peak Gold explores for minerals.

Recap: Newmont-Goldcorp Create World's Leading Gold Company

DENVER, CO - Newmont Mining Corporation and Goldcorp Inc. have entered into a definitive agreement in which Newmont will acquire all of the outstanding common shares of Goldcorp in a stock-for-stock transaction valued at $10 billion. Under the terms of the agreement, Newmont will acquire each Goldcorp share for 0.3280 of a Newmont share, which represents a 17 percent premium based on the companies' 20-day volume weighted average share prices.

The agreement will combine two gold industry leaders into Newmont Goldcorp, to create an unmatched portfolio of operations, projects, exploration opportunities, reserves and people in the gold mining sector. Newmont Goldcorp's world-class portfolio will feature operating assets in favorable jurisdictions, an unparalleled project pipeline, and exploration potential in the most prospective gold districts around the globe. In addition to providing shareholders the largest gold Reserves per share, Newmont Goldcorp will offer the highest annual dividend among senior gold producers.

"This combination will create the world's leading gold business with the best assets, people, prospects and value-creation opportunities," said Gary Goldberg, Newmont's Chief Executive Officer. "We have a proven strategy and disciplined implementation plan to realize the full value of the combination,

CONTINUED FROM PAGE 1

Kinross Gold Corporation...

encountered and is being placed on the existing heap leach pads. Construction of the new heap leach pad is now approximately 80% complete, while construction of the vertical carbon-in-column (VCIC) plant is approximately 50% complete, with commissioning for both expected to start in Q2 2019. Construction of mine infrastructure such as the truck shop, warehouse, wash bay and fuel island are all proceeding as planned and are approximately 35% complete.

Full-year production at Fort Knox decreased year-over-year largely due to a decrease in grades and tonnes of ore processed in the mill and placed on the heap leach pads. The pit wall failure in Q1 2018 also limited access to higher-grade ore and higher than average rainfall in the second half of 2018 affected geotechnical stability. Production in the fourth quarter was largely consistent with the third quarter of 2018. Full-year cost of sales per ounce was higher compared with 2017 mainly due to a decline in grades and an increase in operating waste mined. Cost of sales per ounce in Q4 2018 was lower versus Q3 2018 mainly due to lower processing costs.

The Bald Mountain Vantage Complex project is proceeding well, with construction of the heap leach approximately 85% complete, and the VCIC approximately 30% complete. Some challenges due to weather and a tight labour market have been encountered, but commissioning of the heap leach and processing facilities remain on track to begin in late Q1 2019. Support infrastructure including the truck shop, warehouse, and wash bay is approximately 25% complete. Stacking of economic but previously leached ore on the new heap leach pad is underway with approximately 50% of the material moved onto a segregated portion. Mining activities at the Vantage Complex have commenced and initial ore is now being mined and stockpiled in preparation for placement on the new heap.

The Fort Knox Gilmore project is progressing well, on schedule and on budget, with initial ore expected in early 2020. Construction of the heap leach has begun and will continue during the 2019 and 2020 construction seasons. Expansion of the dewatering system will continue throughout the year in anticipation of stripping that is expected to commence in Q3 2019.

The feasibility study for the La Coipa Restart project and the scoping study for the Lobo-Marte project are both proceeding well, and are expected to conclude in the third quarter of 2019 and first quarter of 2019, respectively. Permitting is in place for the La Coipa Restart project and permitting strategy planning has begun at Lobo-Marte.

The Maricunga delivered strong results during the year, as production from the rinsing of heap materials placed on the pads prior to the suspension of mining activities was better than expected. Cost of sales per ounce for full-year 2018 was higher than 2017 mainly due to timing of sales.

The Russia region continued its strong and consistent performance, as Kupol and Dvoinoye's combined full-year production met expectations, while cost of sales per ounce outperformed. Full-year production was lower than the previous year mainly due to the expected decrease in grades and the completion of mining of the September Northeast deposit at the end of 2017. Production quarter-over-quarter was largely consistent.

