ARIZONA Mining

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Freeport Plans to Grow Copper Production

— Bagdad completes conversion to autonomous haulage

Gunnison: America's Newest Copper Producer

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Corey Hartwig
Engineering Manager
EPC
760-382-7936
chartwig@pcl.com

Mark Pittser
Director of
Business Development
661-343-2789
mepittser@pcl.com

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Produced by:
Mining Media International Inc.
11655 Central Parkway, Suite 306
Jacksonville, FL, 32224, USA
Tel: 904-721-2925
Fax: 904-721-2930
www.mining-media.com

Sponsor:
Arizona Mining and Industry Get Our Support — AMIGOS
8711 E. Pinnacle Peak Rd.
PMB 308
Scottsdale, AZ, 85255, USA
https://miningamigos.com

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A Message from Arizona Mining and Industry Get Our Support – AMIGOS

Alberto Bennett, Chairman

Sydney Hay, President

It is an exciting time to be part of the mining industry. As our nation moves toward an ever-greener economy, mining will be more important than ever. Green technological innovations require vast amounts of copper, silver, gold, lithium, rare-earth elements and more. The future of mining is bright, and it is an exciting industry to be part of. Reflecting that optimism, our membership ranks have grown dramatically, now topping **400 member companies**.

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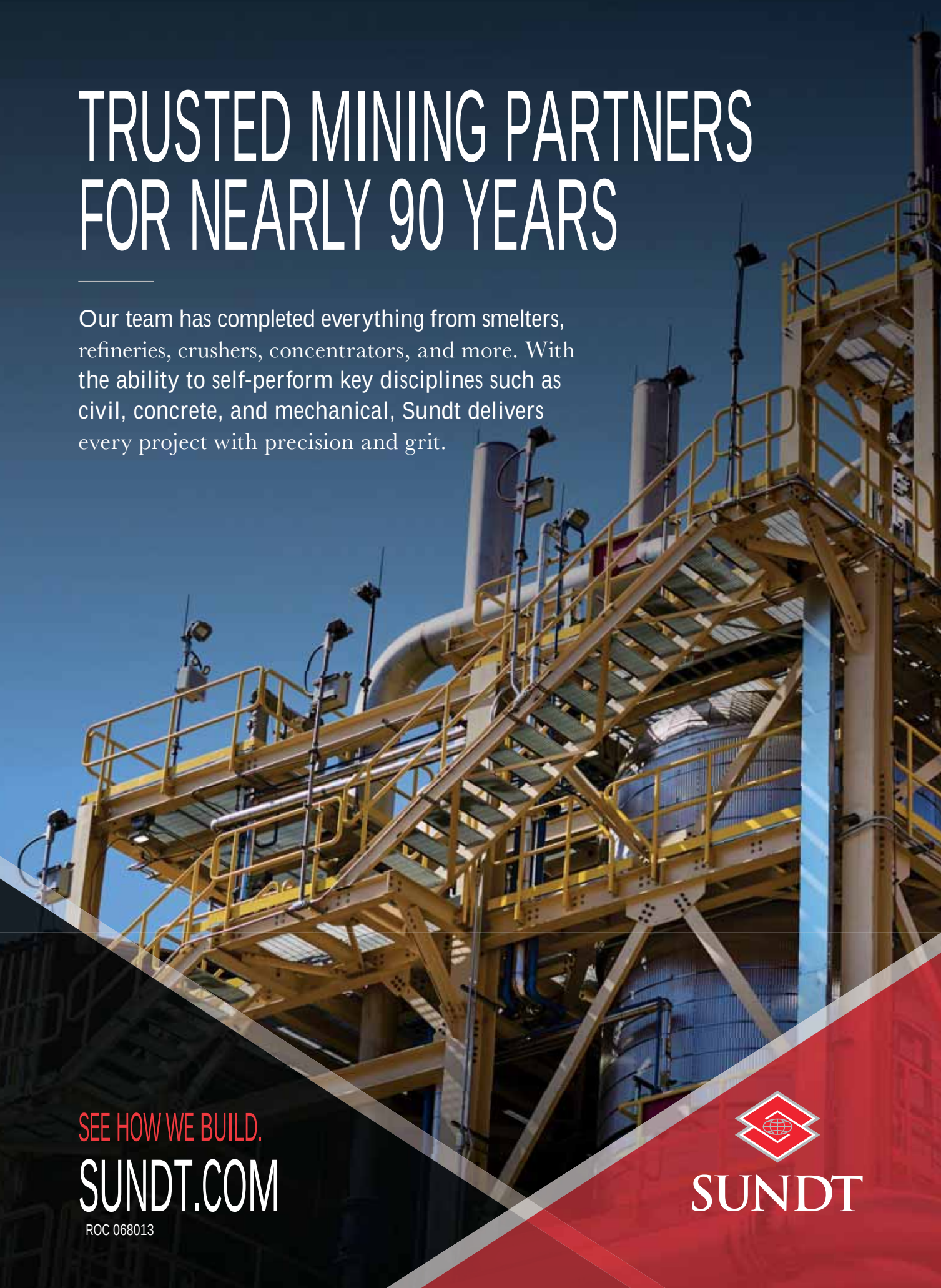
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Freeport Grows Copper Production in Arizona

Taking full advantage of leaching initiatives and autonomous haulage, America's leading copper miner positions itself for future success

Freeport-McMoRan operates seven copper mines in North America – Morenci, Bagdad, Safford (including Lone Star), Sierrita and Miami in Arizona, and Chino and Tyrone in New Mexico. The company also operates a copper smelter and rod mill in Miami, Arizona, and copper refinery and rod mill in El Paso, Texas.

Freeport knows it has substantial reserves, resources and future opportunities for organic growth. Several initiatives are already under way to fulfill anticipated significant future growth in U.S. copper demand. These initiatives include leaching and innovations in mining technology.

Recently the company launched a remote operations center (see sidebar) at its headquarters in Phoenix and during October 2025 the Bagdad mine in northwest Arizona completed its haul truck fleet conversion to autonomous haulage. Bagdad is now the first major mine in the USA to operate a fully autonomous haulage fleet.

The company is also considering a $3.5 billion expansion project at the Bagdad mine, which could more than double its concentrator capacity. Bagdad's reserve life currently exceeds 80 years and it would support an expanded operation.

Freeport said it also continues to advance pre-feasibility studies in the Safford/Lone Star district to define a potential significant expansion opportunity. Exploration drilling in recent years indicated a large, mineralized district with opportunities to pursue a further expansion project. The company said it expects to complete these studies in 2026.

The company continues to incorporate new applications, technologies and data analytics into its leaching processes. It is actively advancing testing of innovative technology to substantially increase production from these initiatives.

In addition to its innovative leaching initiatives, Freeport is pursuing opportunities to leverage new technologies and analytic tools in automation and operating practices with a goal of improving operating efficiency and reducing costs and capital intensity of its current operations and future development projects.

All 33 of Bagdad's autonomous haul trucks are in operation.

Managing Risk in a Modern Era

During December, Freeport promoted Cory Stevens to president and COO of Freeport Americas. He joined Freeport in 1997 and has held multiple leadership roles throughout his career.

When asked about $6/lb copper prices, he smiled and said, "I was around during the days of $0.60/lb copper, so yeah, it's amazing and something I never thought would happen."

Freeport's North American workforce has changed and roles continue to evolve. Since 2019, about 50% of the 14,000 people working for Freeport in North America are new to the company, Stevens explained.

After COVID, Freeport endured the great resignation with its turnover and challenges. "We have reached a point where things are stable now, and we have this new workforce that we are training, and that is exciting. On the flip side, average ore grades continue to decline, and a lot of the cost inputs continue to climb regardless of copper prices," he said. "So, when we think about how we secure our future in the southwest, we really need to leverage technology, innovation, and different ways of working to capitalize on our strengths.

"Internally, we are talking about more centralization, and more autonomous/automated type work like what we have accomplished at the Bagdad mine," Stevens said. "The work at Bagdad is really a phase one for us in terms of how that might actually unfold broadly into the Southwest to improve

safety and efficiency and be able to harness the resource that much better."

The Integrated Remote Operations Center (IROC) represents a way to centralize expert resources, Stevens explained. "It will create a collaborative forum, where we will be able to hold ourselves accountable to a common standard, and apply other tools, like AI, to a common framework. And then, when we implement an improvement for one site, we can do it for six at the same time.

"It will allow us to be much more nimble on how we are applying technology solutions," he said. "We are doing it with fragmentation in blasting operations. We are doing that with a lot of our predictive maintenance diagnostics. We will soon centralize our geotechnical monitoring and dispatch capabilities."

These are exciting times, technology-wise, for Freeport. "It's also a lot of change and sometimes the technology seems to move so fast that the change management aspects cannot keep up," he said. "So, we are purposely tapping the brakes here and there to make sure that we're really focused in on the people side of the impacts because at the end of the day that's really our most precious resource."

The haul trucks at the Bagdad mine were converted to autonomous haulage, which is an engineering feat in itself, but it was also accomplished with zero job losses for the drivers. "That is super important to us as we apply new technology throughout the organization," Stevens said. "Deploying technology is not about replacing people, it's about becoming more efficient. That gain in efficiency allows us to grow and create more jobs. Those jobs might look a little bit different and require additional training programs. Some individuals would rather operate equipment and there is still plenty of equipment to operate. The point is that the use of technology will continue to grow and we really want the team of people that's been with us to stay with us moving forward as we make the transition."

Cory Stevens, president and COO, Freeport Americas.

The Bagdad expansion involves the construction of a new concentrator, which would be a 3- to 4-year construction project. "While I have never seen the company more optimistic about the outlook for demand for our product, we don't know what the price of copper will be in three to four years," Stevens said. "The success of the project hinges on securing the labor resourcing to ensure that we can build it. Arizona is a hotbed of activity right now. Companies are importing skilled expertise from out of state. We are competing with data centers and chip manufacturing, while we will be trying to build a new concentrator in a rather remote location. Enticing top notch talent to help build and operate that facility could be difficult."

Freeport is discussing the project with contractors to get a handle on the incentives. "We don't want to get halfway through the project and face a possible skilled labor shortage," he said. "It's a different sort of risk management strategy.

"It's a great time to be part of Arizona," Stevens said. "When times are great with high commodity demand and prices, it's usually the hardest time to execute on expansion projects, but it's the best price environment to justify it."

The current concentrator processes around 90,000 tons per day (t/d) and it was built in the early 1970s. It uses autogenous grinding mills and it's an efficient plant. "We have spent the past five years redesigning the flowsheet for the expansion," he said. "It would still use autogenous grinding, but we want to increase the capacity by 115,000 t/d. It will incorporate other processing technologies from our other state-of-the-art flowsheets like HPGR technology. Instead of five lines, it will have two. It will also be retrofitted with all the modern sensors and gadgets for remote monitoring and the use of digital twins. So it's going to be pretty cool."

In connection with the company's innovative leaching initiatives, Morenci is currently testing an internally developed additive. Continued success with these initiatives could lead to more recoverable copper in leach stockpiles at favorable average cash costs.

"Last year, we started using our leach additive on one of the stockpiles at Morenci," Stevens said. "It's performing quite well for us. It's a first of a kind for us and the industry. And so now we're building facilities to use the additive across the site at Morenci early this year. It gives us a bump in chalcopyrite recovery. And it's the first in the pipeline of several that we have in development and we will be adjusting additives incrementally as we move forward."

As far as longer term plans, Stevens said he is looking forward to providing development opportunities for people to step up and lead, and to harness Freeport's resources safely and responsibly to add life for the next generation.

Production is Up and Costs are Down

Freeport said it planned to produce at least 1.3 billion lb of copper from its U.S. operations in 2025. That would be an increase of at least 50 million lb over the company's 2024 production of 1,250 million lb. Through the first nine months of 2025, the copper production from U.S. operations stood at 967 million lb, 42 million lb ahead of the 925 million lb the mines produced during the same period in 2024.

Copper production from leaching operations in North America totaled

607 million lb for the first nine months of 2025 versus 633 million lb for the same period in 2024. The mines collectively place more than 600,000 metric tons per day of ore with an average grade of 0.21% on the leach pads to achieve this level of production.

Through the first nine months of 2025, the company's milling operations processed 330,100 mt/d compared to 304,2000 mt/d for the same period in 2024. The average grade was 0.31% (up from 0.30% in 2024) copper and the recovery rate was 84% (also up from 82.6%) in 2024. Milling operations produced 503 million lb of copper through the first nine months of 2025, compared to 440 million lb during the same period in 2024.

Unit net cash costs, which include by-product credits, for the U.S. copper mines averaged $3.11/lb of copper in Q3 2025, which were lower than Q3 2024 average unit net cash costs of $3.24/lb, primarily reflecting higher copper volumes and higher molybdenum by-product credits.

Freeport expects the net cash costs for its U.S. copper mines to continue to trend lower for 2026, reflecting the projected impact of efficiencies, improved volumes and cost reduction plans currently in progress.

Freeport's U.S. Copper Production

(millions of lb)	2023	2024	YTD 9/30/24	YTD 9/30/25
Morenci (72%)	575	505	381	368
Safford	245	249	182	210
Sierrita	185	165	120	137
Bagdad	146	146	109	117
Chino	141	133	97	106
Tyrone	51	43	33	24
Miami	12	9	7	7
Other	-5	-4	-4	-2
Total	**1,350**	**1,246**	**925**	**967**

Bagdad Completes Conversion

The Bagdad mine has fully implemented its fleet of autonomous haul trucks while meeting its commitment that no displaced drivers would lose their jobs with the company because of the conversion. The site's full fleet of 33 autonomous vehicles has been running since August.

The announcement that Bagdad would convert to autonomous haulage was made in July 2023. "Our team has done a phenomenal job," said Jeff Monteith, general manager for the Bagdad mine. "This has been a very long two-and-a-half-year rollout with respect to autonomy. We are going to continue to work on it. We are going to continue to improve."

Beyond retrofitting the haul trucks themselves with new technology, extensive site improvements were required to make the autonomous system function. A new command center was built to monitor and control the trucks, communications and data transmission networks were upgraded, roads were widened, and an isolated autonomous operating zone was created to minimize human interactions with the driverless vehicles.

October 1 was the official close-out date for the implementation phase of the project, said Mark Elliott, project manager of the Bagdad Autonomous Haulage System. Now, the focus is on continuous improvement to maximize and sustain operational efficiency and deliver on production goals.

"We knew up front there would be a steep learning curve," Elliott said. "To effectively manage an autonomous fleet, we have to be almost perfect in every aspect to fully utilize its capability. So, we as a site have to elevate our skills and expertise to the degree that we didn't quite understand with a staffed operation."

The Bagdad mine is the first major mine in the USA to transition to fully autonomous haulage. (Photo: Freeport)

Zero Job Losses

The zero job loss goal was communicated to drivers when the decision to convert to a driverless haulage fleet was announced. The company followed up with career fairs, one-on-one interviews and opportunities for job shadowing so displaced drivers could find out what other career opportunities matched their skills and interests. Extensive training was made available.

Ensuring none of the more than 200 haul truck drivers then working at Bagdad lost their jobs because of the conversion was a priority from the beginning, Monteith said. Kathleen

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Quirk, president and CEO, repeatedly stressed the company was committed to protecting the workforce. Quirk is the one who coined the phrase "Zero Job Loss."

