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# **Getting lost in the Copper Corridor...** Do you know where this photo was taken? **Page 8**

NUGGET

October is National Copper Month so we are celebrating copper's past, present & future

# Technique theory put into practice

fter learning the basic elements that are necessary to make any technique work, most students think that continued emphasis on practicing those basic movements should be enough to guarantee success when the technique is applied. A technique can include any Strike, Lock, or Throw. Simply working hard at practicing a technique is not going to give any assurance of its effectiveness. Working hard has to be

### NUGGET

Covering the Copper Corridor Communities of Globe, Miami, Superior, Kearny, Hayden, Winkelman, Dudleyville, Aravaipa, Mammoth, San Manuel, Oracle, SaddleBrooke and Catalina.

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"We sure could use a little good news today."

- Anne Murray

#### Advertising Information

We have very attractive rates available. Please call (520) 385-2266 for more information. accompanied by working smart. The conditions that can make any technique fail are many. That is why we relish training with a variety partners and under a wide range of circumstances. Differences in size, ability, strength, etc. are one way to test whether one's skills are real or imagined. Hoping that your street savvy opponent will be cooperative with your efforts is delusional at best and dangerous at worst. So, how does one put theory into practice? Understanding how the body works and responds mechanically is a crucial step in this time consuming, but essential process.

Perhaps the first thing that any Aikido student must learn, is to recognize the difference between energy projection (Ki in Japanese and Chi in Chinese) and physical strength. Knowing this difference allows for a better, more sensible handling of a persons' "muscle" tension. We don't mean to sound arcane when we use the

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term "Acceptance vs. Resistance", however, we "accept" energy projection and we do not waste our "energy" on resisting strength. Future articles will elaborate on this and on such body control concepts as "Taking Out the Slack", "Two **Objects Cannot** Occupy the Same Space", "Using



By Steve Weber Special to the Nugget

the Head to Extend the Body", "Giving Up Ground", and "Giving Up Technique".

Mr. Weber is the chief instructor at the Aikido Academy of Self-Defense located at 16134 N. Oracle Rd., in Catalina. He has more than 45 years of experience in the Martial Arts and has achieved skills in a variety of disciplines. He also teaches Tai-Chi on Saturday from 9 to 10 a.m.

Please call (520) 825-8500 for information regarding these and other programs. If you wish, check out the website at www.AikidoAcademyOfArizona.com.

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# Weekend nature programs set at Oracle State Park

Cooler autumn temperatures at Oracle State Park mean it's time to enjoy weekend picnics on the Kannally ranch house patio, or come for any of the scheduled nature programs.

The park is open 8a.m. to 5 p.m. Saturdays and Sundays. Visitors are welcome to tour the historic ranch house and exhibit of paintings by self-taught cowboy artist Lee Kannally; explore the 15 miles of hiking trails; or just enjoy the mountain views. Details, including information about latemonth programs, are at www.AZStateParks.com/ Parks/ORAC.

Admission is \$7 per car at the gate on Mt. Lemmon Rd.



The Kannally Ranch House Patio is where all the events begin at Oracle State Park.

October events include: **Saturday, October 4: Guided Hike, 8 a.m.** Windmill Loop Hike for 8 miles with Gason Meloche. Reservations required with Gaston at 520-638-5404. Meet at the ranch house parking lot. Free with park admission. Sunday, October 5: Mineralogy Program, 11 a.m. in the ranch house living room, with mineralogist, Wolfgang Continued on page 10



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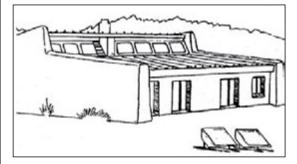
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# Miner for a heart of gold

ou probably remember the line in the Neil Young song: "I've been a miner for a heart of

gold". I certainly had the song stuck in my head many a workday while chute-tapping underground at the mine, or fork-trucking anodes at the smelter for Magma Copper Company.

This was in the early 70s, just after they started making hydrochloric acid out of a noxious gas previously released into the air from the copper smelting process. San Manuel and the San Pedro Valley no longer experienced the settled sulfur smoke that would often drive us indoors as kids.

Now we had cleaner air, fed families and lots of work – all vital needs for a happy, healthy community. When you realize that close to 3,000 people were employed in our local mine alone, then compare that to Amazon's ("poorly paid and overworked") 110,000 employees worldwide, its easy to see the giant lack of opportunity and income that has gradually happened over the last four decades. A lot of money goes to Amazon, but as we know a tiny few get the majority of the money.

So how do we gain and maintain certainty in an uncertain world? How do we keep our hope up, stay balanced and ready for each new day? How do we cultivate the "enthusiastic perseverance" needed for a contented life? Can we really 'mine a heart of gold' in a world that reveres real gold?

Well, we all have our ways. Prayer, meditation, and reflection are all tools to reach a quieter, more



appreciative state of mind. Walking, gardening, painting, knitting, working outside - any activity really - when done with gentle, grateful attention on the present moment can bring us closer to calm. This is key to lowering the stress hormones that can do so



### **SELF-HEALING**

**By John Huntington** Special to the Nugget

much damage to our health and happiness.

In addition, when we are in our more mindful states, "in the zone" as we say, we see solutions and options more easily, worry melts away, and our playfulness, creativity and energy rise.

It is important to realize that we already know how to find this inner quiet, that it is our natural, default state. We only need to allow it to come, effortlessly. Keep remembering that the idea that, "I'll be happy when (fill in the blank: get a job, wife, husband, new car, etc.)," never pans out, not really. That is outside/ in thinking, and it really only happens the other way around.

Dr. Huntington practices Chiropractic, Biomedical Acupuncture and Physiotherapy in Oracle, Az. 520-896-9844 huntingtonchiro@hotmail.com.

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# **Freeport-McMoRan gives** back to the community

**By Andrea Justice** Pinal Nugget

Early in June Freeport announced it's 2014 Globe-Miami Community Investment Fund Grant recipients. The grant recipients are recognized for being organizations with a vision for a sustainable future in infrastructure, education, community/ economic development, community services and cultural/historical preservation. Nine area non profits were awarded a total of \$335,000.