Full-year cost of sales per ounce was slightly higher versus 2017 mainly due to lower grades at Dvoinoye and increased maintenance costs. Q4 2018 cost of sales per ounce was lower quarter-over-quarter mainly due to less operating waste mined and lower labour costs at Dvoinoye. At the Dvoinoye Zone 1 deposit, development is continuing as scheduled and production is expected to commence in mid-2019.

In West Africa, full-year production at Tasiast was slightly higher compared with 2017 mainly due to the completion of the Phase One expansion in the third quarter. The site achieved record quarterly production in Q4 2018 mainly due to higher than expected throughput at the new mill and better mill grades and recoveries. Cost of sales per ounce for the full year was higher compared with 2017 mainly due to higher fuel and maintenance costs and an increase in operating waste mined. Cost of sales per ounce was lower in Q4 2018 compared with Q3 2018 mainly due to higher mill grades and lower operating waste mined.

Production at Chirano was slightly lower for the full-year compared with 2017 mainly due to anticipated lower grades, and was lower quarter-over-quarter primarily as a result of lower mill throughput. Cost of sales per ounce for full-year 2018 decreased compared with 2017 mainly due to lower overhead, maintenance and power costs, as open pit mining was suspended in Q3 2017. Cost of sales per ounce was higher in Q4 2018 versus Q3 2018 mainly due to lower mill throughput, partially offset by lower power costs and favourable foreign exchange movements.

Tasiast continues to perform strongly, achieving record quarterly production in Q4 2018. The site is currently exceeding throughput and recovery expectations. The Phase One expansion has been completed successfully and the new SAG mill is performing very well. In addition, continuous improvement initiatives have been undertaken which are expected to result in meaningful cost and operational improvements. The Company expects Tasiast to continue to deliver strong operational performance in 2019.

The Phase Two expansion continues to be a viable option as the Company completes its evaluation of alternative approaches to further increase throughput at Tasiast. The evaluation is seeking ways to reduce capital expenditures, while preserving the overall value proposition, and incorporates strong Phase One performance results, including throughput averaging above nameplate capacity. Phase Two expansion considerations include, among other matters: results from the Company's evaluation of alternative throughput approaches; acceptable project financing terms; capital priorities across the Company's portfolio; and, the ongoing discussions with the Government of Mauritania.

Kinross' total proven and probable gold reserve estimates were 25.5 million Au oz. at year-end 2018, largely in line with reserve estimates of 25.9 million Au oz. at year-end 2017. The addition of approximately 1.9 million ounces of estimated mineral reserves from Fort Knox Gilmore and approximately 343 Au koz. from exploration mostly offset depletion and engineering changes during the year. The company's total estimated measured and indicated mineral resources at year-end 2018 were 27.8 million Au oz. compared with mineral resource estimates of 29.6 million Au oz. at year-end 2017. The slight reduction was mostly due to the conversion of 1.9 million ounces of estimated resources from Fort Knox Gilmore to estimated mineral reserves. Total estimated inferred gold resources at year-end 2018 increased to approximately 6.5 million Au oz., compared with 6.4 million Au oz. at year-end 2017. Exploration gains at Kupol, Bald Mountain and Chirano, and engineering changes at Paracatu, offset the loss of ounces at Tasiast Sud after the Company was not granted an exploitation license at the project.

While brownfields exploration remains Kinross' core exploration focus, it also continues to pursue greenfields opportunities. In 2018, the company focused on targets in Nevada, Alaska, the Abitibi region in Quebec and Ontario, Manitoba, areas of Eastern Russia, and northern Finland's greenstone belts. Kinross also pursues greenfields opportunities and high margin types of deposits through strategic investments and partnerships. In North America, it explored 11 projects in both JV and 100%-owned Kinross claims. Kinross and its JV partners undertook geochemical sampling, ground and airborne geophysical surveys and drilling programs. Indications of mineralization and prospective targets were generated at several projects, and first and second phase drilling programs were undertaken in 2018. The company and its JV partners have also identified new opportunities in Nevada, Quebec, Ontario, Manitoba, the Yukon, and Finland, and are assessing potential drilling programs at these projects for 2019.

The company's address is 25 York Street 17th Floor, Toronto, ON M5J 2V5, (416) 365-5123, www.kinross.com.