"She was clear from the beginning that no one would lose their job, and those were our marching orders," Monteith said. "The commitment to our employees is something that makes Freeport stand out. These are not people who can be cast aside. They're not just employees, they're family."

As of mid-September, 217 haul truck drivers have found new roles with the company. About 80 drivers found new jobs in Bagdad mine operations running shovels and other equipment. Another 15 have been retrained for new careers in the autonomous system while the rest are scattered in other departments.

Former driver Isaac Romero, MIS Technician, said the company did an effective job communicating the career opportunities and training that were available to drivers.

Romero spent time shadowing co-workers in different departments and researching other jobs at Bagdad. Eventually, he retrained as an MIS technician, working on the equipment needed to support driverless haul trucks.

"It's the future of mining, here and at other mines around the world," Romero said. "It's really exciting to be a part of this. I look forward to the future to see where my career goes. There are a lot of different paths you can take with autonomous."

Freeport Establishes Remote Operations Center

Shifting certain roles from mine sites to a centralized Phoenix-based operation, Freeport recently launched its Integrated Remote Operations Center (IROC), which supports North American mining sites through remote monitoring, data analysis and coordinated decision-making. It brings together work that previously was performed independently at individual sites, allowing teams to operate from shared data, common dashboards and consistent communication protocols.

IROC supports mine sites by monitoring equipment health and operational performance in real time and working directly with site teams to address issues as they arise. Engineers, technicians and analysts collaborate in one location, improving coordination and reducing delays that can occur when expertise is spread across multiple remote locations. Initial focus areas include payload optimization, fragmentation improvement and remote asset management, with additional technical and engineering functions expected to transition over time as appropriate.

"IROC is a tangible expression of our commitment to operational excellence," said Cory Stevens, president and COO Freeport Americas. "It will connect people, technology and processes to make our operations safer, smarter and better aligned with the future of mining."

The Phoenix-based operating center is designed to handle certain functions common to North American sites from a single facility. (Image: Freeport)

The move to IROC reflects both technological readiness and operational need. Advances in remote monitoring and communications now allow critical decisions to be made effectively away from the mine site, while increasing operational complexity makes a site-by-site approach less efficient. Centralization enables earlier identification of risk, more consistent decision-making and better use of specialized expertise.

IROC is being implemented through a phased approach that is already underway, beginning with remote monitoring and core technical functions and expanding over time as additional roles are assessed and transitioned to the centralized model.

IROC changes where certain roles are based, not whether they exist. Employees whose positions move to Phoenix are offered relocation support, and those who choose not to relocate can work with the company to explore other opportunities. The approach is intended to strengthen long-term workforce stability while maintaining continuity of experience and knowledge.

For now, IROC is in a temporary space within the company's corporate hub in Phoenix and is scheduled to move into a larger, purpose-build space in an adjacent building in mid-2026. The new facility is designed as a modern, high-performance workspace that supports remote operations and fosters collaboration across the teams. It places operational decision-making closer to enterprise leadership, planning and support functions. This proximity improves alignment between day-to-day operations and broader business strategy, while also providing access to a larger and more sustainable talent pool than remote site locations.

Overall, IROC represents a shift in how Freeport's mining operations will be supported and managed. The company said it will move the organization toward a more connected, technology-enabled operating model that emphasizes faster decisions, reduced operational risk and long-term competitiveness.

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America's Newest Copper Producer: Gunnison Copper

Gunnison restarts the Johnson Camp mine and quickly proves the viability of the Nuton Technology

Last year was a year of firsts for Gunnison Copper. The company, which controls the Cochise Mining District in the Southern Arizona Copper Belt, brought the Johnson Camp mine back into production. The operation began mining and placing ore on leach pads. By September, it was producing and selling copper cathode, and generating revenue. Just before the end of 2025, the company announced first copper production from Rio Tinto's Nuton Technology.

Located 65 miles west of Tucson, Ariz., the Johnson Camp mine can trace its history to the 1880s, and today Gunnison is using the latest technology to recover copper cost effectively and explore for more metals. The use of Nuton Technology is a prime example. It's a process developed by Nuton LLC, a Rio Tinto Venture that uses microorganisms to extract copper from primary sulphide materials, adding a new twist to leaching techniques that boosts recovery. The Johnson Camp mine is now expected to produce 25 million lb/y of copper cathode.

Gunnison is also evaluating the use of new cutting-edge technology to explore for critical minerals regionally. The company is partnering with Lunasonde Inc., a defense and mineral exploration technology company that has developed Airborne Georadiotomography (aGRT) Technology. This next-generation, remote sensing technology may have the ability to see through the thick alluvial cover.

"This collaboration reflects Gunnison's disciplined approach to innovation and data-driven decision-making," said Stephen Twyerould, president and CEO of Gunnison Copper. "We are continuously evaluating advanced technologies that have the potential to enhance our geological understanding, improve targeting efficiency and support long-term value creation across the Cochise Mining District."

The Cochise Mining District contains 12 known deposits in the Southern Arizona Copper Belt. In addition to the Johnson Camp mine, the company's Gunnison copper project has a measured and indicated mineral resource containing more than 831.6 million tons with a total copper grade of 0.31%. The plan is to develop it as a conventional open-pit mine, using heap leach and solvent extraction/electrowinning (SX/EW) to produce copper cathode on-site.

Gunison Copper produces first copper cathode from the Johnson Camp mine. (Photo: Gunnison)

Johnson Camp Sells First Copper

On September 15, 2025, Gunnison reported copper sales of 225,371 lb at an average realized copper price of $4.64/lb, which generated gross proceeds of nearly $1.05 million, following successful commissioning of the SX/EW plant and refinery.

"We are especially proud that every pound sold is 100% Made-in-America copper, directly supporting our nation as we work together to strengthen our supply chains," said Craig Hallworth, senior vice president and CFO for Gunnison.

Copper cathode production at the Johnson Camp mine began during the last week of August 2025, ahead of schedule, and with an excellent health and safety record. "Not only did we start producing ahead of schedule, but we started producing with an excellent health and safety record," said Melissa Mackie, director, investor relations and communications for Gunnison. "We're extremely proud of our operational discipline and bringing American copper to the market."

The Johnson Camp mine uses hydraulic excavators, wheel loaders and a fleet of trucks to move rock and ore. Ore production began in January 2025 and was stockpiled as the leach pad was developed in phases. Phase 1 was developed for conventional oxide heap leach, while Phase 2 would host

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Nuton's processing equipment and a mix of sulphide and oxide ore.

The company also completely redesigned and constructed a modern laboratory for on-site material and process analysis. The lab started its work in April alongside development of the leach pads. The company's human resources group progressed its staffing plan, with a focus on hiring locally, and has added exceptional talent to the Gunnison team.

"In one year Johnson Camp has been able to deliver a brand new mine, a brand new leaching plant and start the SX/EW plant," said Robert Winton, senior vice president, operations for Gunnison. "We have transformed Gunnison Copper into a nimble open pit copper producer with a future as bright as the Arizona sky we enjoy daily."

A blasthole rig drills a bench at the Johnson Camp mine. (Photo: Gunnison Copper)

Gunnison Proves Nuton Technology

During December, Gunnison announced the first use of Nuton Technology to produce copper at the Johnson Camp mine, "marking a pivotal step forward in the development of this innovative copper processing technology," the company said.

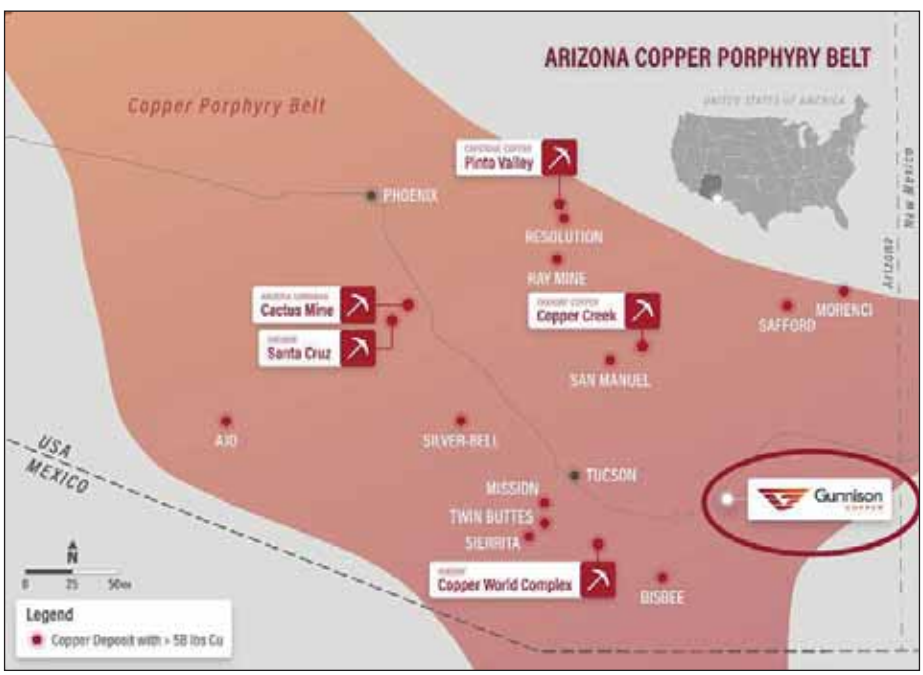
After more than 30 years of research and development, the first copper cathode using Rio Tinto's proprietary bioleaching technology, which relies on microorganisms grown on site, was produced at the Johnson Camp mine during November. The deployment involved the design and delivery of a technology package for a heap leach pad targeting production of 30,000 metric tons (mt) of refined copper (16,000 mt from run of mine leach pad and 14,000 mt from Nuton) over a four-year demonstration period.

"This is a breakthrough achievement for our Nuton technology, which is proving that cleaner, faster and more efficient copper production is possible at an industrial scale," said Katie Jackson, chief executive, Rio Tinto Copper. "In an industry where projects typically take about 18 years to move from concept to production, Nuton has now proven its ability to do this in just 18 months.

"The first production of Nuton copper at Johnson Camp is the culmination of exceptional teamwork between Gunnison Copper and Rio Tinto's Nuton team," Twyerould said. "Achieving this level of performance in such a short time frame shows what is possible when innovation, operational excellence and a shared vision come together. With Nuton copper now entering the U.S. supply chain, this milestone underscores the critical role we can play in strengthening domestic access to cleaner, low-carbon copper."

Nuton relies on naturally occurring microorganisms to extract copper from primary sulphide materials, which are traditionally difficult to process. These microbes, grown at large scale in Nuton's proprietary bioreactors, accelerate the oxidation of minerals in the crushed material heap, generating heat and enabling copper to dissolve into a leach solution, which is then processed into 99.99% pure copper cathode.

Significantly, processing copper ore with Nuton eliminates the need for concentration, smelting and refining, shortening supply chains and delivering copper cathode at the mine gate. It achieves recovery rates of up to 85% from primary sulphides, the most abundant copper bearing materials in the world.



Gunnison's operations are located 65 miles east of Tucson. (Map: Gunnison)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An aerial view shows the scale of the Johnson Camp leach pad. (Photo: Gunnison)

Nuton can also extend mine life and maximize resource use by extracting value from mineralized materials that would otherwise be classified as waste, increasing yield and revenue at both new and existing mines.

"Nuton has designed a modular system deployed as a technology package integrating biology, chemistry, engineering and digital tools, allowing it to be rapidly scaled and tailored to different ore bodies, unlocking resources that have historically been considered uneconomic or challenging," Jackson said.

At the Johnson Camp mine, Nuton aims to produce copper with the lowest carbon footprint in the USA. Through the purchase of 134,000 Green-e Energy certified renewable energy certificates, Nuton ensures 100% of the site's electricity is matched by renewable sources. The copper produced is anticipated to have a mine-to-metal carbon footprint of 0.82-kilogram CO_2-e per kilogram copper, the lowest in the USA and substantially lower than the projected 2026 global average of 3.4 kilograms CO_2-e per kilogram among operating copper mines. Additionally, water intensity is anticipated to be 71 liters per kilogram copper, compared to the global average industry estimate of ~130 liters per kilogram of copper production.

While this milestone confirms Nuton's engineering and operational viability, the next phase will focus on validating long-term technical performance. This includes multi-year testing, independent third-party verification and internal review by Rio Tinto to ensure consistent recovery rates and environmental performance.

Using Technology to Target Critical Minerals

Lunasonde will deploy its proprietary aGRT remote sensing technology to conduct an initial high-resolution subsurface survey over a defined portion of Gunnison's property. The work program is expected to include test and calibration flights, followed by data processing and analysis to generate three-dimensional subsurface imaging of identified anomalies with the potential to host critical minerals.

The collaboration is intended to evaluate the potential application of Lunasonde's technology as a complementary exploration and targeting tool across Gunnison's land position, which hosts multiple known copper deposits within close proximity to existing infrastructure and operations.

"Our partnership with Gunnison is a pivotal first step toward deploying aGRT for mineral exploration across the globe and securing our nation's critical mineral supply" said Jeremiah Pate, founder and CTO of Lunasonde.

Lunasonde's technology is designed to identify subsurface features from aerial and space-based platforms, offering a non-invasive method of data acquisition that may complement traditional geophysical and geological datasets. Results from the initial survey will be assessed alongside Gunnison's existing technical information to determine potential future applications.

"The Cochise Mining District has been known to host at least 12 of the critical minerals so important to the U.S. supply chain, yet most of this geology lies, un-explored, beneath thick alluvial cover," Twyerould said.

A Positive Impact for Arizona and the USA

Restarting of operations at Johnson Camp mine has already benefited the local community and economy by bringing jobs and economic growth to the area, not only through direct employment, but also by supporting local suppliers, contractors and service providers.

During October 2025, the University of Arizona's Eller College of Management completed an economic impact study, which underscores the transformative economic potential of the Gunnison copper project. It calculated a total present value output of $14.6 billion for the project, which would support more than 53,000 job-years of employment and generate $2.07 billion in labor income across the U.S. economy over its life.

Beyond the jobs and the economic impact, the new leaching technology that Gunnison and Nuton have proven will hopefully benefit the entire copper industry.

"The importance of Johnson Camp being the next American producer is significant for America and its supply chain," Winton said. "We have a significant lack of copper in America. Being able to produce a finished copper product domestically is incredible and such a proud moment for the entire organization and all of our partners in this process."

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South32 Prepares for Future Production at Hermosa

South32 embarks on a program to home-grow a workforce to support a greenfield operation

The Hermosa project differs from other mining projects. The deposit contains abundant amounts of critical minerals and for that reason it benefited from the federal government's FAST-41 permitting program providing greater transparency and an enforceable timetable through the Permitting Council. The owner, South32, made a $2.16 billion final investment decision in 2024 to develop its zinc deposit. It has also received two grants from the federal government for its manganese deposit. More importantly, however, Hermosa is a greenfield project, which means that it is starting with a clean slate and a fresh approach to operations that will create a meaningful economic uplift for southern Arizona.

Located in the Patagonia mountains just north of the Mexican border about 60 miles southeast of Tucson, the Hermosa project is currently focused on two large critical mineral deposits, one zinc and the other manganese. Processing these metals will create byproduct streams of other metals and a copper deposit has potential for development.