Among the recipients was the Arizona Youth Partnership. The group received \$20,000. These funds will support the Building Futures for Families Globe/Miami Resource Center project. This is in an effort to provide workforce development services to 150 unemployed or underemployed individuals in the Globe-Miami area. The program will work with individuals to help them become self-sufficient while overcoming employment



**Cobre Valley Institute of Technology** Superintendent Pete Guzman accepts a grant from Freeport McMoRan.

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barriers.

The Cobre Valley Institute of Technology received \$55,000. This grant will provide transportation services for Globe and Miami High School students that will allow them to participate in college level career and technical education programs.

The Gila County Housing Services received \$10,000 to assist with the completion of minor home repairs and adaptations that specifically assist elderly and disabled individuals.

The Gila County Canyon Water Improvement District received \$50,000. This grant will allow the Canyon Water Improvement District to replace and repair aging pumps and infrastructure on a six mile long water system that provides 550 residents with potable water.

Other recipients include: Gila Community College who also received \$50,000 to enhance the welding program at the Regional Training Center, Globe Unified School District who received \$38,500 and Miami Unified School District who received \$30,000.

Miami Genesis received \$26,500 to help fund the Miami Highway 60 Beautification project and the Southern Gila County Economic Development Corporation received \$55,000 that will fund a signage project to help build a consistent brand for the region.

"Freeport-McMoRan is committed to working with communities to identify effective partnerships that will bring lasting benefits to the people in greater Globe-Miami," said Tracy Barne, president of the Freeport-McMoRan Foundation.



Friday, October 3, 2014 730pm—"Conversation" With John Borling



Come laugh, cry, think and interact with retired Air Force Major General, John Borling, one of America's best speakers and author of the nationally acclaimed book "Taps on the Walls". \$15 inclusive \$20 door

Saturday, October 4, 2014 - Southern Arizona Symphony Orchestra - 7:30pm Berlioz: Rakoczy March from The Damnation of Faust. Mozart: Piano Concerto No. 21, Sandra Wright Shen, piano. Holst: The Planets. \$24 inclusive \$26 door



#### Saturday, October 18, 2014 - Oracle Piano Society - Featuring Dr. James DeMars and Native American Flutist, R. Carlos Nakai -

7:30pm. Oracle Piano Society Artist Advisory Committee member, composer/conductor James DeMars, belongs to a generation that is revealing a new integration of world music with the range, depth and stylistic variety of the classical tradition. DeMars will perform his duo piano sonata, "A Diary of the Seasons," with Stephen Cook, his former student and Oracle Piano Society Artistic Director. Supporter guests will join Dr. James DeMars, R. Carlos Nakai and Dr. Stephen Cook in a



private cocktail party. \$75 Supporter, \$25 inclusive, \$30 door, \$10 student

Saturday, November 1, 2014 - Tucson Jazz Institute Ellington Band -7:30pm Congratulations! Tucson Jazz Institute Ellington Band was voted Number One at the Essentially Ellington Festival and Competition in New York. Doug Tidaback, Director, claims that students are raising the bar of this Competition year after year. Join us as we welcome our national winners back to our stage for a night to remember! \$25 inclusive \$30 door



Saturday, November 8, 2014 - Southern Arizona Symphony Orchestra - 7:30pm. Guest Conductor Gabriele Pezone. Rossini: Overture to L'Italiana in Algeri. Panufnik: Concerto for Violin and String Orchestra - Marta Magdalena Lelek, violinist. Schubert: Symphony No. 5. \$24 inclusive \$26 door



Wednesday, November 12, 2014 - "FATS" A Tribute to Fats Domino - 7:30 pm Produced by Lonely Street Productions. Dutch pianist/singer Eric-Jan Overbeek, aka Mr. Boogie Woogie, brings his critically acclaimed salute to the music of the legendary Fats Domino to Arizona. Antoine "Fats" Domino was one of the pioneers of Rock & Roll, with chart-topping hits including "Ain't That a Shame," "I'm Walking" and "Blueberry Hill." Don't miss this one-of-a-kind rhythm and blues extravaganza! "I never heard a band that comes this close to the Fats Domino Band" - Jim Moliere (Fats'

guitar player for 25 years.) \$25 inclusive \$30 door



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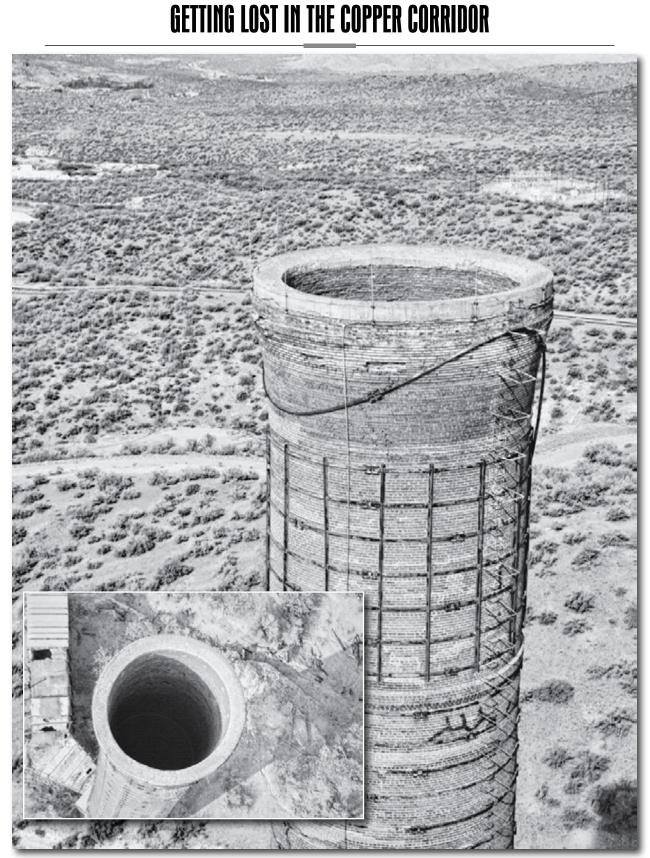


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Can you guess where in the Copper Corridor this photo was taken? If you guessed Superior, then you would be right. This is the now unused smokestack at the Superior Smelter once operated by Magma Copper Company. The photo was taken by staff at Resolution Copper Mining from a helicopter allowing us a rare peek inside the stack. The Nugget has been taking our readers on a journey through the Copper Corridor, helping you to 'Get Lost.' We hope you continue to travel with us. Photo Courtesy Resolution Copper Mining