Northwestern Ontario

West Red Lake Gold Intersection On The Rowan Mine

TORONTO, ON - West Red Lake Gold Mines Inc. has intersected 14.18 grams per tonne gold (gpt Au) over 7.8 metres (m) including 35.26 gpt Au over 3.0 m during exploration drilling at the NT Zone on the Rowan Mine Property in the prolific Red Lake Gold District of northwestern Ontario. The Company also intersected 6.51 gpt Au over 9.3 m plus several additional positive gold intersections from shallow drilling.

West Red Lake Gold completed 1,443 m of diamond drilling in eight shallow holes along a 250 m portion of the NT Zone which is interpreted to be approximately 2 km in length. The current drilling followed the NT Zone from the south property boundary along trend to the northeast. The next drill program on the property is planned to follow the NT Zone further along strike to the northeast.

John Kontak, President of West Red Lake Gold, said, "We believe these results demonstrate that the 2 km long NT Zone holds significant exploration potential and we plan to focus exploration drilling at the NT Zone." Red Lake Gold Mines, a subsidiary of Goldcorp and the 40% joint venture partner of the Company in the Rowan Mine Property, undertook surface exploration work on the property during the fall of 2018.

The exploration work identified several areas of exploration potential including the location of these positive NT Zone drill results and additional NT Zone targets further to the northeast that are situated within the Structural Intersection area of the property.

All of the current holes intersected the NT Zone which consists of a broad hydrothermal deformation zone comprised of ultramafic, mafic and felsic volcanics as well as iron formation. The drilling intersected in excess of 100 m of pervasive alteration in every hole and most of the holes ended in alteration. All the lithologies have undergone intensive pervasive hydrothermal alteration consisting of extensive sericitization, silicification and carbonatization. This results in a sequence of rocks consisting of predominately sericite, iron carbonate, silica / quartz and fuchsite. Sulphide mineralization, consisting of pyrite, pyrrhotite and sphalerite, is also associated with the alteration package.

The technical information presented in this news release has been reviewed and approved by Kenneth Guy, P.Geo., a consultant to West Red Lake Gold and the Qualified Person for exploration at the West Red Lake Project.

All drilling was completed using NQ size core. Gold analyses on the samples collected by West Red Lake Gold were performed by SGS Laboratories Ltd. Analysis consisted of a fire assay of a 50-gram sample with an atomic absorption finish. Samples assaying over 10.0 gpt Au are re-assayed with gravimetric finish. Samples noted to contain visible gold are analyzed via total metallic assay method. A rigorous Quality Control and Assurance Program is in place using control samples including blanks and standards.

West Red Lake Gold Mines is a minerals exploration company focused on gold exploration and development in the prolific Red Lake Gold District of Northwest Ontario, Canada.

The Red Lake Gold District is host to some of the richest gold deposits in the world and has produced 30 million ounces of gold from high grade zones. The Company has assembled a significant property position totalling 3,100 hectares in west Red Lake (the "West Red Lake Project") which contains three former gold mines. The Mount Jamie Mine and Red Summit Mine properties are 100% owned by the Company and the Rowan Mine property is held in a 60%-owned joint venture with Red Lake Gold Mines, a partnership of Goldcorp Inc. and Goldcorp Canada Ltd. The West Red Lake Project property covers a 12 kilometre strike length along the Pipestone Bay St Paul Deformation Zone and the Company plans to continue to explore the property both along strike and to depth.

The company's address is 82 Richmond Street East, Suite 200, Toronto, ON M5C 1P1, (416) 203-9181, www.westredlakegold.com.

The Infamous Legacy of Upstream Tailings Dams - "Because

By Matt Fuller, LEG, P.Geo.
Tierra Group International, Ltd.

The mining industry was traumatized by the Feijão tailings dam failure in Minas Gerais (Brumadinho), Brazil on 25 January 2019. The Feijão failure occurred a mere 38 months since the Fundao tailings dam failure (also in Minas Gerais) in November 2015, brought heightened awareness of the inherent risks associated with tailings dams constructed by the "upstream method" to retain conventional "wet" (slurry) tailings. The Fundao and Feijão tailings incidents caused untold negative environmental impacts, more than 200 fatalities and total economic consequences to the mine owners exceeding billions of dollars. This article provides a "layman's" explanation of the upstream tailings dam construction method, its challenges, and potential consequences.