Hermosa is a true greenfield project that provides a unique opportunity to develop a next-generation mine, explained Pat Risner, Hermosa president, South32. "We have the good fortune of being able to do things differently, and our company is committed to funding that effort."

The Hermosa project has about 45,000 acres of unpatented mining claims. In the middle of that land package, it has about 600 acres of patented mining claims on private land.

Hermosa has one of the largest undeveloped zinc deposits in the world and another deposit could yield battery grade manganese. "The high purity manganese that we are targeting is for the lithium-ion battery supply chain and it has the scale and grade to serve domestic demand," he said. "The project also has 15 areas with potential satellite deposits where we are conducting exploration. As for the capital program we're deploying now, more than a quarter of it is in shared infrastructure that we can use to develop several deposits. It's kind of an emerging district play for critical minerals development."

The supply and demand issues associated with rare earth elements and other critical minerals is well known. Today, the USA produces only 6% of the world's zinc supply. Over the next eight or nine years, however, South32 sees a significant supply-demand gap developing. "By about 2034, we believe there will be a global supply-demand gap of

The Hermosa mine will have a footprint a fraction of the size of other mines in the area. (Photo: South32)

at least 4 million tons," Risner said. "To close that gap, you would have to develop three Hermosa's or more every year between now and then."

The supply chain for manganese is even more challenging, much like some of the other battery metals. "It's one of the critical minerals where the USA has no domestic production," he said. "We have not mined manganese in North America in about 50 years. We believe that demand will grow about 15-fold over the next 10 years."

Nearly all battery grade manganese (99%) comes from China. "If you operate a battery-electric vehicle (BEV), the battery most certainly has Chinese manganese in it," Risner said.

Hermosa is currently progressing through construction of its zinc deposit. South32 received the final state permits, allowing construction to commence 18 months ago. The company's board made the financial $2.16 billion investment decision to move forward, and it is funding the project through operating cash flow. "We received our permits quickly and we didn't have to go to the market to finance construction on the zinc deposit," Risner said. "We do have two grants regarding the manganese deposit that are helping us accelerate the production of battery metals.

"We received a $166 million grant from DOE to accelerate manganese processing which will be fully integrated," he said. "We will mine it and process it in southern Arizona into a final product for sale into that supply chain. That equates to a one-third cost share of the first phase of the manganese processing facility, which was part of the bipartisan infrastructure act. We have just finished construction of a decline to access the manganese deposit, which was funded in part by a.... Defense Production Act Title III grant."

South32 had a very deliberate strategy around permitting. "We started on private land to get into the construction as soon as possible," Risner said. "We began with a state permitting regime. We kept the project confined to private land and then as we started to think about the ancillary infrastructure and the federal lands that surround us, we started to engage the federal government on FAST-41," which refers to Title 41 of the Fixing America's Surface Transportation (FAST) Act.

An LHD arrives at the shaft's first level to begin lateral development. (Photo: Hermosa)

In May 2023, under the Biden administration, Hermosa became the first mining project to be covered under the FAST-41 permitting program. "We are really happy to see this program being used more broadly by the current administration," Risner said. "As a project developer who is almost through the full process, we believe it works, particularly the covered projects where you get the full force and support of the Federal Permitting Council as well as better resourcing. It's better coordinated and it has been a very successful program for us. We will get through that process in about two years."

When South32 started the prefeasibility for the Hermosa project, it made a decision, based on purpose, values, and objectives, to present something different to its stakeholders. Hermosa will combine the best practices used in many places by various mine operators in one place for a different outcome. The project will leverage technology and innovation to not only be safer and more responsible, but also to achieve its goals as far as its social license to operate.

Next Gen Mining

Like most mines, Hermosa needs to meet the expectations of its stakeholders. "We are working really hard with this project to challenge a lot of the paradigms as far as past mining practices," Risner said. "We knew we had to produce something fundamentally different to engage our stakeholders."

One of the goals was to minimize the surface footprint of the Hermosa project to the fullest extent possible. "We will mine both deposits with a potential 70-year mine life, yet only disturb a total of 750 acres," he said. "That includes roads, tailings, support infrastructure, everything. Our primary mine access and infrastructure is contained to a block of land that is less than 200 acres."

Hermosa has a footprint a fraction of the size of other mines in the area. The mine will be a long-hole, open-stope mine that will produce 11,800 tons per day (t/d). "For a mine of that scale, 750 acres is a very small footprint," Risner said. "We built a new lined, dry stack tailings facility."

Another commitment is to reach net-zero as soon as possible which includes using battery-electric equipment. In April 2025, South32 placed the largest order for battery-electric underground mining equipment in the history of the industry. "By the time we hit full nameplate capacity, our primary and support equipment underground will all be BEVs," Risner said.

South32 is also working with the local utility to power the mine with renewable energy sources. "If you eliminate fossil fuel-powered electricity and diesel use underground, Hermosa moves closer toward a net-zero mining operation," he said.

Water is obviously a hot-button topic in the Sonoran Desert of southern Arizona. "Beyond permitting requirements, this is a particularly sensitive issue for the area, and our stakeholders value the emphasis we have placed on this issue," Risner said. "It's really important to them and it's an area where we felt like we really had to push hard."

At nameplate production, Hermosa will consume about 0.5 gallons of water for every pound of metal produced. "To put that into context, the average mine consumes about six to 20 gallons for each pound of metal produced," Risner said. "A lot of the open pit mines use 10 to 20 gallons per pound of metal produced. With filtered tailings, we will recover about 90% of the process water and reuse it. We also designed the underground mine to be a low water consumer as well.

"We didn't make these decisions to accelerate permitting," he said. "We wanted to meet stakeholder expectations as far as our social license to operate. We have the luxury of starting from a blank sheet, and we decided to do things differently."

Automation and the Social License to Operate

Another area where South32 is pushing the boundaries is the use of automation and remote operations. "All of our primary production processes underground will either be tele-remote, fully automated or semi-autonomous from a remote operating center. Why? There is the obvious safety and productivity benefit with far fewer people underground. However, the reason that's probably not as evident is that we can use technology to enable our social license to operate.

"If all of the equipment was manned, we would need to import a large, experienced workforce to do the work," he said. "We still will have to do some of that, however, once the mine is operating at nameplate capacity, and we have the automated and tele-remote fleets in place, many of the jobs as far as operating primary production equipment will be located at our remote operating center, Centro."

Centro is currently under construction in Nogales, 20 miles from the mine site. "Typically, the mining industry builds these remote operating centers in large metropolitan cities to access larger pools of workers," Risner said. "Our aim is to have a local workforce."

A social license to operate means shared value for stakeholders. "Mines create lots of jobs and one of the big selling points is the socioeconomic community uplift created by operations like this, and it's more impactful when the local community benefits the most," he said. "Our intent is to home-grow the workforce and technology now enables that."

At peak operations, South32 plans to have 80% of its workforce come from current residents from the community, not people that move to the community. "We can train people that have no mining experience in about 18 months to do a lot of the jobs in this facility with modern technology," Risner said. "That gives us a much better chance to accelerate the local content in our workforce compared to a traditional operation. It gives us a chance to truly have a workforce that reflects our community really early in the life of the mine.

"We believe there will be a lot of people that would have never considered a career in mining to be attracted to Hermosa," he said. "That's why we decided not to put Centro in Tucson, but to build it in Nogales, a community of about 20,000 people on the border, which has not had mining in a long time."

A person that would not want to drive 60 miles roundtrip to work a shift in an underground mine might choose to work at Centro instead. It would be close to schools, their support network, childcare, etc. A remote operating center removes those barriers that might prevent a career in mining.

"For many years, we have been talking about the impact of retirement on the industry and the impending workforce crisis," Risner said. "If we do not make the jobs more accessible to everyone, we are going to have a challenge operating these businesses. That is what we will need to do to be successful with these new projects and Centro could introduce a lot of new people to mining."

Hermosa will have about 200 roles based at Centro, meaning that a little more than one-third of the workforce will not work at the mine. "They will be monitoring autonomous, semi-autonomous, and tele-remote operating equipment at this facility," he said.

Hermosa will have 200 people based at Centro in Nogales. (Image: South32)

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An illustration depicts the zinc processing plant, which is under construction. (Image: South32)

"It will also house short interval control planning and engineering. We will have a lot of predictive analytics roles planned for Centro. It will be the nerve center for the operation."

Construction Update

With its final investment decision, the South32 board committed $2.16 billion in February 2024 to build the infrastructure for its zinc deposit. At that point, the company had already invested about $500 million in early expenditures. When Hermosa reaches first zinc production in mid-2027, the company will have invested about $2.7 billion to get the project from inception to first production.

"We're about 45% through the full construction program now," he said. "We have one shaft that's developing the first mining level, which is a little more than 50% complete. We're starting to do some lateral development. Later this year, we will be developing a second level, and one shaft will be complete."

"For the manganese development, we finished the decline at the beginning of December," he said. "We are developing some more sampling levels to start underground exploration drilling."

Hermosa has been producing battery grade manganese from a pilot plant for about two years now. "We are in the process of scaling that up into a much larger test plant so that we can produce greater volumes," Risner said. "We have about 15 entities in the lithium-ion battery supply chain testing that material. They need larger volumes to test and to qualify that material. So, we will take a bulk sample from the decline and run it through that test plant. We have MOUs with two potential customers for manganese offtake."

Currently about 1,000 people are working on construction including building a paste plant, a tailings filtration plant and a zinc processing facility. "We are about a third of the way through the first of four packages, and obviously the shaft sinking is well developed," Risner said.

The pace of the manganese development will follow the development of the U.S. battery market. "That is a market that does not exist today, but it's coming," Risner said.

The Workforce Challenge

When Risner arrived at the Hermosa project in early 2019, he said South32 had about 25 to 30 people in a little office thinking about what a prefeasibility study might look like. "We now have 250 full time staff and another 700 or 800 contractors, and in the next 18 months, we have to hire 300 to 350 more people," he said. "With the longer-term development of both deposits, the total workforce will grow to 800 to 900 people."

While Arizona is a mining state, Santa Cruz County has not seen mining activity in a long time. It's one of the more impoverished parts of the state where unemployment is double the state average. The per capita income is 40% below the state average. Each Hermosa job generates twice the average household income in the county, and this will be transformational. Risner admits that home-growing the workforce is not the easiest way to go about this and acknowledges it will take more effort and time.

"Santa Cruz County has never had a skilled trade training program," he said. "If you wanted to be a welder or an electrician, you could not get the training in Santa Cruz County. They do not have a community college. That's the environment we are working with."

South32 is now partnering with Pima Community College in Tucson to offer skilled trade training programs through the Santa Cruz County Provisional College in Nogales. "We have just kicked off the first program in the history of the county," Risner said. "We're training electricians in Nogales. We are training double what we need to provide a broad skills uplift for the community. We are going to roll out one program after another over the next five to 10 years.

"This is a really important legacy that we can leave," he said. "If we are going to grow and build new projects, we need to think about how we start to home-grow workforces, how we start to invite more people into the business and how to establish the next generation of workforce for these mines."

This article was adapted from the keynote speech Hermosa President Pat Risner delivered at the American Exploration & Mining Association's annual convention, which was held during December 2025 in Reno, Nevada.

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Florence Copper Starts Wellfield Operations

First copper production is expected by early 2026

Construction activity at Florence Copper is now complete and the focus has shifted to wellfield operations and commissioning of the SX/EW plant. Located south of Phoenix in the community of Florence, Ariz., it will produce LME Grade A copper metal onsite with operating costs projected to be in the lowest quartile among global copper producers. The operation will soon become a significant employer in the region and the state, supporting more than 800 Arizona jobs.

With in-situ copper recovery, a low-pH solution is injected into a naturally fractured copper orebody via a series of injection wells, causing copper minerals to dissolve into solution prior to being pumped to the surface through recovery wells. Hydraulic control of the solution is maintained through carefully managed pumping rates and verified with monitoring and compliance wells.

Operations at Florence Copper do not require blasting, loading, hauling, crushing or conveying of mineralized material, resulting in 75% fewer greenhouse gas (GHG) emissions, 65% less energy use and 78% less water consumed per pound of copper produced, compared to conventional open-pit copper mines in Arizona.

Construction of Florence Copper's commercial production facility began in January 2024, and first copper is expected to be produced in early 2026. When fully operational, it's expected to produce 85 million lb/y of copper for 22 years. The first copper cathode from the new production facility is expected soon.

The copper-bearing solution is processed through a solvent extraction/electrowinning (SX/EW) plant to produce copper metal as cathodes. The general contractor assigned to the SX/EW plant area completed construction on September 19 and began to demobilize its construction crews at that time. Florence Copper is supervising the remaining contractors as they wrap up the final construction activities and systematically hand over sections of the plant area to the operating team for commissioning. The commissioning phase for the SX/EW plant is scheduled to run in parallel with the start of wellfield operations.

"The transition from construction to early-stage operations at Florence has gone smoothly, and we are very pleased with the initial copper recoveries and performance of the commercial wellfield," said Stuart McDonald, president and CEO of Taseko. "Our project team is focused on the successful start-up of the SX/EW plant, followed by first copper cathode production."

With copper prices approaching record levels, and a growing focus on security of critical mineral supply, the timing is ideal to bring on a major new source of refined copper inside the USA, McDonald explained.

Moving Forward With Wellfield Operations

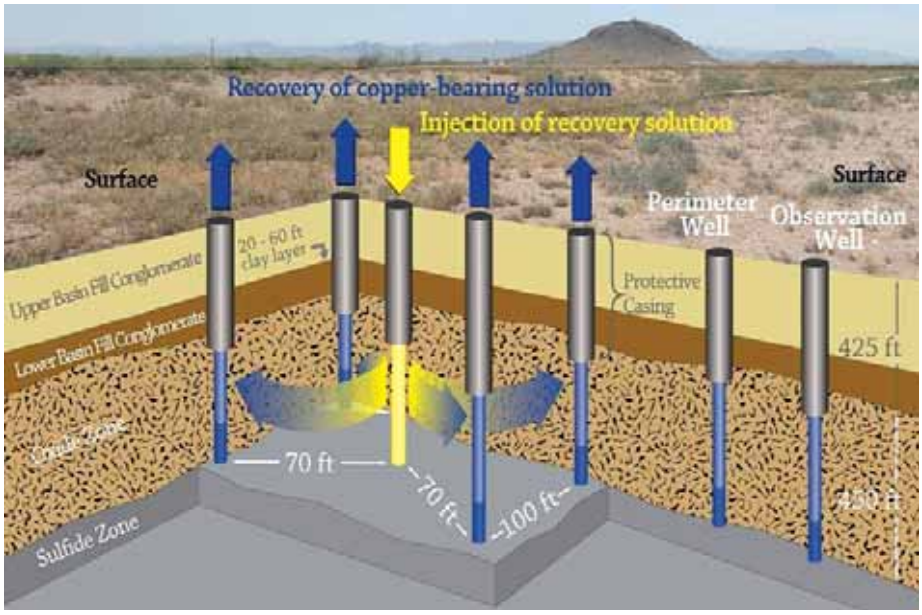
Wellfield acidification commenced in early November, and in early December mining solutions were circulating in all the new production wells within the commercial wellfield. Injection flowrates in the wellfield have met or exceeded expectations, resulting in faster initial acidification of the wellfield.