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5 lbs. Beef Soup Meat (2-2 1/2 lb. packs)

### \$60 Meat Box 4

2 lbs. Chicken Breast Boneless (2-1 lb. packs)
3 lbs. 100% Beef Ground Round (3-1 lb. pack)
3 lbs. Beef New York Strips (6-8 oz. steaks)
3 lbs. Beef Boneless Ribs (12-1/4 lb. cuts)
2 lbs. Pork Chops Boneless (4-8 oz. cuts)

### \$60 Meat Box 5

10 Beef Ribs Boneless (10-1/4 lb. cuts)
10 Pork Ribs Boneless (10-1/4 lb. cuts)
4 New York Strip Steaks (10-1/4 lb. cuts)
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Tucson Eye Physicians is a well established, thriving ophthalmology medical practice with its office in Tucson and recently added San Manuel location. Founded in 1987, Tucson Eye Physicians has been providing surgical, medical and lens prescription needs to Tucson and surrounding communities. Dr. Peter Kaufer relocated with his wife and four children to join the Tucson Eye Physicians at the end of 2007 after many years of

providing excellent care in Pleasanton, California.

Dr. Kaufer is available at other locations in the Tucson area. Call Tucson Eye Physicians for the nearest location.

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# Carlota supports community

#### **By Andrea Justice Pinal Nugget**

Carlota was discovered in the 1990s and came to be one of the first copper mines designated and permitted under modern environmental legislation. Owned entirely by KGHM International Ltd., the mine was commissioned in late 2008 and has produced an average of 25 million pounds of cathode copper annually for the last four years. Carlota has been implementing a mine for closure plan which optimizes cash flow while advancing activities related to the winding down of operations. This plan is consistent with the life of mine objectives as described in the Carlota permits which called for a staged closure plan during the last years of mining. The mine's timeline for closure is in accordance with current permits and Arizona environmental regulations. Time and attention is spent on closure to ensure an end-used mined land to be reused for other purposes

Carlota supports the local community both financially and with donations of employee time. They have donated funds to repair and re-open the Miami Community Pool and support a variety of programs for the elderly, such as Meals on Wheels. They are also a member of the 2012 Pinto Valley Road clean-up team. The mine and the employees are directly involved in the community and

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have donated safety equipment for science labs at San Carlos elementary school. In addition, they have donated funds, gift cards and nearly 5,000 in non-perishable food items and toys to local food banks.

### **ORACLE STATE PARK**

Continued from Page 3

Mueller. A hands-on 45 minute show-and-tell program on gems, minerals, and the copper industry of Arizona. Free with park admission.

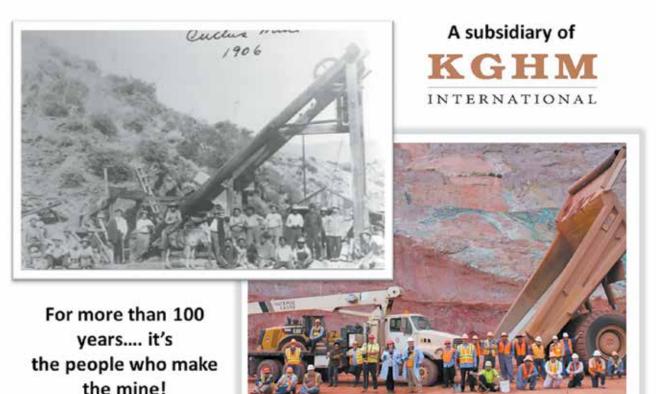
Saturday, October 11: Nature Journal Making Workshop, 11 a.m.-1 p.m. with Val Bembenek, local paper artisan at the ranch house. Make your own naturejournaling notebooks using basic Japanese stab binding techniques. Create blank journals of any size with unique embellishments, for your notes, sketching, photos or to give as gifts. \$12 includes park admission. Reservation required.

Saturday, October 18: Bat Night with AZGF Research Ecologist, Joel M. Diamond, Ph..D. His 30-45 minute pre-sunset talk on how light pollution at night affects local wildlife, such as bats. The talk will be followed by capturing bats for an up-close look at our nocturnal neighbors. Free with park admission; time and details TBA.

Sunday, October 19: "The Wonders of the Mesquite Tree", presentation begins at noon in the Ranch House. Free with park admission; details TBA. Possibly live music and Dessert in the Desert.



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# ASARCO launches Hayden smelter into second century with plans for \$110 million upgrade

By James J. Hodl Pinal Nugget

For more than a century, Hayden and copper smelting have been synonymous. In fact, Hayden started as essentially a company town providing housing for workers at the nearby Ray open pit mining complex and the local copper smelter complex. Both Hayden and the copper smelter came into being in 1912.

And the relationship will continue into the future, according to Thomas Aldrich, vice president of environmental affairs at ASARCO/Grupo Mexico, which owns and operates the Hayden Smelting Operations. Copper reserves remain high at the Ray and Mission mines that send ore to the smelter. And ASARCO is embarking on a project to upgrade the smelter so that it meets new environmental emission standards, and thus continues to provide jobs and economic prosperity to Hayden and the surrounding Copper Basin area.

The ASARCO smelter and surrounding operations continue to be an important part of the Hayden/Winkelman economy. It employs 1,400 hourly and salaried workers, who are annually paid \$140.8 million in wages, salaries and fringe benefits. The operations also generate \$28.6 million in property, severance and sales taxes. The company annually generates spending of \$345.8 million on materials, fuel and supplies into the Arizona economy.

Each year the Hayden smelter produces more than 300 million tons of 99 percent pure copper used in numerous household and commercial products, according to Kelly Norton, president of the Arizona Mining Association. The smelter also produces more than 575,000 short tons of sulfuric acid each year.

From the beginning, the smelter has emitted into the air byproducts that include lead, arsenic, sulfur dioxide (SO2), particulate matter, and other materials. These contaminants drifted over the entire region in the air and many of the materials contained in these emissions fell out of the atmosphere and settled on the ground. Less than a decade after the Hayden smelter began operations, the first emission controls were installed. The electrostatic precipitators added in 1920 were designed to remove particulate matter from the stack emissions. These minimal emission controls remained the only controls until 1969 when anticipation of new federal requirements being offered to the Clean Air Act prompted the installation of acid plants to more effectively limit SO2 emissions.