Dam Construction Methods

Tailings dam design/construction methodologies can be grouped into three fundamental categories with respect to the direction that the dam crest centerline advances horizontally as the dam crest is raised vertically (Figure 1).

All things considered, the three dam construction methods shown in Figure 1 can be considered to have a higher to lower potential dam failure risk from top (upstream) to bottom (downstream). Figure 1 shows that the upstream dam construction method results in a tailings dam crest constructed upon a larger profile of fine tailings (slimes). Tailings slimes are very fine grained, have low permeability and are susceptible to "liquefaction".

Liquefaction is a geotechnical phenomenon whereby a seemingly solid or semi-solid saturated soil mass subjected to increased pore pressure (pore pressure is the force that water occupying the space between soil particles imparts on the soil particles) morphs into and behaves as a fluid. Liquefaction can be triggered by earthquake shaking ("dynamic" liquefaction), or by a steady increase in pore pressure due to static loading, i.e. "static" liquefaction. Case studies have shown that pore pressure within liquefiable tailings have increased to a point where they overcome resisting forces (dam geometry), causing the tailings to liquefy, leading to a tailings dam slope failure. The essentially instantaneous failure is typically followed by a release of saturated tailings and water in a tailings or "mud" wave to downstream environs.

Upstream Tailings Dam-History

In the 1800's and early 1900's nearly all mineral extractive processes resulted in a mixture of finely crushed ore and water (slurry). A high water to solids ratio slurry allowed operators to discharge tailings from the process plant by gravity. Typically, this was accomplished by positioning the plant on a topographic high point adjacent to a waterway (stream or river). Proximity to a stream allowed operators to capture fresh water upstream of the plant, use it in the process plant, and then discharge plant effluent (tailings) downstream of the plant (typically back into the stream).

In the mid-20th century mine operators initiated the concept of tailings "storage" as an alternative to tailings "discharge". Tailings storage could be accomplished by constructing a dam in a valley and depositing the tailings behind (upstream of) the dam (much like a water storage reservoir). Operators were however challenged by capital tailings dam-construction costs, which as a capital cost, which hurts the bottom line. To minimize up-front capital expenditures to construct a dam capable of storing tailings for the life-of-mine, operators looked for ways to economically initiate tailings storage, and then cost-effectively increase tailings impoundment storage capacity over time.

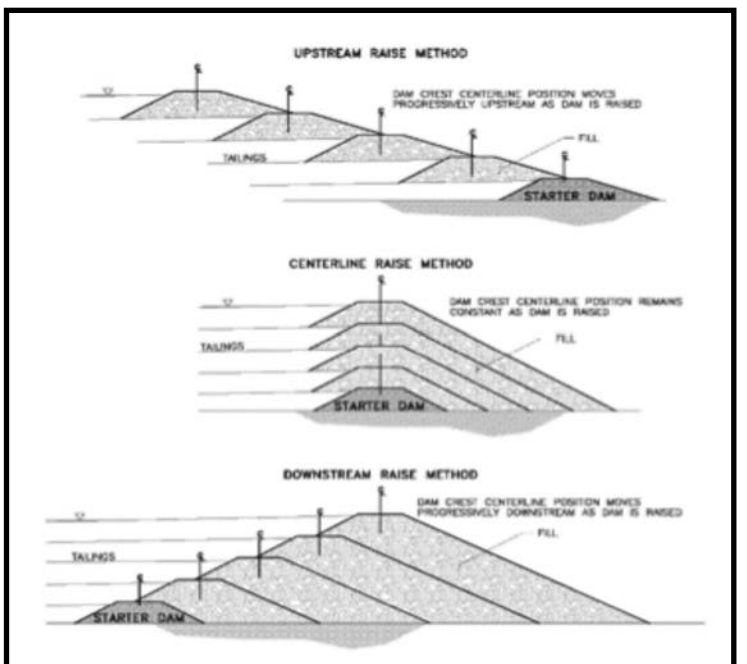

Figure 1. Upstream, Centerline and Downstream dam profiles

This ingenuity resulted in the "upstream tailings dam" construction method. Operators discovered whole tailings slurry from the plant could be separated into a course (cyclone-underflow, "sand") and fine (cyclone-overflow, "slimes") fraction at the dam using hydro-cyclones. Tailings sand (underflow) provided a free-draining "dam" construction medium, which could be used to construct an embankment to retain tailings slimes on its upstream side. Operators accomplished this by:

- Initially constructing a small ("starter") dam using locally available earthen materials near the end of a valley;
- Cycloning tailings near the starter dam and depositing the underflow sands atop the starter dam, while simultaneously depositing tailings slimes behind (upstream) the dam;
- With time, free and interstitial water in the tailings slimes would segregate away from (upstream) the dam creating a "tailings beach" adjacent to the upstream side of the cyclone-sand dam;
- Subsequent tailings dam raises were realized by depositing underflow tailings sand atop the tailings beach to create a higher "lift" of the dam crest, behind which additional slimes were deposited to create another beach, over which a future dam raise could be constructed;
- By repeating this cycle, the dam could be raised in the upstream direction until the dam reached the full-height of the valley ridges (dam abutments) forming the valley (Figure 1).

The Legacy

Upstream tailings dam construction has been utilized for close to a century. In the mid-20th century the engineering community began to intensely study and understand liquefaction, which lead the industry towards avoiding the upstream dam construction method. In fact, several high-seismic mining jurisdictions have banned the upstream tailings dam construction method entirely (e.g. Chile and Perú). There are however those jurisdictions where the upstream method has been used

that's the way we've always done it..."

for many, many generations and is continued to this day. Brazil is one such jurisdiction, and the Marianas (2015) and Feijão (2019) tailings dam failures are symptomatic of the inherent associated risks thereof.

Closing and reclaiming upstream tailings dams will lower the risk of future failures however it is not fool-proof. The very low permeability of tailings slimes prevents them from dewatering "quickly" resulting in their remaining saturated for decades in many cases (particularly in tropical climates where rainfall is high and low-permeability soils underly the tailings basins). The Feijão tailings impoundment was reportedly "in closure", hadn't received tailings in two to three years, and was undergoing active care and maintenance when it failed.

There are hundreds (if not thousands) of upstream tailings dams in various states of activity, or inactivity around the world (reportedly there are 88 in Brazil alone). Tierra Group is currently working at a mine in Mexico that has six upstream tailings dams on the property (five are legacy tailings storage facilities). Another Tierra Group site has three (two active, one legacy). It is Tierra Group's experience that it is quite rare to visit a mine site in Mexico more than a decade or two old that has not historically utilized the upstream dam construction method. To this end the worldwide inventory of legacy upstream tailings dams is likely unknown.

An associated concern with the upstream construction method legacy is what the author refers to as the "that's the way we've always done it..." commonality amongst these facilities. The upstream dam construction method was developed long before the advent of modern geotechnical engineering understanding, analyses, technology, and design. The author has personal experience with:

- Two separate centerline tailings dam designs (at the same mine) that were developed in the 1960's and 1970's decades without any engineering analyses whatsoever;
- A current operating tailings storage facility in Brazil whose operators stated that they were using certain design-slopes because, "that's the way they did it at a previous mine site they worked at"; and
- Being told an unaccountable amount of times over the past 30-years working in Latin America that tailings design's and operations are done the way they are because...you guessed it... "that's the way we've always done it...".

The author just returned from a site reconnaissance to a mine in South America that has been operating for more than 100 years. The latest tailings dam in operations is a single-stage earth fill dam. All previous tailings dams however were constructed by either the upstream or centerline method.

This is not to say that mining company's tailings dam designers have not advanced their engineering analytics and design expertise over the past several decades. In fact, they certainly have, by:

- Utilizing modern-day geotechnical sampling and laboratory testing procedures;
- Applying contemporary geotechnical analytical software programs; and
- Implementing new and advancing technologies (i.e. geosynthetics, drainage products, etc.) into their designs.