The grade of copper recovered in solution from the recovery wells has continued to increase, and the average solution grade has now reached the level required for SX/EW plant operations.

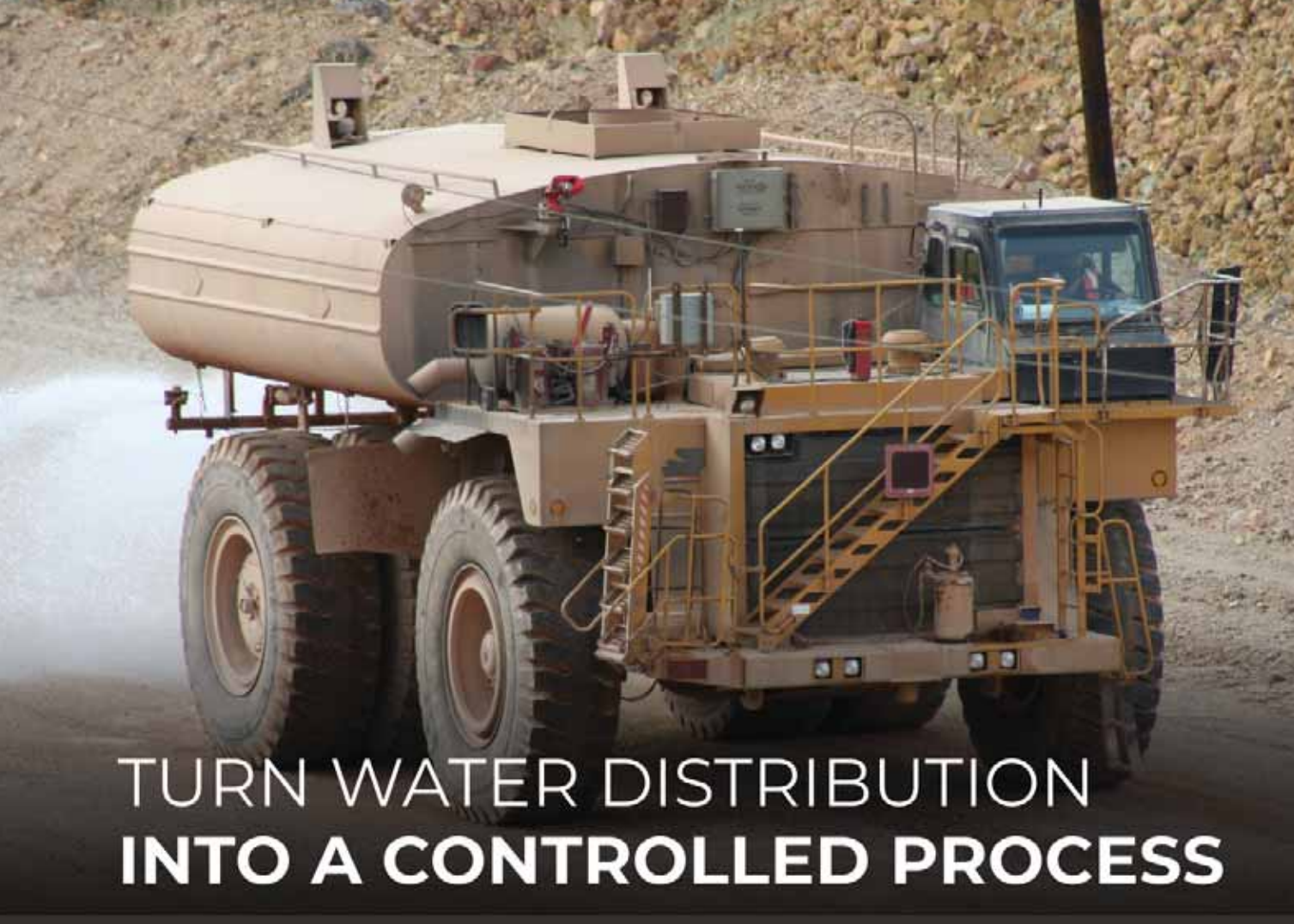
Commissioning of the SX/EW plant area has been advancing without any significant issues, and plant operations are expected to commence shortly.

Wellfield drilling has also re-commenced with three drill rigs currently operating on site. Continued expansion of the commercial wellfield will support higher solution flows and increased copper production for the ramp-up this year.

"The transition from construction to early-stage operations at Florence



In early December, solution began circulating in the commercial wellfield. (Image: Taseko)



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Florence Copper is now focused on the start-up of the SX/EW plant. (Photo: Taseko)

has gone smoothly, and we are very pleased with the initial copper recoveries and performance of the commercial wellfield," McDonald said. "Our project team is focused on the successful start-up of the SX/EW plant, followed by first copper cathode production."

Prior to the launch of the production facility, Taseko built a production test facility (PTF), which consisted of a wellfield (four injection wells, nine recovery wells and 11 ground-monitoring wells), and a small SX/EW plant. Operation of the PTF proved Taseko had the ability to establish and maintain hydraulic control of the fluid within the oxidized zone of the orebody. The PTF also allowed the company to collect valuable information in initial leach periods, sweep efficiencies and recoveries, which was used in the design of the commercial scale facility.

During the 2026 ramp up, Florence Copper will commence operations with approximately 90 wells. Wellfield drilling began during Q4 2025 with new wells to begin phasing into operation throughout 2026. The company expects to drill 100 wells per year. The target is to produce 85 million mt/y (the design capacity) in 2027.

Since acquiring Florence Copper in 2014, Taseko has invested $266.6 million to bring the project online. That includes $50 million in construction financing from Mitsui. In exchange, Mitsui received a 2.67% copper stream plus an offtake contract for 81% of the copper cathode during the initial years of operation. Mitsui has the option to invest an additional $50 million (for a total of $100 million) to convert the stream to a 10% joint venture interest.

Mitsui and Florence Copper will develop sales channels for green (low-carbon) copper in the USA.

Florence Copper, United Way Raises Funds for Early Literacy

Florence Copper recently announced the results of its 2025 United Way of Pinal County campaign. Thanks to the generosity of employee donations and a $15,000 corporate contribution, over $25,600 was raised to support early childhood literacy in the community.

Florence Copper employees helped raise $25,600 for the United Way of Pinal County. (Photo: Taseko)

Employee donations totaled more than $10,600, reflecting a strong commitment to giving back and investing in the next generation. These combined contributions helped provide approximately 9,848 books to local children through the Better Beginnings Initiative.

Better Beginnings is a partnership between Florence Copper, United Way of Pinal County and the Florence Unified School District (FUSD). In Pinal County, only 31% of students are considered proficient readers by third grade. Working with Dolly Parton's Imagination Library, the Better Beginnings program aims to help address this issue and promote early childhood literacy by providing free books to children ages 0-5 living in FUSD zip codes. This effort is part of United Way's broader Reading by 3rd Grade initiative, which works to help foster a lifelong love of reading and set young learners up for future academic success.

"Florence Copper is deeply committed to strengthening the community we call home," said John Mays, general manager of Florence Copper. "Supporting early literacy is one of the most important investments we can make, and we are proud to stand alongside our employees and partners to help create a brighter future for local children."

Families interested in registering for the program can learn more at: https://unitedwayofpc.org/programs/.

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Ivanhoe Electric Publishes Feasibility Study for Its Santa Cruz Project

The study further defines a deep copper mining operation with strong economics

Ivanhoe Electric (IE) is developing the Santa Cruz project, a major underground copper mine and mill, located 60 miles south of Phoenix. During June 2025, the IE published a prefeasibility study for the project detailing its mining and processing plans for the first time.

The Santa Cruz project sits on private land, which will allow for an accelerated permitting process. Most of the reserves are held in a large oxide formation that will allow heap leach recovery. IE is projecting 1.4 million metric tons (mt) of copper cathode over a 23-year mine life. The capital costs for the project are estimated at $1.24 billion and the cash costs to mine and process the copper will be $1.32/lb, according to the study.

More recently, IE's subsidiary, Mesa Cobre Holding Corp., closed on a $200 million bank credit facility to support project development. The multi-draw bridge facility is secured by a banking syndicate composed of the National Bank of Canada, BMO Capital Markets and Societe Generale. The bridge facility is a significant milestone in Ivanhoe Electric's long-term financing strategy for the Santa Cruz project. The company said it will complement ongoing discussions related to the broader project financing plan.

"As we advance toward breaking ground in 2026, Santa Cruz is steadily marching on the path to becoming one of the first new copper mines built in the U.S. in almost two decades," said IE Executive Chairman Robert Friedland. "Our mining process is designed to produce 99.99% pure copper metal on site, thanks to the very high grade nature of our oxide copper reserves. Santa Cruz is the first step in our vision to grow a new American-based and American-focused critical metals company. Today's credit approvals, coming from this group of top-tier mining financiers, are a clear vote of confidence in the project, our people and this vision."

Along those lines, during April 2025, IE received a Letter of Interest from the U.S. Export-Import Bank (EXIM) for $825 million of project debt under the Make More in America initiative. The full application for funding from EXIM is in process. The company expects to complete the project financing process for the Santa Cruz project in mid-2026. IE is poised to become the newest producer of copper metal in the USA.

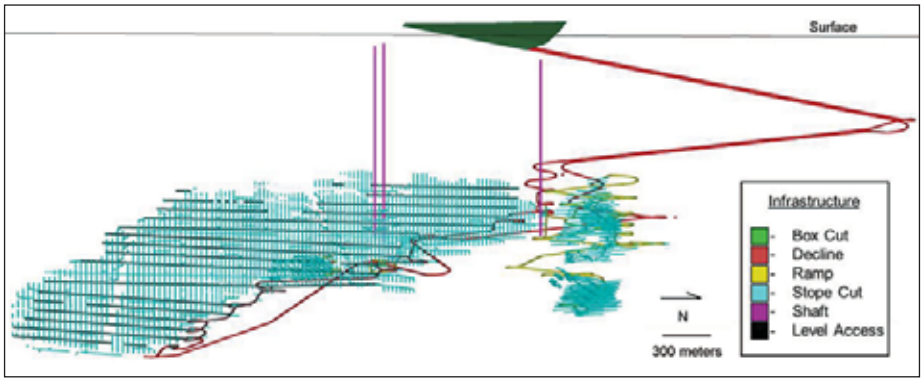
Producing Copper in America for America

"Given the global conflicts that concern us all, the USA is now awake to the urgent national security imperative to restore domestic American mineral production to the scale of the American economy," Friedland said. "Our government, industry and defense establishment clearly recognize the paramount importance of having a secure, domestic supply of all critical minerals in the 21st century, including copper."

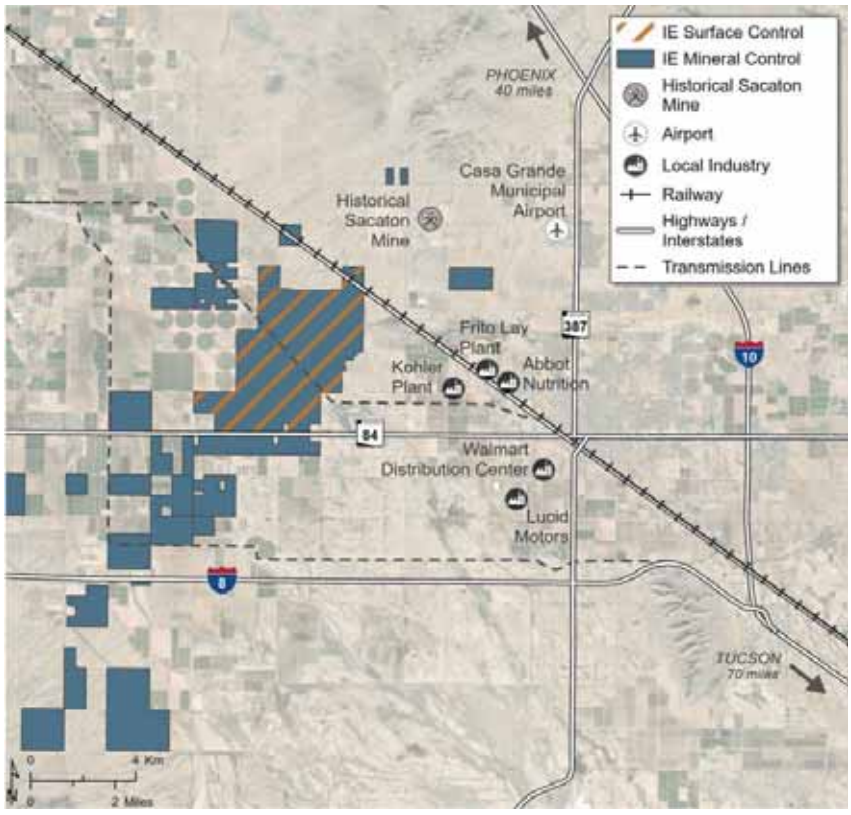
Santa Cruz will mine the largest high-grade copper oxide orebody in America, which will be processed onsite by a new generation of skilled and highly paid American workers. "Santa Cruz will produce an LME Grade A copper cathode that will be ready for immediate sale to American industry from our mine gate. Our project will not process concentrate in antiquated, expensive and polluting smelters or ship copper concentrate back and forth across international borders for downstream processing.

"We will produce pure American copper mined and processed in America, and directly shipped from Arizona for use in American homes, factories and our national defense industry," he said. "Santa Cruz is the right project, in the right place, at the right time.

"Our progress to date could not have been achieved without the support of our long-term supportive investors, such as Saudi Arabia's Maaden and BHP, the world's largest mining company, and several of the world's top institutional investors who understand the urgent need for domestic copper production," Friedland said. "This is what the American mineral industry and resurgence must look like – clean, secure, strategic and ready to support American national security."



Santa Cruz copper project underground mine design, long-section. (Source: IE)



Santa Cruz copper project location.

A World Class Operation Supported by Modern Technology

Since its initial assessment study in 2023, IE has invested more than $100 million in new drilling, advanced test work and extensive engineering studies to produce the preliminary feasibility study. It incorporates data gathered from an additional 149 drill holes totaling nearly 120,000 m, more than 250 trade-off studies, and hundreds of hydrogeological and metallurgical tests. Since commencement of exploration at the Santa Cruz project in 2021, IE has completed 329 drill holes totaling 279,000 m.

Fluor Canada Ltd. served as project lead for the study and was also responsible for surface infrastructure and heap leach pads, working in close collaboration with IE's project team of more than 40 engineers, geologists and technicians. Other industry-leading consultants involved in major workstreams of the study include BBA USA Inc. for resources, reserves, underground mine planning and economic analysis, KCB Consultants Ltd. for heap leaching, Paterson & Cooke USA, Ltd. for paste backfill, Met Engineering, LLC for metallurgical testing, and INTERA Inc. for hydrogeology.