In 1974, the 1,000-foot double-shell concrete stack was built by ASARCO to discharge exhaust gases from the smelting operations, which replaced the 300-foot reverberatory furnace stack and 250foot converter stack. ASARCO further modernized Hayden smelter in 1983 by constructing of a second sulfuric acid plant to capture and reuse SO2 emissions produced during smelting, and construction of a wastewater treatment plant to recover process water from the sulfuric acid plant for reuse.

The last major renovations took place in 1989 and 1996. In 2012, ASARCO voluntarily undertook a \$10 million project to reduce lead emissions through the addition of a monitor system to keep lead emissions to within EPA rules issued in 2008 that trimmed allowable emission levels to one-tenth of the former standard.

The ASARCO smelter currently operates on a large complex of about 200 acres at the eastern end of the town. Two large emission stacks dominate the horizon. One is 1,001 feet tall and the other is 250 feet tall. There are also several smaller stacks visible at buildings throughout the complex. A large

slag pile, a solid glass-like waste material, is on the eastern end adjacent to the town. But additional upgrades are in the making. To meet new more stringent emissions rules issued in 2011 by the **US Environmental Protection Agency** (EPA), ASARCO has drafted plans for a \$110 million upgrade of the Havden copper smelter to bring the apparatus in compliance. Filed with the Arizona Department of Environmental Quality (ADEQ), the project will enable the smelter to meet EPA rules limiting SO<sub>2</sub> emissions from 140 ppb (parts per billion) to 75 ppd during a 24-hour period. The Hayden smelter has until Oct. 3, 2018 to meet this standard.

ASARCO's plan, which it filed on June 24 with ADEQ, describes a converter retrofit



Asarco Smelter in Hayden c. 1953. Photo courtesy Georgie Wood

project that will replace the smelter's five current 13-ft. diameter converters with three 15-ft. diameter converters. Also Continued on page 31

# We salute the Copper Industry Past, Present & Future

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### Español ... y Más (Spanish ... and More)

Fall 2014 Session with Judy Freeman starts Oct. 7 & 8!

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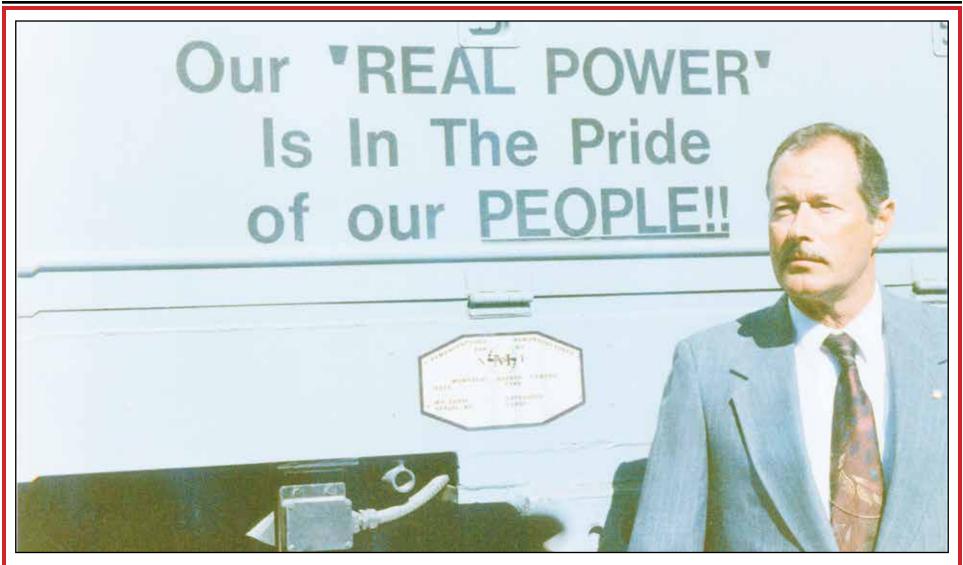
- The Beginning Class meets Wednesdays starting Oct. 8 from 6-8 PM.
- The Intermediate Class meets Tuesdays starting Oct. 7 from 6-8 PM.
- Both classes meet in *The Acadia Ranch Museum, 825 Mt. Lemmon Rd. in Oracle.* The cost is \$140 for the 13-week session.

• The Conversation Group meets Wednesdays, 10:30-12:30, place TBA. We also offer opportunities outside of the classroom to practice what we are learning. Sign up now so you don't miss out on the fun! For more information, please contact:

Contact: Judy Freeman at 520-818-2256 or jayfree@earthlink.net Our website has all the information: espanolymas.wordpress.com



Asarco Smelter in Hayden.



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~ L.S. "Jake" Jacobson



# The Copper Basin Railway People

A NOTE FROM THE PUBLISHER:

Jake Jacobson was chosen as North America's "Railroad Man of the Year" in 1994, the Copper Basin "Citizen of Year" in 1998 and one of the "Century's Great Railroaders" in 2000.

# The Copper Basin Railway – small but mighty

By John Hernandez Pinal Nugget

The rail line known as the Copper Basin Railway (CBRY) began its life as part of the Santa Fe Railway which was an affiliate of the Phoenix and Eastern Railroad and was built between 1902 and 1904. The railway connected Phoenix to Winkelman via Florence. In 1904 the Phoenix and Eastern became part of a legal battle for control of the railroads in Arizona between Santa Fe Railroad interests and the Southern Pacific Railroad. The Phoenix and Eastern was granted the right of way for the line that is now controlled by the CBRY.

The line travels from Winkelman to Magma Junction following the Gila River. In 1911 the track was extended 6.35 miles to Christmas, Ariz. to serve the mine operations there. This track extension would be abandoned in 1961. It also hauled copper concentrate, freight, mail and passengers.

Over its history this railroad line has changed ownership numerous times, being operated by the Arizona Eastern, Santa Fe, Prescott, and Phoenix Railway, Southern Pacific Railroad and Kennecott Copper. In 1986 Kennecott Copper sold the railroad to Rail Management Corporation and Copper Basin Railway was started. Lowell "Jake" Jacobson was made COO and helped turn the railroad into one of the most efficient and safest short line railroads in the country.

