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Hudbay vastly overhauls mining plans for Santa Ritas near Tucson

Tony Davis

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The Santa Rita Mountains' west slope where Hudbay plans to build part of its Copper World project, which will mining plan on the range's east slope.

Kelly Presnell, Arizona Daily Star 2021

Tony Davis

Hudbay Minerals Inc. has unveiled an ambitious new plan for mining in the Santa Rita Mountains that for the first time scraps plans to export copper to China and other foreign buyers.

But while the company notes that move will save energy and reduce greenhouse gas emissions, Hudbay is delaying or reversing earlier plans for its operations that were instituted at least in part to achieve environmental benefits in reducing water use and

pollution risks. Those changes will delay its introduction of low-water-use mine tailings and revive a long-discarded plan to leach copper oxides from ore on the mine site.

In announcing a new preliminary economic analysis for its Santa Ritas' copper operation Wednesday, Hudbay disclosed these and other significant changes in the scope, orientation, operations and mining life from what it and its predecessor at the site had been planning since the mid-2000s.

The company even has eliminated the name Rosemont, which has been attached to the copper deposit and entire site on the east slope of the Santa Ritas over which various mining companies and environmentalists have tangled for many decades. Instead, the entire project, covering the mountains' east and west slopes, has been dubbed the Copper World complex and its mining operations will stretch 44 years.

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Like past economic analyses done for the Santa Ritas mining operation, Hudbay's new analysis promises major economic benefits. The company said Copper World will create more than 500 direct jobs and up to 3,000 indirect jobs in Arizona.

Over 44 years, Hudbay expects Copper World to generate more than \$3.3 billion in total tax revenue nationally and locally. That would include approximately \$660 million in taxes to the state of Arizona and \$590 million in local property taxes, the company said.

U.S. customers

Here are details of the biggest changes:

Hudbay will process all of its mined copper on site and ship it entirely to U.S. customers. The Rosemont Mine's original plan was to ship copper concentrate off the site for smelting and refining in other countries and delivery to them because of a lack of U.S. smelting capacity. Hudbay said it will now process the copper without smelting, into copper cathodes, which are sheets consisting of virtually pure copper, as high as 99.99% pure.

The use of copper oxide leaching and solvent extraction, which Hudbay's Rosemont predecessor Augusta Resource Corp. eliminated in 2012 partly out of environmental considerations, is being revived by Hudbay. That's partly due to the nature of the copper found on the west slope and partly to what Hudbay says are different environmental considerations than those of a decade ago.

The use of dry stack tailings, which use far less water and could be less polluting than conventional tailings, will likely be pushed back into Copper World's second phase of mining that will start after a 16-year first phase. But the company hasn't totally ruled out using them during the first phase.

Hudbay says its plan to deliver all its copper to U.S. customers will reduce the company's energy use, overall carbon footprint and greenhouse gas emissions, and that its use of leaching is also consistent with reducing greenhouse gas emissions.

The economic analysis pegs the value of the entire Copper World complex at nearly \$1.3 billion, and says developing the project will cost about \$2.8 billion.

Using a news release to describe the economic analysis, Hudbay outlined plans to mine copper in four separate open pits in the entire area. It says the copper will be mined in separate phases of 16 and 28 years.

The company also said it may acquire additional private land on top of 4,500 acres it owns on both sides of the mountain range southeast of Tucson. That would extend its Phase 1 mine life beyond 16 years.

Hopes to begin mining in 2027

It said it hopes to start construction of mining facilities in 2024 and begin mining in 2027. Those timetables depend on the pace of government approvals of needed permits and the outcome of possible litigation by opponents.

Phase 1 would be used to mine copper from only private land on both sides of the mountain range, and would require only state and local permits to operate, the company says. Phase 2 would extend operations onto federal land and would require additional permission from the U.S. Forest Service — permission that has been held up by two unfavorable federal court rulings since 2019, including a 9th Circuit Court of Appeals decision just last month.

The plan appears to be a departure to at least some extent from earlier plans to build a Rosemont Mine on the Santa Ritas' east slope, which faces the Sonoita area, separate from the Copper World operation on the west slope, which faces Sahuarita and Green Valley south of Tucson.