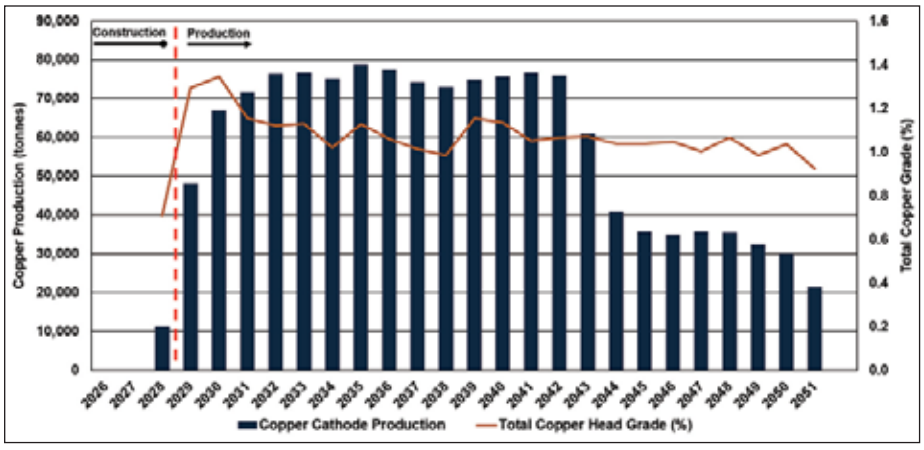
"Working together with our expert industry consultants, our team's tireless efforts have resulted in a highly engineered underground mine plan and a simplified heap-leach process design with low initial capital, low unit operating costs and high copper recoveries," IE President and CEO Taylor Melvin said.

The study determined that the economics of the Santa Cruz project compare favorably on a global scale in terms of C1 cash costs, and in terms of capital intensity when compared to other greenfield copper projects in North and South America.

Located near Casa Grande, Ariz., the Santa Cruz land package consists of 6,000 acres of private land, including surface, mineral and associated water rights necessary for the mining operation. Casa Grande is at the heart of a rapidly growing industrial corridor with readily available power and transportation infrastructure and a skilled local industrial workforce. The planned site layout provides for a compact surface footprint of less than 2,600 acres.

The probable reserves for the project amount to 136 million mt at a 1.08% total copper grade, totaling 1.5 million mt of contained copper. The study only considered the high-grade copper mineralization from the oxide and chalcocite domains of the Santa Cruz and East Ridge Deposits.

The deposit will be accessed by conventional twin decline drifts. Roadheaders will be used to mine the declines, measuring approximately 8 km in combined length. Main intake and exhaust raises will be developed using blindbore shaft sinking to supply ventilation to the mine workings.



Copper production at Santa Cruz will average 72,000 mt/y for the first 15 years. (Source: IE)

The underground mine will utilize the latest mining equipment, including a tele-remote-operated electric fleet, mine telemetry and grade control technologies. Underground mining will primarily use longhole stoping and local drift-and-fill, totaling approximately 201 km of stope cuts completed across 16 main levels. Mining will occur in blocks, extracting ore from the bottom upwards, with paste backfill providing ground support. Ore will be transported underground using the Railveyor system.

Hydrogeological mitigation strategies during decline development and mining include grouting, hydrostatic lining and silica gel injection. Groundwater modelling and mitigation result in residual passive inflow rates ranging from approximately 6,000 to 8,000 gallons per minute (gpm) during peak mining periods.

Throughput will steadily increase from the start of production onward to achieve an average of 20,000 mt/d, producing an annual average of 72,000 mt of copper cathode over the first 15 years of the mine life.

Mined ore will be brought to the surface and processed through a conventional chloride-assisted on/off-heap leach process to produce copper cathode through solvent extraction/electrowinning (SX/EW). The high-grade nature of the Santa Cruz and East Ridge orebodies enables high copper recoveries averaging 92.2% over the life of mine, with low sulphuric acid consumption of 6 kg/mt of treated ore. Up to 50% of the spent ore will be converted into paste and used as backfill underground.

Permit	Status	Submittal Timeline
The following permits have been obtained for exploration activities and are in the process of being amended for project construction activities:		
Arizona State Mine Inspector Mined Land Reclamation Plan	Active/amendment in progress	Q3 2025
Pinal County Dust Control permit	Active/annual renewal	Ongoing
The following permits for construction activities are in preparation or have been submitted:		
City of Casa Grande Major Site Plan and Development permit	In progress	Q3 2025
Pinal County Air Quality Control District Class II Air permit	Submitted	Q1 2025
Arizona Department of Environmental Quality General Aquifer Protection permits for construction	In progress	Q3 2025
Arizona Department of Water Resources 45-513 Groundwater Withdrawal permit	In progress	Q4 2025
The following permits for construction and operation will be prepared and submitted as design and engineering details become available:		
Arizona Department of Transportation Encroachment permit for access off Highway 84	Road improvements engineering in progress	Q4 2025
US Environmental Protection Agency Class V Underground Injection Control permit	Engineering to inform application in progress	Q4 2025
Arizona Department of Environmental Quality Individual Aquifer Protection permit	Engineering to inform application in progress	Q3 2026
Arizona Department of Environmental Quality Recycled Water Discharge permit	Detailed engineering required for application, if necessary	Q1 2027

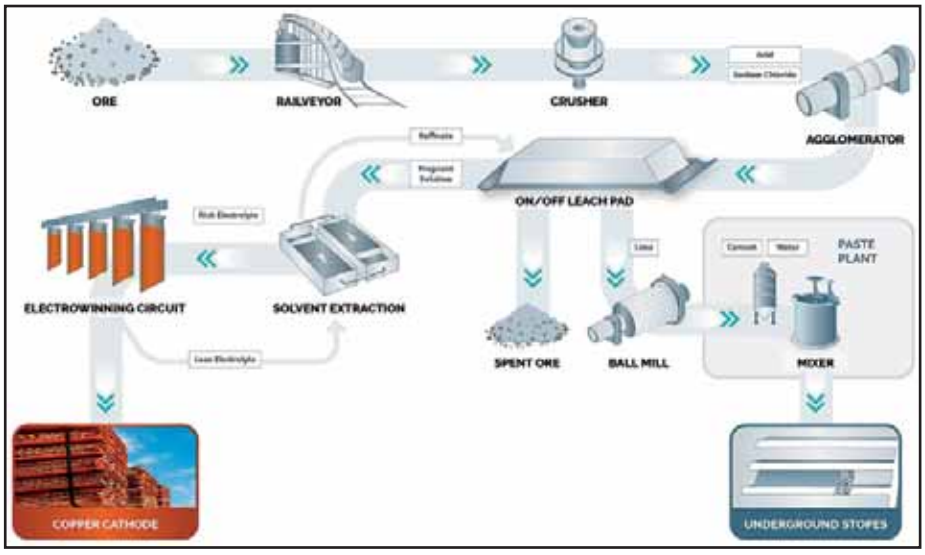
Current Santa Cruz copper project permitting status and timeline. (Source: IE)

The Santa Cruz project requires permits primarily from the City of Casa Grande, Pinal County and the State of Arizona, with only one Federal permit required. Land use authorizations from the City of Casa Grande, including a General Plan Amendment and Major Amendment to a Planned Area Development Zone, have already been obtained and allow mining activities and infrastructure within the project site.

The current Santa Cruz development plan targets initial construction in the first half of 2026 and first copper cathode produced in 2028.

The indicated resources at Santa Cruz and East Ridge, exclusive of previously discussed mineral reserves, comprise a total of 1.5 million mt of contained copper. The indicated resources amenable to heap leaching at Santa Cruz total 800,000 mt and 41,000 mt at East Ridge. These indicated resources at Santa Cruz and East Ridge are not included in the current mine plan, and if converted to mineral reserves, represent near-mine expansion potential.

"Santa Cruz will provide high-paying jobs in Arizona and be a significant long-term U.S. producer of copper cathode," Melvin said. "We are fortunate to have such a high-quality copper asset on private land with excellent infrastructure."



A simplified flowsheet shows the copper production process for Santa Cruz. (Image: IE)

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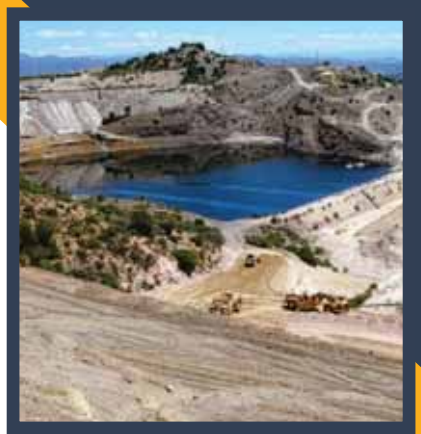

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Arizona Sonoran Outlines Plans for a Long-life, Low-cost Copper Producer

Hudbay and others provide initial funding for the project

The Arizona Sonoran Copper Co. (ASCU), a U.S.-based copper exploration and development company, published a prefeasibility study (PFS) for its Cactus project during October 2025. The study considers a simple open-pit, heap-leach operation using solvent extraction/electrowinning (SX/EW) to produce approximately 103,000 metric tons per year (mt/y) of copper cathodes during the first 10 years, which would make Cactus the third largest cathode producer in the USA.

During 2025, ASCU raised a considerable amount of cash before and after the PFS announcement. During June, the company closed on a C$51.75 million ($37.2 million) bought deal with a syndicate of underwriters led by Scotia Capital. That same group returned in December with another C$86.3 million ($62 million). Hudbay Minerals exercised its pre-emptive rights as an investor and brought an additional C$10.4 million ($7.5 million) to the table.

"The recent financings have provided ASCU with the incremental capital to expand our key 2026 deliverables to include early development activities," said ASCU President and CEO George Ogilvie. "Logistically, we will begin advancing the most productive and/or time sensitive activities outlined in the recent PFS." He thanked Hudbay for its ongoing support. As a result, ASCU ended 2025 with a little more than $100 million.

The Cactus mine will soon become a world class copper producer. (Photo: ASCU)

An Optimized Plan Brings High-grade Ore Forward

The PFS that ASCU published for its Cactus project in Pinal County, Arizona, foresees a long-life and economically viable copper mining operation. It will use conventional open pit mining methods and heap leach-SX/EW processing to produce LME Grade A copper cathode onsite.

"The work product of this recent study validates the investment of optimizing the Parks/Salyer mine plan both in terms of production cadence and ore quality," said Bernie Loyer, senior vice president-projects for ASCU. "That optimization has resulted in higher grade material being placed sooner in the execution plan, and produces a much more consistent copper production profile, generating superior cash flows as compared to the 2024 PEA.

"Building on the benefits first highlighted by the 2024 PEA, including the impact of the MainSpring land acquisition and the comprehensive available infrastructure, a solid foundation with a defined and compelling plan of operations emerges in sharp focus," he said. "That plan, in combination with a supportive local community, a proven project team on deck and the Cactus project being fully positioned on private land, sets an impressive stage for the next step in this incredible journey to deliver a future long-term source of copper cathode produced in the USA."

Ogilvie explained that the PFS is a major milestone in the advancement of the project toward a final investment decision, which could be as early as Q4 2026. "We believe we are developing a world-class copper cathode project, within Casa Grande's copper district," Ogilvie said. "Looking forward, Cactus is a project capable of plating an average of 103,000 mt/y of copper cathodes annually in the first 10 years.

Ogilvie also noted that, to date since the company's IPO in 2021, the land position for the Cactus project has increased by 320% and mineral resources have grown by over 580% in the measured and indicated category, with the after-tax NPV8 reaching a substantial $2.3 billion.

"We have the opportunity to become a significant player in the American copper industry, filling a clear gap in the domestic copper supply," Ogilvie said. "Cactus is among the highest quality copper development projects globally in terms of risk, size, scale and capital intensity." He said the

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company is anticipating production of first copper cathodes in H2 2029.

ASCU will now embark on three key workstreams toward a final investment decision, including a definitive feasibility study, obtaining permit amendments and project financing. "Each workstream has begun and is being led by experienced team leaders," Ogilvie said.

The Cactus PFS contemplates a streamlined mine plan that leaches oxides and enriched ore from Parks/Salyer and Cactus West open pits, reducing the life of mine (LoM), but improving estimated overall ore grade reporting to the processing circuit and simplifying the execution of the project. The Primary Sulphides and Cactus East underground will be placed on the back burner as future expansion opportunities.

The new mine plan optimizes crushing and haulage to maximize copper recovery. Metallurgical performance improves to 75% total copper recovery from 65% total copper, over a defined leach cycle spanning three 180-day cycles.

Economically, the focus on efficient copper operations results in consistent estimated annual revenues, free cash flows and annual production rates. An initial capital estimate of $2.3 billion supports a higher production profile in years three through five. The Cactus operation becomes positive in terms of cash-flow between years two and three, based on $4.25/lb. It generates $3.8 billion in cash flow over the first 10 years. Mining costs are reduced through economies of scale. The processing side will benefit from decreased net acid consumption (7 lb/ton).

Conventional Mining and Processing Operations

The PFS moves the mining phases north to access higher grade ore tons earlier at Parks/Salyer. The crusher capacity was increased to 28 million mt/y and the SX flow rate was increased to 21,500 gallons per minute (gpm). Full SX/EW nameplate capacity increases to 140,000 mt/y copper between years three and four, facilitating a higher production profile in the early years.

The mine plan establishes onsite copper cathode production from conventional heap leach and SX/EW processing of the oxide and enriched sulphide ore. Mine operations are expected to use conventional truck and shovel and two-stage crushing. The mine will use trucks to load the leach pads in the first three years and then pivot to conventional stacking.

The Parks/Salyer and Cactus West open pits will provide ore feed to the leach pad from year one through year 20 at variable rates not less than an estimated 18 million mt/y and not more than 28 million mt/y. The Parks/Salyer open pit will be mined in seven phases (0-6), while the Cactus West open pit will be mined in two phases (1-2).

A total of 1.84 billion mt of material is projected to be mined from the Parks/Salyer pit, including 373.8 million mt of proven and probable mineral reserve leach ore at a 0.59% total copper grade and a strip ratio of 3.9:1. A total of 368.9 million mt of material is projected to be mined from the Cactus West pit, including 139.1 million mt of proven and probable mineral reserve leach ore at a 0.33% total copper grade and a strip ratio of 1.7:1. The LoM strip ratio is 3.3:1 combined.

The material handling system has been designed so that 28 million dry mt/yof ore can placed on the heap leach pad. Crushing rates are variable to accommodate constraints in the electrowinning circuit and avoid building large inventories on the leach pad. The mining sequence has been designed to balance stripping requirements under this constraint for efficient plant operations.

There are also various future opportunities to improve material handling solutions. Trolley assist for haul trucks, battery-powered trucks and waste sizing/stacking systems, etc., could lower overall operating costs per ton. These are expected to be further detailed in the definitive feasibility study. The use of in-pit or near-pit crush and convey solutions for waste could reduce operating costs. Once the rail line is operating, it could be used to deliver supplies in bulk, such as reagents, which would also reduce costs.

The Cactus processing plant will consist of a two-stage crushing and screening plant ahead of heap leach. All material will be crushed to a minus ¾-in. P80 size, stacked on a single pad and leached for 180 days. The pregnant leach solution (PLS) will be processed in a SX/EW plant. The SX/EW plant process design will include three extraction settlers, one strip settler and a tank house. The tank house will start as a 70,000 mt/y facility and then ASCU will add a second facility of same size, ready for use between years three and four.