In 1993 severe flooding of the Gila River nearly destroyed the railroad. Perseverance and around the clock labor by CBRY workers led by COO Jake Jacobson saved much of the railroad line. This effort as well as Jake's commitment to safety and loyalty to his employees earned him the honor of Railway Ages "Railroader of the Year" for 1994. He was named "Great Railroader of the Century" in 1999. Asarco – Grupo purchased the CBRY railroad in 2006. They are also its chief customer. The railroad transports copper ore and concentrates from Ray Mine to the Hayden Smelter and carries sulfuric acid from the Hayden plant to the Ray Mine. It also transports copper anodes and cathodes. It connects with the San Manuel Arizona Railroad Company (SMARRCO) line and is used by SMARRCO to transport concentrate to connecting lines to the port of Guaymas, Mexico. The CBRY has seen a lot of history in its 110 plus years of existence. Just like the Gila River CBRY keeps on rolling along.



Just before Christmas 2013, the Kearny Fire Department and Jake Jacobson of Copper Basin Railway collected and delivered a "sleighful" of toys for local children who might not otherwise have presents to open on Christmas Day. Santa's helpers, from left are: Angie Gotto, Jake Jacobson, Lora Snow and Tim Gotto. And it wouldn't be Christmas without Jake's traditional delivery vehicle, his vintage black Mustang convertible (or as we choose to call it – his "one horse open sleigh."





A bridge utilized by the Copper Basin Railway.

John Hernandez | Nugget



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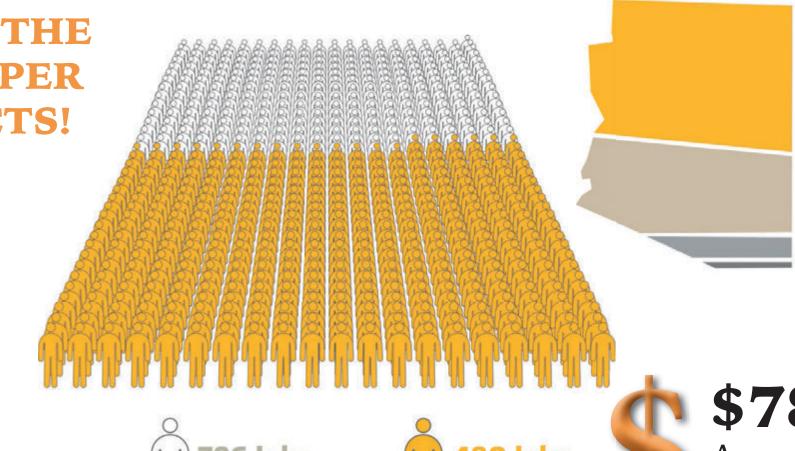
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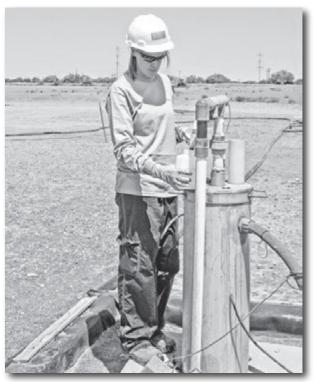


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The wellfield is sampled at Florence Copper. Photo courtesy Florence Copper

n the 21st century, we want jobs that are close to home. We want prosperity and growth in our local communities. We want industry that is environmentally safe and innovative. And we want our modern technologies that allow us the freedom to access information and get where we want to be quickly.

Florence Copper represents that opportunity. A study released by Arizona State University predicts that the project will create an average of 480 jobs annually for Pinal County. Many of the jobs the project creates will be for the SX/EW facility and will not require a college degree. In fact, Florence Copper will establish a training program for these careers. Our local hiring policy means that we will recruit employees from Florence and Pinal County. The average wage in the copper industry is over \$78,000 per year, meaning that the jobs will be head-of-household wages right here in Florence.

As the Florence Copper project contributes to economic growth, new businesses in retail, health care, transportation, and other industries will also be established in our communities. This means the restaurants and shops we are all waiting for will finally arrive, and they will continue to support employment even after the project ends.

Although folks refer to the project as the "Florence Copper Mine," it really isn't a mine. Florence Copper is bringing innovative, proven technology to Pinal County





**By Rebecca Rios** Special to the Nugget

called in-situ recovery. While Florence Copper is proud to be part of the mining community, it actually will be a copper recovery facility.

In-situ is an environmentally safe way to recover copper, a metal that is needed for our everyday, modern lifestyles. This is a "21st Century Copper Mine" that will use a method tested and improved by the mining industry for decades. Florence Copper will be the first to use this process exclusively to recover the mineral, and mining experts from around the globe will watch as Florence Copper sets the stage with this cutting-edge opportunity for Pinal County.

Copper powers our communications, our computers, our homes. Copper powers the modern American dream. Turn on your faucet – thank you, copper. Get on the internet – thank you, copper. Drive your car – thank you, copper!

Florence, Arizona will soon be seen as a technological hub with copper as its backbone.

To learn more, watch the video at http://youtube/H-O8WJudhW8 to learn how Florence Copper's in-situ process works.

Those curious to see how the process works can meet the engineers and project leaders by scheduling a tour. Schedule online at www.florencecopper.com/s/ SiteTours.asp.

#### Florence Copper supports the community now

The Florence Copper Community Foundation recently announced its second round of giving to the community. The Foundation was founded to make valuable contributions to the Town of Florence and greater Pinal County through charitable donations, community project support and sponsorships. Further information about the Foundation can be found at www.florencecoppercommunityfoundation.org.

Visit Florence Copper's website at www. florencecopper.com for complete project details.

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# History of the Magma Arizona Railroad, Superior

#### **By John Hernandez** Pinal Nugget

In early 1914 the Magma Copper Company, after studying different methods for transporting copper concentrate to the new smelter in Hayden, decided that hauling by railroad would be the most economical. The mine had been hauling concentrate by wagon to Webster located on the Southern Pacific Railroad line. The ore would be transferred to the Phoenix and Eastern Railroad where it would then be hauled to Hayden. Webster which would later become known as Magma Junction and then Magma was 31 miles from Superior. Hauling by wagon required a team of between 20 and 32 mules pulling three ore wagons and cost the company \$10 a ton.

A young engineer, Edward Dentzer from Pennsylvania had convinced Magma Copper that a narrow gauge railroad would be the most economical means of transportation. On Oct. 10, 1914 the Magma-Arizona Railroad Company (MARCo)was officially organized. The contract for the railroad line was awarded to the MacArthur Brothers Company. Dentzer would become superintendent of the railroad. Before he retired in 1944 he would be promoted to general manager, director and vice-president of the Magma-Arizona Railroad Company.