Quite often however these approaches are used in a highly "prescriptive" manner, which may or may not be specifically applicable in the case of upstream tailings dam construction. A case in point is the application of traditional 2-dimensional slope stability analyses to estimate factors of safety against slope instability. While traditional seepage and slope stability computer models are an acceptable industry practice for dams constructed using soil and rock and considering a phreatic surface (water level) through the dam, it is not necessarily appropriate for an upstream tailings dam where the dam crest is constructed over a "liquefiable mass" (that once liquefied behaves like a fluid). In this case more sophisticated liquefaction and deformation analyses considering non-Newtonian flow characteristics (a media whose flow characteristics change under varying forces) of liquefied tailings may be more appropriate to understand the potential dam failure mechanism, and post-failure impacts.

Today's Engineers' Challenge

Inevitably today's tailings design engineers are asked to find ways to technically (and economically) extend tailings storage at existing (legacy) operations where upstream tailings disposal methods have been traditionally utilized. This request presents can present a myriad of challenges, including but not limited to an operator's:

- Lack of knowledge of the true environmental, social and economic risks and liabilities associated with tailings dams constructed by the upstream method (although this is becoming ever more transparent considering recent tailings dam failures);
- Cultural hesitance towards the rigors of current engineering practice required to best characterize an historic (operational or non-operational) facility prior to determining the technical and economic feasibility of its continued use;
- Lack of appreciation for the rigorous engineering analysis and design necessary to bring an existing upstream tailings dam design up to a standard of care consistent with current, internationally accepted engineering practice; and
- Pressure to maintain (or increase) production while minimizing capital and sustaining capital expenditures.

Closing

Following on the Feijão and Marianas tailings dam failures it is with a heavy heart that this article is written. To lose but one more life to an upstream tailings dam failure knowing what is known today about the associated risks is senseless. It is therefore incumbent on the engineering community to educate and advocate mine operators and regulators on behalf of society and the environment, to the risks and liabilities associated with the continued use of upstream tailings dam construction, which is why this article was written.

Tierra Group extends their sincerest condolences and heartfelt sympathy to those affected by the recent Feijão tailings dam failure near Brumadinho, Brazil.

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Drill Results At Tonopah Project

VANCOUVER, BC - Viva Gold Corp. reported assay results for an additional three drill-holes in its 2018-2019 winter reverse circulation (RC) drill program at its Tonopah Gold Project located near Tonopah, Nevada.

Drill result highlights: TG 1902: 100.6 meters from 10.7 meters to 111.3 meters depth at 1.33 grams per tonne ("g/t") including 6.1 meters from 41.1 to 47.2 meters at 3.29 g/t, 3 meters from 61 to 64 meters at 4.82 g/t, and 7.6 meters from 83.8 to 91.4 meters depth at 4.13 g/t. TG 1902 was drilled to infill a gap in the north Discovery zone.

TG 1901: 15.2 meters from 38.1 to 53.3 meters depth at 0.39 g/t. TG1901 was drilled to fill a gap east of the 63-77 structural zone. This infill hole was terminated at 65.5 meters depth, short of its planned depth of 120 meters, due to poor drilling conditions. As a result, its planned target was not intercepted. TG 1820: 6.1 meters from 31.1 to 41.1 meters depth at 0.35 g/t. TG 1820 was also drilled to fill a gap east of the 63-77 structural zone.

The company has now completed 11 drill-holes in its current RC drill program. Samples for the remaining three holes have been submitted for assaying, and TG1903 is delayed for additional metallic screen assay. "Mineralization in TG 1902 commenced at 10 meters below surface and produced an impressive column of over 100 meters of mineralization. This drill-hole infills an area of the north Discovery structural zone that was previously carried in the resource model as low-grade inferred material. We anticipate that this result will add confidence and upgrade the near surface "starter pit" area of the project. TG 1901, TG 1820 and the previously announced TG 1819 were all drilled in a large gap of low-grade inferred mineralization and uncharacterized material between two pods of indicated resource east of the Dauntless zone. We believe that these results will help to infill and connect those two existing pods," said James Hesketh, President & CEO.