Production from the heap will reach 140,000 mt/y from year five. Copper cathodes will be produced directly on-

The Cactus team plans to revive a brownfield copper operation. (Photo: ASCU)

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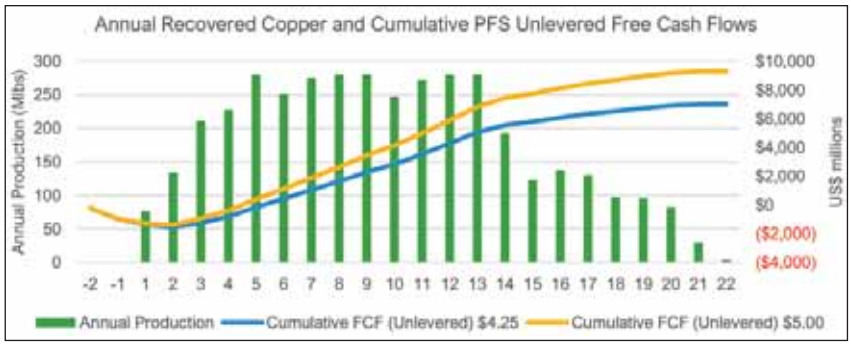

Production from the Cactus mine is expected to average 113,000 mt/y for the first 10 years. (Graph: ASCU)

site via heap leach and SX/EW, including a three-year ramp up period. Average annual cathode production for the first 10 years is expected to be 113,000 mt. A total of 2,210 million mt is expected to be mined (waste + ore), including a total of 513 million tons processed, resulting in the recovery of 3,988 million lb of copper cathodes over the LoM.

Average annual water consumption is planned at approximately 2,050 gpm, the equivalent of 3,300 acre-feet/year, well within ASCU's permitted 3,736 acre-feet/year industrial use allocation, using in-place onsite wells. The PFS includes a high demand for dust suppression. ASCU acknowledged that it would be possible to reduce the use of water by adding surfactants, gravel, or pavement to reduce dust from the roadways. It will be evaluated as a way to minimize the environmental impact and preserve water resources.

Infrastructure, Permitting and Financing

The Cactus project is a brownfield project located approximately six miles northwest of Casa Grande and 40 miles south-southwest of Phoenix.

During historic ASARCO operations (1974-1984), a rail spur was connected directly with the Union Pacific Railroad to ship concentrates to its El Paso refinery in Texas. While the spur has been removed, the onsite rail line still exists. Current onsite infrastructure also includes power lines and a substation, water wells and a water pond, geological buildings, core sheds and administrative offices. All of which contribute to a lower capital intensity.

Because it will be developed on private lands, the Cactus project has no federal nexus for permitting. All permitting is limited to state and local required permits, including the aquifer protection permit, industrial air permits and the mined land reclamation permit, each of which ASCU has already received from regulators pertaining to the 2021 PEA. Permitting amendments will be submitted to address changes in the mine plan pre-

sented by the PFS, with an expected completion date in H2 2026.

In keeping with its community engagement and partnership standards, ASCU said the Cactus project will be developed with a plan to establish and maintain the support of its host communities. The company initiated community outreach at the earliest stages of the project and is currently evaluating and building partnerships within the community. ASCU understands the importance of outreach during its development and throughout the LoM.

ASCU said it is encouraged by the positive response to the project from the community. Reviving a brownfields project is potentially more appealing than a new mine.

Discussions with Tier 1 lenders for the mining space are well underway. ASCU is targeting a financing completion date as early as H2 2026. "Our financing strategy will focus on minimizing dilution and optimizing the Cactus project's strong cash generation potential," said Nick Nikolakakis, CFO, ASCU. "With the PFS confirming the financial strength of the project, we have begun the process of engaging with a range of banks, private lenders and export-credit agencies to support a disciplined and capital efficient path to construction."

The Parks/Salyer and Cactus West open pits will provide ore feed for the Cactus leach pad. (Map: ASCU)

ASCU is reviewing several standalone opportunities for further optimization of the operation. There are possibilities for an expansion. Exploration has identified opportunities at Cactus West, Cactus East, Northeast Extension and Gap Zone North, Southwest and beneath the Cactus West pit between Cactus East and Cactus West. Cactus East development could add to the production profile, as could options for late-stage processing of LoM primary sulphide ores (including leaching and flotation technologies).

Resolution Copper to Strengthen Arizona Economy

Resolution Copper's project in Superior, Ariz., is expected to become the largest copper mine in North America, with a goal of producing as much as 40 billion pounds of copper over 40 years. The proposed underground mine is a large brownfield redevelopment of the historic Magma mine, an underground copper mine located in a region where mining has been ongoing for over 100 years. The Resolution Copper project has the potential to add up to $1 billion per year to the state's economy and create thousands of local jobs both directly and indirectly, while also positioning Arizona as a key supplier of essential minerals.

Miners celebrate shaft sinking success. (Photo: Resolution Copper)

The project, which is jointly owned by Rio Tinto (55%) and BHP (45%), saw its first Final Environmental Impact Statement (FEIS) from the U.S. Forest Service (USFS) in 2021, but the FEIS was ultimately revoked a short time later to allow for further review and tribal consultation. In April 2025, the USFS issued a legally required 60-day notice of the agency's intent to republish a FEIS for the project.

"A decade of feedback from local communities and Native American Tribes has shaped this project every step of the way," said Vicky Peacey, general manager at Resolution Copper. "Working together, we have created a plan that preserves the area's cultural heritage and natural resources and enhances recreational opportunities while creating new economic opportunities that will put Arizona resources and workers at the center of the nation's energy security and infrastructure needs, with a domestic supply of copper and other critical minerals."

The land exchange, wherein Resolution Copper would transfer more than 5,400 acres of land across Arizona to the USFS and the Bureau of Land Management (BLM) in return for over 2,400 acres of Tonto National Forest land, was scheduled to occur on August 19, 2025, but was halted the day before the exchange by a panel of judges with the 9th U.S. District Court of Appeals in response to late appeals by a Native American tribe and environmentalists. Four months later, the "Save Oak Flat from Foreign Mining Act" was introduced to Congress, further delaying the project.

"We believe Arizonans deserve clear, accurate information about this project. It will help protect America's energy future, support American jobs and reduce reliance on foreign copper," the company said in a statement regarding the bill. "Resolution Copper has agreed to forego half-a-billion tons of ore and completely relocate major surface facilities to minimize impacts, preserve access to Oak Flat and physically avoid areas of cultural significance identified by Tribes."

While the project's development status is currently paused, the company did reach a major milestone with the completion of a $200 million project to rehabilitate and deepen the historic No. 9 Shaft.

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No. 9 and No. 10 headframes on a sunny day. (Photo: Resolution Copper)

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as a production shaft until the mid-1990s, the refurbished and deepened shaft now extends to a final depth of 6,898 ft and measures 22 ft in diameter. The completed No. 9 Shaft is now the second deepest single lift mine shaft in the USA. Resolution's No. 10 Shaft is the deepest at 6,943 ft.

Rehabilitated and deepened from 4,800 ft to over 6,800 ft, the No. 9 Shaft now connects to the No. 10 Shaft, serving as ventilation and access for future underground development. Over the course of the work, crews drilled nearly 14,500 ft, poured more than 560 yd^3 of concrete and installed nearly 140 yards of shotcrete.

Together, the network of underground mine workings forms the backbone of the project's next phase of underground development, creating the foundation for future copper production that will strengthen the U.S. supply of this critical mineral.

"This achievement underscores what's possible when American miners, homegrown talent from local communities including the Superior, Miami, Globe, San Carlos Apache Tribe, Hayden, Kearny and Winkleman, come together to do the job safely," Peacey said. "While ongoing litigation continues to stall development, we are ready to advance this important copper project, enabling thousands of high-paying jobs, billions in economic development for rural Arizona and access to a domestic supply of copper essential to American security and modern infrastructure."

"This accomplishment reflects years of planning, discipline and teamwork between our people and partners," said Rob Tobin, operations and maintenance manager at Resolution Copper. "Achieving this safely for more than two years without a recordable injury shows the professionalism and dedication of everyone who worked underground to bring No. 9 back to life in a modern way."

Redpath USA, the project's lead contractor, managed sinking and construction, supported by Globe-based Oddonetto Construction underground concrete and surface batch plant operations and logistics.

"We are proud of the innovative solutions developed in partnership with Resolution Copper, Oddonetto Construction and the flawless safety performance achieved along the way," said Eric Stoll, project manager at Redpath USA.

"Completion of the No. 9 Shaft shows what can be achieved when local companies and national partners work side by side with a shared commitment to safety and excellence," said Kim Oddonetto, president, Oddonetto Construction. "This project demonstrates that with the right training and opportunities, we can build a skilled underground workforce right here in our communities, one that will help power Arizona's future for generations to come."

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Mako Takes Control of the Moss Mine

After slipping into bankruptcy, a new owner buys the mine, restarts operations and begins developing a long-term strategy

At the beginning of 2025, Mako Mining purchased the Moss mine in Mohave County, Ariz., from Wexford Capital, the controlling shareholder in Golden Vertex, which filed for bankruptcy protection. Mako immediately began working toward restoring operations, and in June 2025, the company announced that it had recovered the entire $6.4 million acquisition cost through the cash flow it derived from residual leaching of previously stacked ore, and the return of $1.5 million of the $3.1 million held as collateral for various environmental bonds.

"It's extraordinary to fully recover the acquisition cost of a mine in less than three months, and prior to the restart of mining operations," said Akiba Leisman, CEO of Mako. "This is a testament to how the Moss acquisition was structured, with help from higher gold prices.

"After taking control of the mine, we began to refurbish a lot of the mess that was left by the previous operator," Leisman told the *Korelin Economics Report* during a December 2025 podcast. "Toward the end of April 2025, we were ready to restart mining operations." The company initiated the bidding process and hired a contractor by the end of June.

The contractor began delivering equipment to the site, and by October, the Moss mine was producing 9,000 tons per day (t/d). Leisman said he expects the Moss mine to achieve steady state production around March 2026. "We are still in ramp up mode at this point," he said. "The Moss mine is a heap leach operation, and it takes time to recharge the leach pads."

The Moss mine is mining relatively low-grade gold ore, and Leisman acknowledged some hiccups with startup. "But even with that, it was a profitable mine," he said. "We have never had to take a cash draw from corporate other than an advanced payment for the contractor, which we're going to get back over the course of

A wheel loader transfers ore to the processing plant at the Moss mine. (Photo: Mako)

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the next seven or eight months on an amortized basis. Other than that, all operations have been funded through the cash flows that are coming from the residual heap leach and now from steady state production at the mine."

Unencumbering the Mine

After the sale, disputes arose relating to the royalty agreements that Golden Vertex had entered related to the Moss mine. "Originally, there was a large stream on silver production and five other royalties on the property," Leisman said. "So, the stream is gone. That was eliminated during the bankruptcy process. One of the royalties was settled during bankruptcy. One of the royalties is on a part of the mine we view as depleted. Technically, it's still there, but it has no value.

"Another one of the royalties is associated with a fairly important option agreement," Leisman said. "Over the course of the next six or seven years, a minor property payment needs to be made. And, if we exercise that option for a few million bucks, the royalty holders would be entitled to a 2% royalty. It only comes into play once that option is exercised, and there is a high probability that it will be exercised."

The other two royalties were in dispute during bankruptcy. One was held by Patriot Gold, and the other was held by Sandstorm, which is now owned by Royal Gold. "Litigation began during the bankruptcy in July 2024," Leisman said. "We took full control of the bankruptcy negotiations with them in litigation shortly afterwards."

A few things needed to be decided in bankruptcy that started with the fundamental declaration about whether these royalties were real property interests, Leisman explained. "We thought that the structure of the royalties themselves was pretty clear and that these were personal," Leisman said. "The judge made a somewhat bifurcated ruling on this. He disagreed with us on the real property-interest side for the Patriot royalty. On the Royal Gold royalty, the judge has decided to send that to trial to determine what makes them real or personal. It comes down to what exactly the intent of the parties was during the original construction of the royalties."

There will be fallout from the decision as far as the payments that were due to the royalty holders prior to the bankruptcy that have been tied up, Leisman explained. "That needs to be decided to exit the Canadian bankruptcy process," he said. "The U.S. bankruptcy process was exited.

"A substantial amount of cash collateral is being held in Canada that

The Moss mine is a low-grade heap leach operation and the operation is currently recharging the leach pads. (Photo: Mako)

would be owed to Mako's account pending the conclusion of this trial," he said. "I thought litigation would end this calendar year, but it is likely going to continue into next year. Fortunately, much of the expense is being funded out of the collateral account in Canada."

Restoring the Moss Mine

Mako is resolving a few short-term issues that should improve production at the Moss mine. When Northern Vertex designed the processing side, the feed for the crusher was constrained, Leisman explained. "There was not enough room for a truck dump," he said. "A wheel loader must carry ore from a run-of-mine stockpile to the crusher. It's not the most efficient process, and it requires a functional wheel loader. The mine's Cat 988 wheel loader has maybe 50% or 60% availability. The new contractor delivered another wheel loader just to make sure that the Moss mine can maintain 95% plus availability, which will resolve a short-term bottleneck that should increase capacity to 9,000 t/d consistently."

The mine also has availability issues with its blasthole rigs, which Leisman said would be addressed.

Longer term, he believes the Moss mine needs to run at about 11,000 t/d. "That will require some ingenuity with the current plant configuration," he said. "We're anticipating that this will be resolved by the end of September."

Mako was planning to publish an updated resource in January. An updated reserve and project economics would be published six to eight weeks after that. By early March, Leisman thought the operation could produce an extensive long-term mine plan.

"This is the type of ore body where grades improve at depth," Leisman said. "The higher-grade part of the mine happens to be to the east of one of the controlling faults, which we are not currently permitted to mine. We expect the Bureau of Land Management will issue a permit amendment during Q1 2026. It was delayed due to the government shutdown." With that permit, the Moss mine can access some higher-grade parts of the ore body.

For most of 2026, the operation will be mining lower grade ore. Longer term, Leisman believes the Moss mine will be pushing close to 0.4 grams per ton. "And, if it can mine and process 11,000 t/d, production could be more than 40,000 oz of gold equivalent," he said.

Since the mine restarted, as sporadically as it has been, production has averaged in the mid- to high-4,000-t/d range at low grades, and it's still been profitable, Leisman explained. "It's easy to imagine how great the numbers will be with higher grades, running at maximum efficiency," he said. "People will be surprised at how profitable a mine like Moss can be when it's basically unencumbered by its royalties and running at full efficiencies. This may go down as one of the most accretive transactions the mining industry has ever seen, at least on a percentage basis."

A Turnaround for Pinto Valley

A mature operation leverages know-how to improve operational discipline

By Steve Fiscor, Editor-in-Chief

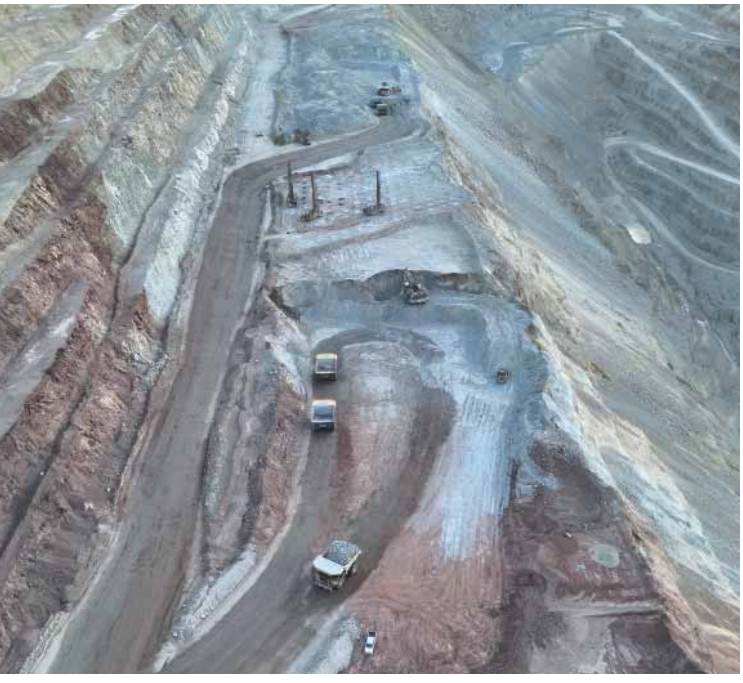
A comprehensive turnaround effort is underway at the Pinto Valley mine to improve key performance metrics. The mine's owner, Capstone Copper, recently brought a new general manager and a well-recognized consultant on board to help implement a new management operating system. The company is currently working to overcome production limitations caused by water shortages, which primarily affected the concentrator.