Construction at Webster began in November of 1914. The rail line would be completed to the concentrator near Superior in April 1915. An article in the Arizona Republican in June 1915 reported that the shipping costs had been lowered to \$3.50 a ton with the use of the train. The train used a saddle tank steam locomotive to haul concentrate, supplies, freight and passengers. They would later transport cattle from local ranches to market. A spur and loading dock was installed near the now ghost town of Reymert so the mine there could ship their ore by rail. In 1920 the mine in Superior had increased in size and production to the point that Magma Copper Company made

a decision to build their

own smelter. In order to

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build the smelter a large amount of steel would have to be shipped to Superior. The narrow gauge railroad could not handle the heavy weight and amount of steel needed. It was decided that a standard size track be built. Construction on a line next to the small gauge line began in late 1921. The small gauge line was kept open to allow hauling of ore to continue while the other line was being built. The Toohy Brothers

Construction Company built the new line. In 1923 the standard gauge line was completed and the old line was junked. The smelter would begin operating on March 31, 1924.

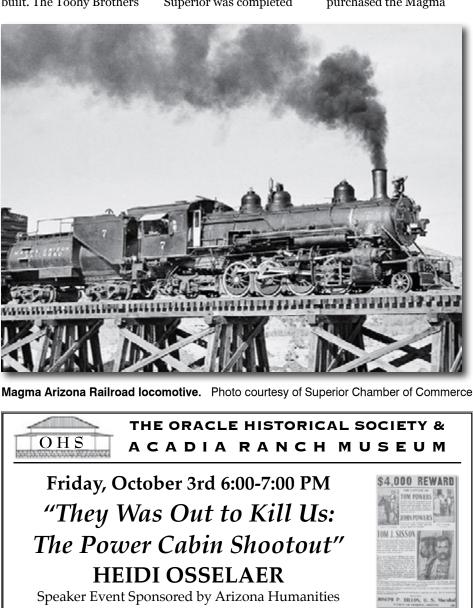
New locomotives, larger ore cars and equipment were purchased. Passenger and mail transportation would continue until 1938 when a better road between Mesa and Superior was completed allowing automobiles to take over. When diesel powered locomotives arrived in Arizona, Magma began phasing out the steam engines. The last steam engines, engine number 5 and number 7 were retired in 1967. Old Engine Number 5 appeared in the motion picture epic "How the West was Won" in 1962. In 1996 Broken Hills Proprietors (BHP) purchased the Magma

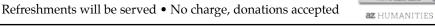
Copper Company properties including the railroad. The operations of the railroad ceased in 1997. Resolution Copper Mining, LLC now owns the railroad and mine properties.

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### **Copper Creek project owner enters into joint venture**

**By Andrew Luberda** Pinal Nugget

22

Redhawk Resources, Inc., the Canadianbased resource exploration and development company that owns the Copper Creek property in San Manuel, recently announced it has entered into an agreement with Anglo American with respect to a joint venture on Redhawk's Copper Creek Project. While the agreement is not 100 percent completed, it's close, according to Redhawk President and CEO R. Joe Sandberg.

Redhawk and Anglo American, one of the world's largest mining companies, expect to form a joint venture company, earning

Anglo American a 60 percent interest in the project after meeting certain funding and expenditures within a five-year period. Anglo American may increase its interest an additional 20 percent with additional funding before the seven-year anniversary of the effective date of the joint venture. As part of the agreement, Redhawk will serve as the operator for the first three years of the venture before giving way to Anglo American as the operator.

"We are extremely pleased to have Anglo American participate with Redhawk on the advancement of our Copper Creek Project," Sandberg said in a released statement. "Anglo American is a respected Continued on page 23

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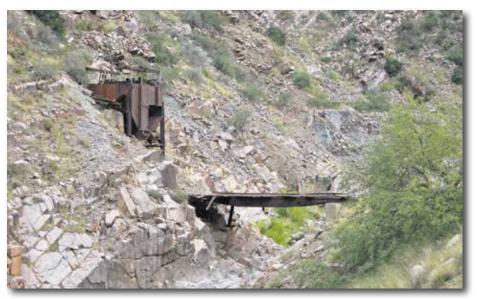
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Redhawk Copper's Copper Creek Project is located on the site of the historical mine in the Galiuro Mountains above Mammoth. Photo courtesy Redhawk Copper

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# Pinto Valley's ramp-up is going according to plan

REDHAWK COPPER Continued from Page 22

#### By Andrea Justice Pinal Nugget

Capstone Mining, which has acquired the Pinto Valley copper project from BHP Billiton last year, has announced it intends to raise \$300 million in debt by offering senior notes with a maturity date in 2022. Capstone is planning to take advantage of the current cheap debt situation as it has also arranged a new \$300 million credit facility valid for four years.

No details have been given yet on the \$300 million note issue, the yield will very likely be lower than 4 percent which means that it's a cheap way to diversify the company's funding needs.

This cheap credit facility and the \$300 million bond should allow Capstone to both reduce its interest expenses and increase its financial flexibility and fire power. At this point in time Capstone is on a takeover path again to secure 'the next project' for its pipeline as Pinto Valley's ramp-up is going according to plan.

Owned by Capstone Mining Corp., the Pinto Valley Mine and associated San Manuel Arizona Railroad Company was acquired from BHP Billiton in October 2013.

The Pinto Valley Mine is located in the Globe-Miami mining district in Arizona, one of the oldest and largest copper districts in the Americas. BHP Billiton invested \$194 million in 2012/2013 to upgrade and re-commision the operation, which was successfully restarted in December 2012. It is projected to produce approximately 130 million pounds of copper in concentrate and approximately 7 million pounds of copper cathode annually, along with by product molybdenum, for the first five years of production.

BHP Billiton restarted mining at Pinto Valley in early 2013 with five years in publicly reported reserves. In early 2014, Capstone announced the results of a Pre-Feasibility Study, extending the mine life by eight years to 2026. Capstone believes there is potential to extend the operational life beyond the PV2 reserve life in Mineral Resources not included in the PV2 mine plan can be successfully converted into Mineral Reserves. Capstone intends to commence engineering and economic studies to



Massive trucks like these are used at most of the copper mines in the Copper Corridor. Andrea Justice | Nugget

consider all remaining current Mineral Resources not included in the PV2 mine plan and their potential for development beyond 2026.

global mining company with ready access to experienced people, technology, and capital."

