

THE NORTHERN MINER

MAY, 2024 / GLOBAL MINING NEWS · SINCE 1915 / www.northernminer.com



Surface Water Sampling at Lobo Marte in Laguna Satna Rosa, Chile. SRK

JV ARTICLE

Smart Water Strategies – Inside SRK’s push to future-proof mines

BY NORTHERN MINER STAFF

As climate extremes intensify and regulatory scrutiny tightens, water has emerged as one of the mining industry’s most pressing operational risks. Whether it’s too little or too much, the stakes are rising — and so is the need for smarter water management strategies.

Mining.com’s Devan Murugan sat down with Brandon Smith, Principal Water Consultant at SRK Consulting, to unpack how the firm is helping mining companies around the world future-proof their operations. From benchmarking tools to integrated hydrology and regulatory compli-



Brandon Smith, Principal Water Consultant at SRK Consulting. SRK

ance, Smith explains why water is no longer just an environmental issue — but a strategic one.

DEVAN MURUGAN: I want to start with the big picture here. Water management has really become a make-or-break factor in mining operations these days. Why is that?

BRANDON SMITH: There are probably several factors, and it starts at the global level. There appears to be an increased awareness among the general public that freshwater is a critical and scarce resource. This increased awareness is drawing greater attention to large-scale industries that rely on freshwater

SMART WATER STRATEGIES – INSIDE SRK'S PUSH TO FUTURE-PROOF MINES, continued

for their operations. As a result, the public is now calling for these industries to optimize their systems to reduce their freshwater usage so that the remaining reserves can be deployed for more critical purposes.

There's also a changing trend inside the industry, wherein mine operators are realizing that poor water management is an unnecessary operational risk that can lead to production delays, unplanned shutdowns or ballooning operational costs. In a worst-case scenario, too much water in inventory can risk an unscheduled release, which could expose a mine to jurisdictional penalties or fines.

Overall, there is an increased awareness and appetite both within and external to the industry for there to be ever-advancing improvements in water management.

DM: I want to talk about that because you've assisted many companies. What are the most pressing challenges you see on the ground?

BS: There are a lot of water-related challenges, and they tend to be site-specific in nature. But if I were to zoom out a little bit, I would say that we could broadly characterize water-related challenges into two buckets. The first bucket would be operational challenges and the second bucket would be what I would qualify as water stewardship and public relations.

On the operational side, what we're seeing with a lot of our clients now is a realization that existing water management infrastructure, things like ditching, ponds, reservoirs, pumps, pipelines – are undersized relative to the risk preference of the operator. We're seeing an increasing preference to upgrade infrastructure to build in more resiliency and more conservatism, under the expectation that climatic conditions are likely to be greater in their uncertainty in the future.

Within the water stewardship and public relations bucket, the pressures on mining operations largely have to do with, again, the expectation that mines reduce their water footprint. One of the ways that this manifests is an increasing demand for mines to reduce or eliminate external withdrawals of water to facilitate the ore extraction process.

A lot of mines currently need a perpetual source of fresh water, usually for nominal purposes like gland seals or reagent mixing. We now see, at least with some of the larger operators, there is an interest to explore whether that use of water can instead be sourced internally, so that the mine can



Biogeochemistry Characterization at Teck Greenhills Operation Tailings Facility. SRK

eliminate that perpetual withdrawal from the surrounding environment.

DM: As I see it, you have an integrated approach where you combine things like hydrology and hydraulics. What does it look like in practice on the ground when you employ this approach? Sounds complicated, but presumably it has become second nature for SRK?

BS: That's a great way to put it. At SRK, we have a really talented group of individuals and practitioners that have very different but very complementary skill sets for this application. You named a couple of disciplines there, hydrology and hydraulics. We also have hydrogeologists, geochemists, and water quality specialists, all of whom allow us to offer a holistic approach to water management strategization.