After commissioning two new shovels and bringing in expertise from a sister operation in Chile, Pinto Valley's mining operation increased material handling by more than 50%, but copper production was limited by the operation's processing capacity. Last year, Pinto Valley produced 42,382 metric tons (mt) of copper, compared to 57,272 mt in 2024. They are working to reverse that trend.

Pinto Valley has plenty of reserves and a long mine-life. Like most mines in the region, they are looking at various ways to limit turnover and bring new people into the organization, and they also benefit from the broad experience of Capstone Copper.

The Adjustment Begins

During October, the company named Mark Scott as the new general manager for Pinto Valley Mining Corp. He previously managed Vale's Manitoba operations, which included the prolific Thompson mine. "We have launched a fairly wide-ranging turnaround effort here that involves just about every aspect of our business," he said. "All of the technological improvements that E&MJ has covered previously are still paying dividends for us. Now, it's time for the next round of improvement to instill operational excellence. The hope is that more informed decision making will take root here so that we can take full advantage of the resource and the processes we have available to us."



A shovel loads copper ore into haul trucks at the Pinto Valley mine. (Photo: Capstone)

Capstone also hired a well-known consulting house to help with management operating system implementation. "We are calling it the Pinto Valley Way," Scott said. "It's the mine's new management operating system, which will improve the discipline with which we execute our management routines, the daily cadence of operations and execution, and continuous improvement."

Getting the team of consultants involved with our design and implementation teams is about organizing and resourcing this change management effort to ensure rigorous discipline for the operation with daily, weekly, monthly and quarterly routines, Scott explained. "It's difficult for a management team to implement that internally when they have full-time jobs, keeping them fully occupied day-to-day," he said. "It's helpful to have outside advice on structure from a group of experienced people who have been through this any number of times in similar environments, including Capstone's other operations in Mexico and Chile. They lend their expertise and help resource our internal effort to gain the discipline that's required for us to achieve the level of operational excellence that we're looking for.

Part of that refresh includes implementing Capstone's Asset Management Framework. "It touches on 14 different elements of the business from structure and leadership through, probably most importantly for us, operational and maintenance integrated frontline planning and scheduling," he said.

"We will use our enterprise resource planning systems and the other operational management tools that are at the disposal of the team here on site to make sure we are reliably meeting the commitments we make to the corporation and to the investment community every year, which has been a challenge here over the last couple of years," Scott said.

During 2025, production at Pinto Valley was limited by water availability. "We're in a multi-year drought here in this part of the country, so we're doing a lot of work on water availability and conservation to make sure we do not have those same limitations in 2026 and beyond," Scott

said. “Part and parcel of that is the maintenance, planning and scheduling work, and operational excellence that goes along with making sure our pumps and pipes are running at full capacity, enabling the mill to do the same.”

The lack of water primarily impacted the plant. “For a good part of 2025, Pinto Valley was only running four of the plant’s six ball mills,” Scott said. “We have been running all six since late October. We’ve had some rain, but unfortunately it was disastrous in our community. The October downpour caused floods and landslides, which led to a loss of life and property in Globe-Miami.”

The rain partially replenished the Pinto Valley mine’s reservoirs, and they have been working to rehabilitate pumping systems to make full use of the water that is now available.

Pit Production Grows

Total material movement in the pit has grown from 90,000 tons per day in 2024 to an average of about 145,000 tons a day in 2025. Scott credits the new mine manager, Jaime Espinoza and his team. “Jaime and the mine department have realized a dramatic improvement in mine material movements over the course of 2025,” Scott said.

Part of the increase in total material movement can be attributed to two relatively new Hitachi 5600 hydraulic shovels. The mine’s second shovel arrived on site at the beginning of 2025. For years, the Pinto Valley mine relied on wheel loaders as the primary production tools. “One of the shovels is in a front-facing configuration and the other is oriented as an excavator,” Scott said. “They have been very productive for us. We are still using the fleet of four Cat 994 wheel loaders, but they are used more as supplementary loading units.”

The mine is currently using the single-side loading method with the shovels, but it may experiment with two-sided loading methods in 2026, which works well for some mines and frustrates others. “It’s a more challenging loading method for sure,” Scott said. “We don’t have the world’s highest benches, so you’re dealing with limited volumes of material in any one setup location for the shovel. We will give it a go and see how much of an improvement we get in our loading, queuing and overall cycle times.”

Pinto Valley also refreshed a good chunk of the truck fleet. “We had some quite high-hour Cat 789s that have been replaced with a combination of 793Fs and NewGen 793 haul trucks. The new trucks are running along with the remaining 12 Cat 789 haul trucks. We have retired six 789 haul trucks so far, and we will retire a few more units as we move through 2026.”

The shovels have improved Pinto Valley’s static loading times, and cycle times for the trucks have also improved. “That is a major development as far as material handling,” Scott said. “We made some improvements with mine plan-

All six of Pinto Valley's ball mills are running again. (Photo: Capstone)

ning and pit sequencing. We are also paying closer attention to the condition of the roadways and the tie down areas, and we have been shortening the shift change timelines. Those are just a few examples of the initiatives underway in the mining department for the last year, which is basically the effort that we are exporting to the concentrator plant, maintenance and tails and water areas in 2026."

Maintaining a Quality Workforce

Like most mines, Pinto Valley must actively maintain a well-trained workforce. Turnover is a concern. "We have 738 employees on site right now, augmented by a couple hundred contractor employees on any given day," Scott said. "We would like to replace about half of those contractors with full-time employees. To do that, we're putting a fair bit of effort into our recruiting process and our training and development processes.

"We have beefed up our progression charts for the formal way in which we develop operators from entry level to haul truck operators, to shovel and loader operators and to multi-equipment qualified operators," Scott said. "The mining department has focused a lot of attention on that over the last year."

To supplement those efforts, Pinto Valley is looking at military outplacement recruiting programs to find operating and maintenance technicians. The company is also implementing a co-op program to recruit professionals, like engineers, geologists, metallurgists, etc.

At the same time, the mine plans to implement a formal apprenticeship program for skilled trade development. "We are going to take some lessons learned elsewhere and formalize the process by which we develop highly skilled maintenance technicians," Scott said.

The mining industry in Arizona tends to have a high turnover. "We are competitive as far as wages and benefits, but there are opportunities with other local employers in the same industry doing very similar work pretty close at hand."

Companies are flocking to Phoenix. There are defense contractors, semiconductor manufacturing operations, and data and fulfillment centers where people can find work relatively close to a major population center.

"In a way, Pinto Valley must compete with those factories starting up in the Phoenix area," he said. "So, we're going to trial some things this year like commuting support programs with buses to see what that does for us in terms of improving our employees' commuting safety, expense and overall quality of life.

"As we achieve operating excellence, we will lower the daily level of workplace stress experienced by our people and make ourselves an even more attractive place to work," he said. "We know we offer competitive compensation, very good healthcare and contributory pension benefits.

"As an industry, we could do a better job of marketing ourselves as an employer of choice, especially when you consider the importance of copper to just about everything that society needs these days, like electrification, data centers and AI. None of that is possible without the copper produced in Arizona," Scott said. "We are an important industry with a lot of opportunities. While *E&MJ* readers certainly get it, we need to do a better job of telling that story more widely."

Located near Miami-Globe, Ariz., Pinto Valley sits near Freeport's Miami copper smelter and KGHM's Carlotta mine, so it has some regional competition. The mine is about 50 miles east of the eastern suburbs of Phoenix, not far from Tucson, which has a big mining presence. "Most of our workforce lives in either Miami-Globe or in the East Valley suburbs of Queen Creek, Gilbert, Gold Canyon, Mesa, etc., just this side of Phoenix," Scott said.

The district has a fairly consistent grade of about 0.3% copper, so concentrator throughput volume is critical. "We have no magic jewel box stope to go to at the end of every month to make our numbers. So, consistent, reliable throughput is absolutely critical," Scott said.

"That improvement in total material movement at the mine last year and the work we're doing on safe, reliable, stable production in the tailings and water and the concentrator this year are big opportunities," he said. "We are permitted through 2039, with a good long life ahead of us.

"There may be some regional consolidation opportunities with the presence of our existing milling and SX/EW infrastructure," he said. "As we stabilize the operation here at 55,000 metric tons per day through the mill, that may serve as a great platform for growth in the Miami-Globe camp down the road.

"This year will be all about reliable, credible, safe operations for us and really achieving operational excellence here, which we've done a great job with in the mine department over the last year and a half," Scott said.

Emergency Response Drill Gives Mining Undergrads a 'Leg Up'

By Pricilia Mugwa

Students in the School of Mining Engineering and Mineral Resources acted quickly to save lives and prevent a catastrophe recently during a simulated roof collapse at the University of Arizona San Xavier Mining Laboratory.

"Students had to engineer their way through technical problems then coordinate with operations to find, triage and evacuate trapped miners," said Kray Luxbacher, the Gregory H. and Lisa S. Boyce Leadership Chair of mining and geological engineering.

The Mine Emergency Response Drill (MERD) was part of the school's safety and health curriculum.

"MERD showed me how interconnected every role is during an emergency," said Jessica Davis, a mining engineering student who served as a procurement specialist. "My job was to help identify and secure the equipment needed for the response, and it taught me how quickly decisions must be made under pressure."

Advisers from Resolution Copper and UofA EMS as well as the state mine inspector were on hand to help guide students through the high-pressure scenario.

"All of these students will graduate with a leg up on any other college of mines because of programs like this," said Arizona Mine Inspector Lesley "Les" Presmyk, who helped guide students during the simulation, including quick development of an emergency plan to evacuate "trapped" miners.

Luxbacher, also the executive director and head of SMEMR, assigned roles such as press relations, mine manager and engineering team.

"Exercises like this allow students to apply curriculum under stress, using skills from geotechnical engineering to communication, all while safeguarding their peers," she said.

Presmyk, a 1975 mining engineering alum with more than 30 years of industry experience, worked with students acting as mine managers to ensure scenario documentation, maps and safety plans followed Mine Safety and Health Administration standards.

He said the simulation covered "all aspects of what would happen and what the mine manager and team would do in case of a collapse or major accident."

Arizona Mine Inspector Les Presmyk guides students through an emergency response to a simulated roof collapse at the San Xavier mine. (Photo: UofA)

Mitsubishi to Invest $600M in Copper World

Hudbay Minerals announced the closing of the strategic investment from Mitsubishi Corp. for a 30% joint venture (JV) interest in Copper World LLC, which owns the fully-permitted Copper World project in Arizona. On closing, Mitsubishi contributed approximately $420 million in cash to Copper World LLC and will contribute an additional $180 million in cash to complete its initial investment within 18 months in accordance with the terms of the definitive subscription agreement. Mitsubishi will also fund its pro-rata 30% share of future equity capital contributions required to construct Copper World.

Peter Kukielski, Hudbay's president and CEO, said: "This strategic partnership will leverage our organizations' complementary strengths to deliver this world-class project that will increase Hudbay's consolidated copper production by more than 50% and create significant value for all of our stakeholders. We are ideally positioned to build one of the next major copper mines in the U.S. and produce 'Made in America' copper for the U.S. critical minerals supply chain."

The company says that the $420 million proceeds from Mitsubishi will be used to directly fund the remaining definitive feasibility study (DFS) costs and pre-sanction costs, in addition to the initial project de-

The funds from Mitsubishi will be used to complete a feasibility study and the initial project development costs. (Photo: Hudbay)

velopment costs for Copper World. Feasibility activities for Copper World are underway, with expected completion of the DFS in mid-2026. Hudbay says it has continued to execute detailed engineering work and other de-risking activities in preparation for a Copper World sanction decision expected in 2026.

Arizona Metals Sugarloaf Peak Shows Expansion Potential

Arizona Metals Corp.'s second round of results from its 2025 reverse-circulation drill program on the company's Sugarloaf Peak gold project continue to expand the deposit laterally to the southwest, along strike both northwest and southeast, and at depth. The company said that the second round of results confirms excellent continuity within the deposit, along with similar results from the first round of the reverse-circulation drill program in December 2025, which also confirmed continuity of mineralization.

Duncan Middlemiss, president and CEO of Arizona Metals, commented: "The results from this drill program have delivered a meaningful increase in the scale of the deposit, with strong continuity demonstrated along a

The Sugarloaf Peak gold project, located in La Paz County, Arizona. (Photo: Arizona Metals)

broad southwest corridor where mineralization remains open and highly prospective. With six additional drill holes pending at the lab and active exploration underway to refine and prioritize further step-out targets, we believe Sugarloaf is well positioned for continued growth through additional drilling later this year."

The Sugarloaf Peak project, located in La Paz County, Arizona, on 4,400 acres of BLM claims, is a heap-leach, open-pit target and has a historic estimate of 100 million tons containing 1.5 million ounces of gold. Metallurgical test work on the project by Arizona Metals indicates favorable gold recoveries in both oxide and sulfide mineralization. As a result of these initial results, the company engaged SRK Consulting (Canada) Inc. to oversee metallurgical test work to develop low-cost flow sheets to recover gold from the sulphide zone. This test work on sulfide mineralization indicated gold recoveries of up to 85%. Mineralogy and diagnostic leach tests on the samples indicated that the majority of gold is present as free gold within sulfides, primarily pyrite.

After encouraging current drilling results at the Sugarloaf Peak project, Arizona Metals is conducting a comprehensive, detailed program to evaluate current data and gather additional modern exploration data, including geophysics (IP-resistivity, magnetics, radiometrics), geochemistry (surface rock-sample grid, hyperspectral airborne survey) and AI studies. The planned exploration program intends to integrate all past data with new, consistent, deposit-wide data in order to optimize drill spending later in 2026.

Copper Fox Makes Progress on Mineral Mountain

Copper Fox, a Canadian resource company focused on copper exploration and development in Cana-

da and the USA, made significant headway with exploration of its 100% owned Mineral Mountain porphyry copper project in 2025. The company submitted a Plan of Operations (PoO) to the Bureau of Land Management (BLM) back in 2024 to conduct a drilling program at four locations, and exploration was officially underway by October 2025, when drilling operations commenced at the site.