Instead, the operations, lying east and west of the major ridgeline straddling the Santa Ritas, would have some elements in common. Also, the mining operation on the east slope will now be called the East Unit operation of the East Deposit rather than Rosemont.

Company sees a path

The economic analysis and Hudbay's new mining blueprint come at a time when the project's future is at one of many crossroads it has experienced over the years. The original Rosemont Mine has been blocked since July 2019, just as construction was about to start, by the court rulings.

The company says in its news release that it sees a path — which it doesn't specify in detail — to getting federal permitting untracked in time to start the east slope operation on its schedule.

On the west slope, Hudbay has been clearing and grading land at Copper World since April, carrying out what it says are ground preparation activities for future mine tailings and waste rock disposal areas.

U.S. District Judge James Soto in Tucson — who stopped the east slope mining plan in 2019 — last month turned down lawsuits from tribes and environmentalists aimed at halting the west slope grading.

But U.S. Rep. Raúl Grijalva, chair of the House Natural Resources Committee, has written to the assistant U.S. secretary of the Army for civil works, Michael Connor, asking him to consider halting that activity, on the grounds the grading violates the Clean Water Act. Hudbay has denied that and maintains it doesn't need permission under the act for west slope construction.

44 years of mining planned

Another new twist in Copper World's plan is that wastes from the west slope operation, which will be entirely on private land, will be deposited in the project's later years on the east slope.

Also, Copper World would be mined at first in four open pits only on private land on the west slope. But eventually two of the pits would expand onto federally owned land on the east slope, including the previously planned Rosemont Mine (now called East Unit) pit.

At 44 years, Hudbay's planned tenure for the entire Copper World complex would be close to or more than twice as long as the original Rosemont Mine proposal, which would have extracted copper for 20 to 25 years.

The company's plan is to process about 100,000 tons a year of copper cathodes during Phase 1 of the operation and about 125,000 tons yearly during Phase II. The amount of copper mined at the site would be less — 86,000 tons annually during Phase 1 and 101,000 tons during Phase II.

Hudbay said it expects to get copper from outside sources to process because it will have processing facilities on site.

Economic rate of return

The company said it expects to earn a 17% rate of return during the project's first phase and an 18% rate of return over the project's life.

Those figures assume a copper price of \$3.50 per pound. At a \$4 per pound price, the entire project's total value rises to \$1.903 million, Hudbay said. The project's internal rate of return rises to 21% for Phase 1 and 22% over the project's entire life, the company said. As of Friday, the London Metal Exchange's copper price was \$4.28 per pound, purchased for a 3-month contract.

The company did not release its full preliminary analysis, just the description in its news release.

Why mining plans changed

Hudbay explained some of its major changes in mining plans as follows:

It said it's switching from shipping its copper overseas to shipping it to U.S. customers because first, "the types, grades, and amounts of ore are very different" from the original Rosemont Mine project.

Second, "local sourcing and reducing greenhouse gas emissions have become significantly more important in the 16 years since the Rosemont project was proposed," the company said in response to a question from the Star.

"Producing products close to where they will be used is a core strategy for reducing greenhouse gas emissions. Producing copper on-site will reduce our overall carbon footprint by eliminating the need to ship copper concentrate overseas to be processed," Hudbay said.

This change comes after Hudbay and its Rosemont Mine predecessor, Augusta Resource Corp., sustained criticism from opponents who raised concerns that the Santa Ritas would be seriously damaged to mine copper for export to China, an authoritarian state that consumes around half the world's copper supplies.

The use of leaching and solvent extraction is also tied to the company's goal of reducing greenhouse gas emissions, it said. That's because those processes will allow it to process the copper entirely on site rather than having to ship it overseas.

It also said the entire Copper World Complex, compared to Rosemont, contains far more copper oxide ore. Leaching and solvent extraction are standard processes, the company said.

When Augusta Resource abandoned plans for leaching a decade ago, it said, for one, that leaching plans were not viable based on the configuration of the mining alternative for Rosemont that the Forest Service preferred at the time and ultimately approved in 2017.

It also said that eliminating leaching and solvent extraction would minimize a number of potential environmental impacts. For example, it said eliminating leaching would reduce the amount of water it used to process minerals extracted on site.