The announced venture, when completed, will allow the Copper Creek Project to advance as a result of the resources available through Anglo American. How quickly it advances is unknown at this point, but operating as a productive mine is not in the project's foreseeable future.

"No, there's no timetable to it," Sandberg answered when asked to estimate when the mine would be productive. "It depends what gets found, how big it gets made, and the progress that gets made. It certainly is not going to be in the near future. There is a lot of additional work that needs to be done and a lot of additional exploration that Anglo American wants to do and we are in full agreement with that."

Even though additional exploration and work needs to be completed before the Copper Creek Projects operates as a productive mine, it remains the focus of all parties involved.

"The objective is to ultimately get it into production," Sandberg said. "At least, a reasonable sized mine." In addition to their joint venture with Anglo American, Redhawk has formed a strategic alliance with Howe Mining Projects, Inc., a company that employs internationally known geological and mining consultants.

Redhawk's alliance with Howe is essentially a mutual understanding that the two companies have the same interest in the Copper Creek Project and plan to work together.

The announced venture and alliance increases the number of interested parties in the Copper Creek Project and the ultimate objective of operating a productive mine. However, there remains to be a number of "unknowns" before the project reaches that stage. Included in this list is the expected economic impact on San Manuel and the surrounding area.

"It's going to depend upon how big it can be made and how it's going to be mined, which we don't know the answers to that yet," Sandberg said.

Redhawk's recent moves to form a joint venture with Anglo American and its alliance with Howe Mining Projects, Inc., figure to provide answers, sooner than later.



An aerial view of Redhawk Copper's Copper Creek Project located in the Galiuro Mountains above Mammoth. Photo courtesy Redhawk Copper





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A geologist speaks during a recent public tour of the Resolution Copper Company's Core Processing Center. Ashley Milagros Lira | Nugget

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# Progress continues on Resolution Copper Project

#### **By Mila Besich-Lira** Pinal Nugget

The Resolution Copper Project just east of Superior has met many challenges over the past decade. This past year the company overcame a few challenges during the construction of the number 10 shaft. As the crews reached deeper lengths of the shaft during the construction, the heat became unbearable and construction was halted on the shaft construction to install improved air conditioning and cooling systems. Despite the slow down on the shaft construction, as soon as it was safe to return to constructing the shaft, crews got back to work and currently the shaft is a depth of 6,787 feet below the earth's surface. At completion the shaft will be 6,984 feet. The company expects to get to reach that depth by the end of 2014.

The project continues to await Congressional approval of the Southeast Arizona Land Exchange and Conservation Act. The exchange will exchange 3,800 acres of federal lands including the Oak Flats camp ground for 5,300 acres of high priority conservation lands that the company owns in Arizona. The land exchange includes the transfer of 110 acres to the US Forest Service which will protect the escarpment of Apache Leap which towers over Superior to the east. In 2013 Representatives Gosar and Kirkpatrick re-introduced the land exchange, the bill quickly gained momentum in the House of Representatives with hearings in the House of Representatives Natural Resources Committee. Unfortunately the bill has not received a vote in the House of Representatives. Senator John McCain has

Continued on page 26





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# Freeport-McMoRan announces smelter expansion

**By Andrea Justice Pinal Nugget** 

According to a recent press release from Freeport-McMoRan plans are in the works for a smelter expansion project at its Miami operations. This expansion will increase copper production and also comply with new EPA standards. Upon completion of the project, the copper concentrate throughput for the smelter will increase by approximately 30 percent to a capacity of 900,000 tons per year from the current average of 700,000 tons per year. The expanded smelter capabilities will comply with the new EPA ambient air quality standard for sulfur dioxide emissions.

The release goes on to say that a major component of the project is to install a new smelting vessel which, along with modifications to other facilities in the smelter, will allow for increased copper production. Much of the construction work will be related to emission control systems in order to capture virtually all fugitive gases and particulate emissions. The result will

capture over 99 percent of the SO2 and other emissions from the Miami operations. The additional concentrate to feed the expanded smelter will primarily come from Freeport-McMoRan's Morenci and Chino operations. The smelter will continue to be base loaded with concentrate from the company's Sierrita and Bagdad mines in Arizona.

Engineering work is currently underway. According to Eric Kinneberg, director of external communications for Freeport-McMoRan, they do not have details on a timeline at this point. While some construction will commence later this year, the bulk of the work is expected to begin in 2015. The new smelting vessel is scheduled to be commissioned in the second quarter of 2017 with production ramping up shortly thereafter. The construction workforce will vary greatly and is expected to number from 40 to 500 over a two year period. Freeport-McMoRan plans to hire about 20 new employees to operate and maintain the new emission control systems and facilities.



A conveyor belt system like this one takes copper ore to the smelter for the first round of processing. Andrea Justice | Nugget

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REPRESENTATIV Securities offered through Questar Capital Corporation (QCC), Member FINRA/SIPC. Advisory Services offered through Questar Asset Management (QAM) a Registered Investment Advisor. Arizona Financial Services is independent of QCC and QAM. remained in support of the land exchange but there has still been no significant movement of the bill in the Senate. Congress has adjourned until after the November elections, which means the bill will not have much movement in the 112th Congress. "While we

REGISTERED

RESOLUTION Continued from Page 24

are disappointed Congress adjourned prior to the November elections without taking a vote on the bill; however, Resolution Copper continues to be optimistic about action on the land exchange bill in the 113th Congress," explained Dave Richins, principal advisor and

government affairs with the company.

Resolution continues to provide support to the communities of the Copper Corridor as part of their social license to operate. The company has contributed over \$200,000 to the Town of Superior and throughout

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the region. "We value our relationship with the Town of Superior and we look forward to a long, constructive relationship with the town government and other businesses and institutions in the region," explained Richins. Public polling conducted by pollster Bruce Merrill indicates that the company has an 85 percent approval rating throughout the Copper Corridor.

In the coming year, residents in the region can expects to see continued public outreach about the project. The company expects scoping related the National **Environmental Protection** Act, the scoping will include public comment periods and public meetings. Resolution is also planning the start of additional reclamation work on the mine site.