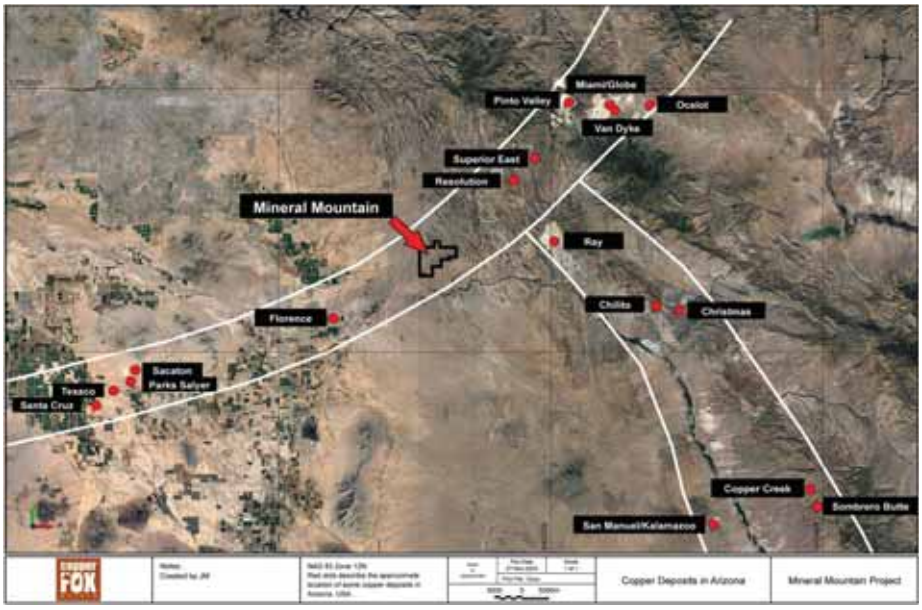
Mineral Mountain is a drill-ready project hosting three porphyry copper targets covering 2,692.4 hectares in the Mineral Mountain Mining District, Arizona, on a northeast-trending porphyry copper belt. The company proposed a drilling program of the area to drill test the depth extent of the porphyry style copper-molybdenum mineralization and alteration exposed on surface, and determine the cause of the underlying, equally large open-ended chargeability anomaly. The drilling program called for up to 2,000 meters of drilling in four locations as specified in the drilling permit.

The 30-day public review period of the drilling on Mineral Mountain concluded on May 7, 2025, where the BLM advised that there were no substantive public comments made. On May 15, 2025, the proposed PoO was approved by the BLM field manager, and by July of 2025, the BLM accepted the company's Surety Bond for the Mineral Mountain PoO to conduct an exploratory drill program.

Preliminary exploration in September 2025 on the Mineral Exploration Permit located on the southeast corner of Mineral Mountain identified a large, broadly defined area exhibiting the host rocks and proximal style of alteration and mineralization expected in a Laramide age porphyry copper-molybdenum system. The identification of this target, combined with the large, open-ended porphyry target found approximately 1.5 km to the north, significantly expanded the size of the district and enhanced its porphyry potential before drilling occurred. Sixteen rock samples were submitted to Vancouver Petrographics Ltd. for petrographic analyses to describe mineral percentages, grain size, textures, vein alteration halos, alteration patterns, copper mineralization and other minerals present.

The maiden drilling on October 28, 2025, was the next step in testing the large porphyry copper footprint that Copper Fox identified at Mineral Mountain in 2024.

Elmer B. Stewart, president and CEO of Copper Fox, stated: "Cop-



A map of Copper Fox's Mineral Mountain porphyry copper project. (Photo: Copper Fox)

per Fox is excited to test this large, high-quality porphyry copper target that exhibits the mineralization, alteration, host rocks and geophysical signatures typically observed at other porphyry copper deposits in Arizona. The size of the porphyry footprint and its location on a northeast-trending porphyry copper belt that hosts some of the largest porphyry copper deposits in Arizona is an indication of the porphyry potential of the Mineral Mountain project."

Edge Copper Acquires Zonia Copper Project

Edge Copper is a U.S.-focused copper exploration and development company advancing the next generation of domestic supply to power the clean-energy transition sustainably, transparently and profitably. Formerly known as Plata Latina Minerals Corp., the company changed its name to Edge Copper in October 2025 after the successful acquisition of the Zonia copper project from World Copper Ltd. in exchange for $10.5 million in cash and an aggregate of 37,820,374 Edge Copper shares, resulting in World Copper and its shareholders owning approximately 31.3% of Edge Copper.

The Zonia copper project is a past-producing oxide copper deposit and conventional open-pit mine that is planned to produce pure copper cathode on-site, located in Arizona's historic Walnut Grove district. As a brownfield site on private and patented land, Zonia benefits from an existing water

supply, nearby grid power and a faster state-level permitting process. Edge Copper's 2024 mineral resource confirms a strong foundation with room to grow, including an indicated 668 million pounds of copper contained in 112.2 million short tons, and an inferred 320 million pounds of copper contained in 62.9 million short tons.

Edge Copper's president, Letitia Wong, commented: "The acquisition of the Zonia copper project marks a transformative step in establishing the new Edge Copper as the next leading U.S. copper developer. As global demand for copper continues to grow and the USA focuses on domestic demand for critical minerals, Edge Copper is focused on advancing projects that can deliver both economic and environmental value."

The company is planning a 60,000-foot drill program for 2026, commencing in Q4 2025, to expand resources and advance the conversion of Zonia's extensive oxide copper indicated and inferred resources. In November 2025, Edge Copper announced an equity investment by and technical collaboration with GeologicAI, the global leader in High-Resolution Decision Engineering for the critical minerals sector. The collaboration is expected to shorten the exploration and development timeline at Zonia.

The Zonia project is a past-producing oxide copper deposit in Arizona's historic Walnut Grove district. (Photo: Edge Copper)

Faraday Copper Initiates Largest Ever Drill Program at Copper Creek

Faraday Copper is a Canadian exploration company focused on advancing

Phase IV of Faraday Copper's drilling program began at the Copper Creek project. (Photo: Faraday Copper)

its 100% owned flagship project, the Copper Creek project, located in Pinal County, Arizona. The company acquired Copper Creek in 2018 and quickly identified the site as the next major source of U.S. copper production.

In June of 2025, the company announced the results of the final nine drill holes from its Phase III drill program at the Copper Creek project, which began in October 2023. Five holes were drilled in the American Eagle area, one at Old Reliable, two at the Sunrise Trend and one at Horsecamp, which resulted in the discovery of multiple mineralized breccias, including the high-grade Banjo breccia.

The approval of Faraday's Exploration Plan of Operations from the Bureau of Land Management (BLM) in July 2025 provided access to 67 drill pads on federal land, 48 of which were in the American Eagle area. The access will allow the company to fully delineate multiple mineralized breccias and porphyry occurrences, as well as near-surface oxide mineralization. The additional approved pads will allow testing for further near-surface porphyry and breccia-hosted mineralization near American Eagle, and as a result, the company has decided to focus on exploration upside to fully evaluate the American Eagle area and test other high-priority targets across the property. Some drilling will be aimed at the collection of geotechnical and hydrological data.

Faraday commenced Phase IV of its planned 40,000 m drill program in September 2025. Phase IV is the largest drill program ever planned on the project to date, according to the company. The program will focus on the American Eagle area, as well as new targets, infill, geotechnical, infrastructure and hydrological drilling.

"I am excited to announce the start of our Phase IV drill program, the largest drill program ever planned on the project to date," said Paul Harbidge, president and CEO. "Growing the resource and maximizing the economic potential is our priority – and, therefore, we have deferred the updated resource and technical study until after this drill program is completed."

Exploration upside remains in the Copper Creek district with numerous breccias and porphyry targets yet to be

drilled. Geological mapping, geophysical and geochemical data, as well as reconnaissance drilling, have highlighted various targets outside the resource area, including the Sunrise Trend, Bunker Hill and Sycamore. Mapping and geological data collection will continue throughout the district and are expected to highlight further exploration targets.

The American Eagle underground resource contains high-grade cores that may correspond to magmatic cupola zones or high-grade breccias. The underground resource at both Keel and American Eagle is open laterally, and additional drilling has the potential to expand the mineralization and further define high-grade mineralization. Some drilling will be aimed at reconnaissance drilling for potential new porphyry centers.

G50 Sets its Sights on Gallium

G5O Corp. Ltd., an emerging precious metals exploration company progressing high-potential projects in the Southwest U.S., is focusing on the continued support of its fully owned Golconda project in Arizona to produce potential commercialization of gallium.

"Gallium's strong price momentum from 2025 has carried into 2026," Mark Wallace, CEO of G50, said in a statement. "Although headlines focus on rare earths, broader strategic metals — including gallium — are likely to be affected [by export restrictions]. With China accounting for roughly 98% of global gallium supply and now restricting exports to both the first- and second-largest consumers (the USA and Japan), the supply outlook has tightened meaningfully."

G50 completed the Golconda project's purchase in October of 2025 for $1 million, under the terms originally agreed upon in August 2020 and disclosed in the prospectus dated August 4, 2021. The transaction follows the company's recent divestment of non-core assets, allowing G50 to streamline its project portfolio and focus resources on delivering value at the Golconda project and the White Caps project in Nevada.

A preliminary mineralogical study conducted in June 2025, after a large gallium discovery and a district-scale precious metals discovery at the company's Golconda gold-silver-zinc project, led to a substantial increase in activity at Golconda in 2025. SGS's two phases of mineralogical test work showed that 90% of Golconda's gallium is concentrated within 10% of the rock (sericite).

Core drilling commenced at Golconda in November 2025, wherein the drilling program has been designed to achieve multiple outcomes, including following up on the shallow high-grade gold and silver discovery made by G50 in 2025, increasing the company's knowledge of the depth extent of known mineralization and exploring new targets along the Tub Vein and Tub Footwall zones. Additional test work in 2026 is expected to define those potential commercialization pathways.

The Antler project is a high-grade, development-stage underground copper project in Arizona with the potential to become a leading U.S. copper supplier. (Photo: Kinterra)

Kinterra Acquires Antler Copper Project

Kinterra Capital Corp. expanded its U.S. copper platform by completing the acquisition of New World Resources Ltd. and its flagship Antler copper project. With the acquisition, Kinterra gained not only the Antler copper project, a past-producing, high-grade underground copper asset in western Arizona, but also two copper exploration projects in Arizona and New Mexico.

Antler is underpinned by a polymetallic resource with over 555 million lb of contained copper, approximately 1.2 billion lb of copper equivalent, supporting robust economics and a projected 12-year mine life. The project is well advanced technically, with a clear federal and state permitting pathway. All metals produced by Antler are classified by either the USGS or by Executive Order as critical or strategic minerals. The project has received all state-level permits, and Kinterra is executing a focused development plan.

"With an average grade of 3.8% copper equivalent, Antler ranks among the highest-grade underground copper development projects globally, nearly six times the global development average," said Kamal Toor, co-managing partner at Kinterra. "Its combination of exceptional grade, capital efficiency and strategic location makes it capable of materially contributing to near-term U.S. copper supply."

"Including Antler, Kinterra now controls approximately 175,000 metric tons of annual copper production capacity across its U.S. portfolio — from Antler in Arizona, White Pine in Michigan and Pumpkin Hollow and the adjacent Southwest Open Pit in Nevada," said Cheryl Brandon, co-managing partner at Kinterra.

Kinterra also initiated the evaluation and development of sulphide leach processing technologies aimed at enabling domestic copper cathode production across its U.S. portfolio. The initiative will evaluate the application of established methods capable of converting sulphide ores directly into refined copper. Early engagement with leading technology developers is underway, with initial testing and pilot plans expected in early 2026.

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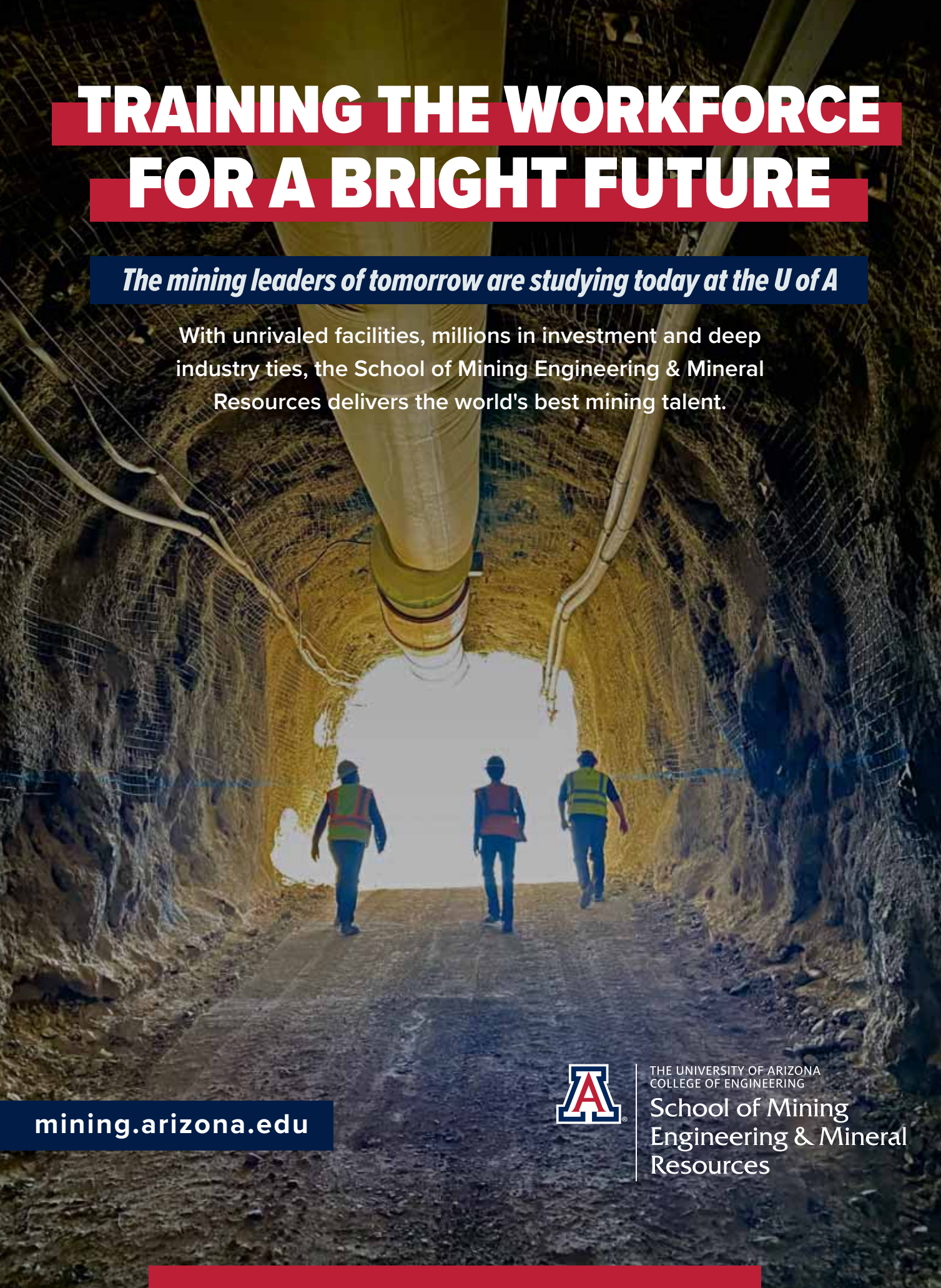
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