Hydrologists, for instance, are those who specialize in the interaction of water between the atmosphere and the ground surface. Hydrogeologists are those who are more focused on how water moves underground. Hydro-technical or hydraulic engineers, like me, design and implement the infrastructure that safely and reliably moves water around the mine and eventually off site.

In concert with our colleagues in the water quality space, we're also able to track and forecast the chemistry associated with mine water. All of this culminates into a water management approach that starts with an audit of an existing project and its water management system. We can then distill this information into various models that allow us to project future water management performance. We then use these model results, ultimately, to tease out opportunities for optimization, ensuring that mine water management is implemented to the highest standard.

DM: Through all of that, you also have to help a company deal with its ESG objectives because companies are under pressure to reduce their environmental footprint. How do you assist in that regard?

BS: The easy way for us consultants is to get in at the ground level with a new project, say at a pre-economic assessment or pre-feasibility stage, and instill the principles of sustainability and good water management practice. This is often easiest at a level where the project is still being fleshed out.

But we also work very closely with a lot of long-standing operating mines as well,

SMART WATER STRATEGIES – INSIDE SRK’S PUSH TO FUTURE-PROOF MINES, continued

and so in that case, improving water management tends to be an exercise in retrofitting. Of course, I mean retrofitting of infrastructure, protocols, and procedures, but it also is an effort in retrofitting mindsets and philosophies. We often consult with operators that have done things a certain way for several years, maybe decades. In these circumstances, “retrofitting” becomes an effort in the changing of mindsets, advocating for doing things with a little bit more precision, ensuring that we have precisely the right amount of water, not too much, not too little.

With some of our more forward-thinking clients, we already see a lot of exploration into the possibility of changing certain processes to improve water removal and recycling.

DM: The problem with policy and regulation sometimes is that it’s ever evolving, right? That could be a challenge for clients and the work you do. How do you navigate that?

BS: Yes, policies, regulations, and guidelines are integral and instrumental in the work that we do. It ensures that the designs, models, and analyses that we put forward to our clients is done to the highest standards. With many clients, there’s an expectation that we will complete a literature review to determine what policies or legislation are in place within the jurisdictions that they operate.

Often, in a very proactive sense, a lot of clients will ask for us to proceed with our work by following the most stringent of the basket of policies and regulations, which is a very positive approach.

Of course, it’s also prudent to recognize that certain policies and procedures are likely to continue to change. I would expect there to be an increasing interest at the governmental level, but also among industry NGOs, that mine sites will build greater resiliency into their infrastructure in response to evolving uncertainty and variability with future climate. I believe the collective mining industry and its stakeholders wish to see an ongoing commitment in the direction of sustainability and minimizing water footprints, but also building in the capacity for future uncertainty.

DM: I want to wrap up by asking you about this water benchmarking tool that SRK is excited about. What is it all about?

BS: It’s a new tool that we’ve recently developed within the Water Group at SRK. The benchmarking tool was a successful collaboration with one of our larger Canadian operating clients. It’s essentially a water metrics database that was compiled using publicly available information from voluntary sustainability reporting from approximately 400 mines around the planet.

The data collected represents a five-year

period of reporting and includes water metrics like withdrawals from the surrounding environment, operational water usage, discharge, anything related to water that was reported to increase transparency around mine water usage. Our team collated all available data from these reports and aggregated it into a back-end database that then feeds our benchmarking tool. What the tool does is allows us to peruse the data at either a coarse or fine degree of resolution to compare how our clients’ operations are performing relative to their peers.

Our benchmarking tool allows this data to be analyzed across various performance metrics, like the climatic or geographic region, the specific commodity that’s being mined, or the mining method, whether it be open pit or underground. We can then look at any project relative to similar sites and determine if there are others performing better in the water management space, and where there may be opportunities for our client to improve their systems.

DM: Brandon Smith from SRK, thanks very much indeed for talking to us. CMJ

The preceding Joint Venture Article is PROMOTED CONTENT sponsored by SRK Consulting and produced in co-operation with The Northern Miner. Visit: www.srk.com for more information.