It also said this action would eliminate the use of four facilities that could potentially discharge pollutants into groundwater and eliminate the possibility of discharges of pollutants from separate leach pads and ponds containing mineral processing solutions.

Tailings issue

The company said it will be "unable to utilize dry stack tailings" for Phase 1 of the project "due to the limitations of available land and topography." But Hudbay anticipates being able to secure "a land configuration that will allow for dry stack tailings for Phase II."

For Augusta Resource, dry stack tailings were a major selling point in its efforts to demonstrate that Rosemont would be an environmentally sustainable mine. Dry stack tailings are dewatered tailings that can be stacked in self-supporting structures because they are unsaturated, a Rosemont contractor wrote in a paper in 2009.

Augusta said the dry stack tailings would use less water and reduce risks that mine tailings would pollute groundwater compared to a conventional mine tailings operation, in which tailings are stored in slurry form in a pond-like area. Because the tailings are unsaturated, their seepage is quite low. They're also not subject to breaching in a potentially major accident and they occupy less space, the Augusta contractor's report said.

But the new Hudbay preliminary economic analysis contemplates construction of three conventional tailings storage facilities during Copper World's first phase, covering 16 years.

Hudbay added, however, "A traditional tailings facility permitted under modern regulations will have an impermeable liner and monitoring wells to ensure that groundwater quality is protected."

Overall, Copper World's processing facilities and mineral products are "fundamentally different" from what was contemplated in the company's most recent feasibility study for Rosemont alone, prepared in 2017, Hudbay said.

Besides leaching, Copper World' processing facilities will include a solvent extraction and electro-winning facility, a sulfide concentrator, a concentrate leach facility and an acid plant. The leach solution from a copper concentrate leach facility will be combined with solution from a separate oxide leaching circuit and treated in the solvent extraction/electrowinning facility to produce copper cathode.

The concentrate leach facility will also produce sulfur which will be processed into sulfuric acid at the acid plant and then used on the oxide leach pads to leach copper from oxide ore.

These changes will reduce Copper World's energy use by more than 10%, resulting in an approximate 10% to 15% reduction in greenhouse gas emissions, Hudbay said.

Schedule and outlook

Hudbay says Phase 1 of Hudbay's Copper World project will operate exclusively on the west slope for the first two years. Production will begin on the east slope at a very low level in year 3 and ramp up gradually, to the point where the east slope produces the majority to vast majority of the site's copper by year 6.

That pattern continues in Phase II, to the point where in the final 15 years of mining, all copper will be produced at the project's east unit and none on the west, Hudbay's news release said.

Over the planned 44-year mine life, the east slope will account for nearly 75% of all copper mined on the project — about 1.008 billion tons.

Looking at the west slope operations, Hudbay said it expects to submit proposals for a state Aquifer Protection Permit and a state Air Quality permit to operate there in the second half of 2022. Those permits must be approved by the Arizona Department of Environmental Quality.

Hudbay said, "We anticipate the balance of the permitting process to take up to two years," meaning it expects approvals by 2024.

It also said it expects its board of directors to approve the start of construction for Phase 1 the same year. Construction of Phase 1 is supposed to last three years, according to the company's schedule, meaning mining could start in 2027.

That schedule assumes Hudbay will prevail in its view that it doesn't need a Clean Water Act permit to discharge dredge and fill material in washes on the west slope. That position could be challenged by environmentalists and tribes. They have filed notices of intent to sue to stop the company's ongoing grading.

Hudbay's news release said the Army Corps of Engineers has never determined that washes meriting federal regulation exist at the Copper World complex and that the company "has independently concluded through its own scientific analysis that there are no such waters in the area." Environmentalists have challenged that conclusion, as did Grijalva in his letter to Assistant Army Secretary Connor.

As for the east slope, Hudbay's news release said, "The company expects it will be able to pursue and obtain federal permits within the constraints imposed by the (9th Circuit) Court's decision." The company has not said how it intends to do that.

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By Tony Davis

Reporter

Tony graduated from Northwestern University and started at the Star in 1997. He has mostly covered environmental stories since 2005, focusing on water supplies, climate change, the Rosemont Mine and the endangered jaguar.