The Tonopah property contains a near-surface low-sulfidation epithermal gold system which includes near vertical structurally controlled quartz-adularia-gold veins and breccias in Tertiary volcanics within a low-angle zone of mineralization which includes and often parallels an erosion surface discontinuity at the top of the Palmetto argillite. Mineralization has been identified in a series of north-striking extensional structural zones within an overall mineralized trend along the regional north-northwest Walker Lane trend, covering an area over 2,000 meters long and 300 meters wide. Downhole lengths are believed to be representative of true thickness for the low-angle zones.

Viva holds 100% of the Tonopah Gold Project, land position with demonstrated high-grade measured, indicated and inferred gold resources, located on the Walker Lane Trend.

The company's address is 199 Street, Langley BC V2Y 0E2, Tel: (720) 933-1150, Website: vivagoldcorp.com,

New World-Class Coking Coal Mine In Northern West Virginia

ST. LOUIS, MO - Arch Coal, Inc. commenced development of a new, world-class longwall mine in Barbour County, West Virginia, that will produce an estimated three million tons of premium, High-Vol A coking coal annually for sale into an undersupplied global marketplace.

The new mine, Leer South, will be similar in virtually every respect to Arch's existing Leer longwall mine, and will operate in the same 200-million-ton reserve base as the Leer operation. The Leer mine is widely regarded as one of the lowest-cost, highest-quality and highest-margin coking coal mines in the U.S. coking coal industry.

"We are excited about this new project, which we view as transformational for Arch Coal and its shareholders," said John W. Eaves, Arch's chief executive officer. "With the addition of Leer South, Arch will greatly enhance its portfolio of world-class coking coal assets, and cement our position as the premier global producer of High-Vol A coking coal. We believe there is significant, unfulfilled global demand for High-Vol A coking coal generally, and our Leer brand specifically, and are already engaged in discussions with leading steel producers around the world that are eager to secure additional volumes of our Leer-brand products.

The company plans to sell the output from the Leer South complex principally into the 300-million-metric-ton-per-year seaborne coking coal market. Steel market consultants expect solid demand growth for seaborne coking coal over the next 10 years, driven by substantial steel sector growth in India and other rapidly emerging Asian economies. At the same time, we believe that global coking coal markets remain undersupplied following years of under-investment, with few large-scale projects – particularly in high-quality coking coal reserves – contemplated in coming years. Premium High-Vol A coals, such as those produced at the Leer complex, face a particularly tight supply outlook. With average seaborne coking coal demand growth projected at 1.5 percent per year, and assuming a modest annual depletion rate of 2 percent at existing mines, seaborne coking coal markets will require the installation of 10 million tons of new mine capacity annually, or a total of more than 75 million tons between now and 2025. We believe that Leer South's projected position in the first quartile of the U.S. coking coal cost curve – coupled with its extremely high product quality – will enable us to achieve highly attractive margins, an excellent return on investment, and a rapid payback across a range of potential market environments."

With their high fluidity and superior plasticity, High-Vol A coking coals can facilitate the inclusion of a wide range of coking coals and even petcokes in a steel mill's coke blend, while reducing coking times and delivering a stronger and more homogeneous finished coke product. Leer-brand coking coal has the significant, added advantage of high coke strength after reaction, or CSR, which results in an even stronger finished coke product.

Eaves said, "Given our outlook for continued strong cash generation, along with other steps we have taken to increase liquidity, we expect to fund 2019 expenditures for the new development with internally generated cash and cash on hand. Even with the projected increase in our 2019 capital spending budget, which includes approximately $90 million related to the Leer South project, we expect to have the capability to continue our share buyback program at similar levels to 2018 should we opt to do so."

In addition to its plans for Leer South, Arch announced that it would be transitioning its Mountain Laurel operation from longwall to room-and-pillar mining at the beginning of 2020, and moving the Mountain Laurel longwall equipment to Leer South at that time.

As indicated previously, Arch expects Leer South's product quality, selling price and cost structure to be comparable to those of the existing Leer mine. Given that fact and based on current market conditions, Leer South would expect to capture a cash margin of around $90 per ton on seaborne coking coal shipments, and to fully recover its capital investment in roughly 18 months upon achieving full production rates.

Arch expects to produce between 6.6 and 7.0 million tons of coking coal in 2019 – of which nearly 60 percent will be High-Vol A quality – and to maintain a similar level of production through 2021. In 2022, Arch's total coking coal production is expected to approach 9 million tons annually, with 75 percent of that total expected to be High-Vol A coal.

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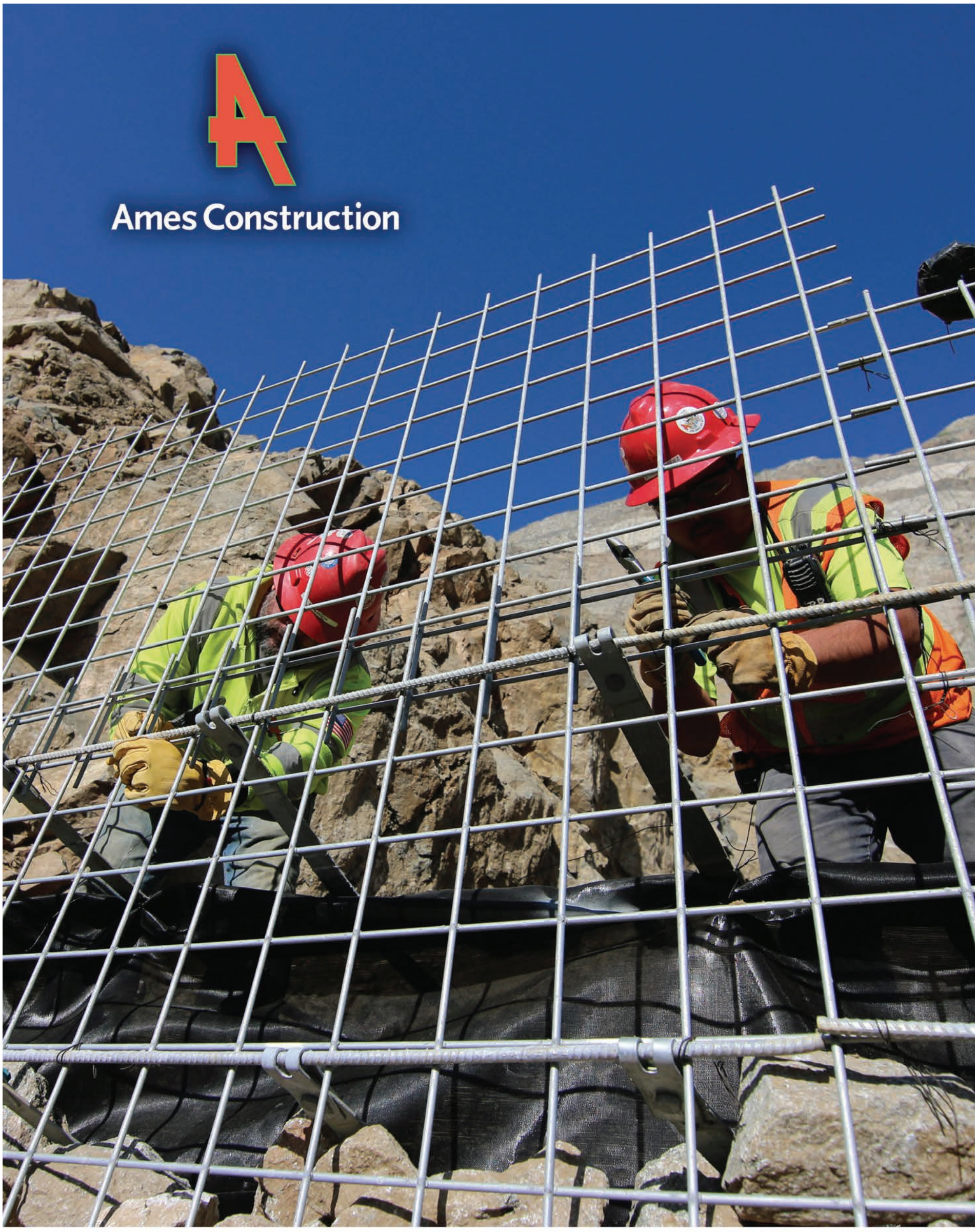

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