For more information on the **Resolution Copper project** you can visit their website at: www.resolutioncopper.com.



# Shaping Our Future

Resolution Copper is one of the largest undeveloped copper deposits in the world, located in the historic Magma Copper Mine adjacent to the town of Superior, Arizona in the Pioneer Mining District. The Resolution copper deposit lies nearly 7,000 feet below the earth's surface and is believed to be more than 1.9 billion tons—that's about the size of nearby Picket Post Mountain, and on average contains 1.5 percent copper.

Resolution Copper Mining is working to develop the mine, which at full production, is expected to become the largest copper producer in North America. Over the life of the mine, it will be capable of producing nearly 25 percent of U.S. copper demand.

For more information, visit ResolutionCopper.com.

## A history of the San Manuel Arizona Railroad 'SMARRCO

**By John Hernandez Pinal Nugget** 

The San Manuel Arizona Railroad Company (SMARRCO) was constructed by the Utah Construction Company and the Stearns-Roger Manufacturing Company in 1955. The short line railroad was built to haul copper concentrates, finished and unfinished copper and sulfuric acid along a 29.4 mile line connecting to Copper Basin Railway at Hayden. There was also a line between the mine and the smelter.

Ore from the mine would be hauled to the mill in San Manuel.

BHP Billiton would acquire SMARRCO along with the mine property through a merger with Magma in 1996. In 1999 the railroad ceased operations. In 2012 work was started to reopen the line. The main line track was upgraded. BHP would then sell the property to Capstone Mining Corporation, a Canadian company, in 2013 along with the Pinto Valley mining operation. Capstone now operates a loading and storage facility



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•2 view lots, city water, sewer, paved roads, make an offer on both lots, and owner will make you a deal. \$7,000 each. ·Beautiful views of the Galiuro Mountains lots of vegetation & large Saguaros. \$10,000 view lots, city water, sewer, paved roads, make an offer on both lots, and owner will make you a deal. \$7,000 each. •Beautiful views of the Galiuro Mountains lots of vegetation & large Saguaros. \$10,000

**Oracle Listings** - Homes •Nestled among the trees 1684 sg ft 3 bed, 2 bath. light and bright great room with large dining area, large bonus room can be 4th bedroom. \$182,500 ·Hilltop views, 1292 sq ft custom home, vaulted ceilings, a/c, granite counters, large porch, new greenhouse, pine trees. \$217,500 Immaculate home feels like new! Hilltop location incredible mountain views & sunsets. 1867 sq ft. 3 bed, 2 bath, open floor plan. \$224,900 Very cozy home with two fireplaces and guesthous on almost half an acre! 3 bdrm, 3 ba. \$160,000 Great views, dream kitchen with 6 burner professional gas range with electric oven and much more, a cook and entertainers dream, open floorplan with lots of natural light, 3 bedroom, 2 bath, 1989 sq. f with enclosed Arizona Room. \$305,000. •Mountain views 4 bed, 2 1/2 bath, 2,404 sq. ft. plus a 1,244 sq.ft. basement, 34 x 27 detached garage on 6.85 ac. \$449,000. •Charming 3 bed, 2 bath home with 2 car garage on large private lot, new ceramic tile, new stove, microwave & dishwasher. \$155,000

#### **Oracle-Land**

•1.36 ac. custom home lot with view, boulders, oaks and more. \$100,000. Stunning 360 degree views on one of the nicest 3 - 4 ac lots in Oracle. \$149,000. •Commercial Property Nice 2 acres commercial property off Frances \$150,000 •3.31 ac with unbelievable views, located in homes only \$150,000. \$85,000. •5 ac parcel mountain views, horse property \$59,900 per 5 ac or \$100,000 for 10 ac owner •1.62 ac. on payed road with utilities at the lot line in homes only location. \$75,000. •4 view lots, nice views, custom home area, boulders and trees, owner may carry. \$72,000.

San Manuel

•DRASTICALLY REDUCED - Charming home on 40 AC home and well is solar powered, beautiful views, horse property, can be split. \$249,900.

 4 lots with great mountain views, lots range from .34 to 60 ac. Lot 2 is \$12,500, other lots are \$14,500.
 8.84 ac, can be split, has two building sites, saguaro and view. \$99,000 saguaro and view. \$99,000 Secluded area with great views, being sold as is for value of 1.3 acres. \$39,000. 2 large buildings, 6,400 sq. ft., living quarters, office space, bathrooms, enclosed patios. \$75,000 -3-lots to choose from. Hill top views shared well, horse property, leveled off areas for home sites. Two lots \$50,000 each & one lot \$70.000.

in San Manuel.

Copper concentrate is delivered to the facility from the Pinto Valley Mine. It is then loaded on the SMARRCO train and hauled to Havden Junction

where it is interchanged to a third party rail and transported to the port at Guaymas, Sonora Mexico. The current SMARRCO fleet consists of four locomotives and 182 ore cars.



Capstone purchased SMARRCO in 2013 and began running the trains through San Manuel and Mammoth after a 14-year closure. James Carnes | Nugget



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# The Copper Art Museum opens for business

The relatively new Copper Art Museum has opened its doors for business in Clarkdale, Ariz., taking up residence in the old high school. Clarkdale was founded as a company town back in 1912 by Senator W.A. Clark who was known as "America's Copper King". The town was built expressly for the purpose of mass producing copper and sending it all over the globe. Clarkdale certainly has the look of an old company town, most of the buildings are the same age. The former high school that now houses the museum has that old historic building feel. The museum can't be missed, the north wall has a reproduction of Botticelli's famous painting of Venus on the Half Shell with a copper colored female symbol inserted into the large mural. The image is quite striking, the clam shell rising out of the water and painted like Arizona's state flag with Venus demurely holding the female copper symbol.



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**By Gary Every** 

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painting to create the mural on the side of the building is revealed inside the museum. In the classical European world, the copper mines in Crete were the richest in the region. Botticelli's painting of Venus rising from the ocean is placed on a beach in Crete. The oft quoted quip, "Men

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The story behind altering this iconic

are from Mars, women are from Venus," comes from the ancient Greek world, where men are from Mars and ruled by iron, while women were from Venus and ruled by copper. Interesting tidbits such as this can be learned in the information room which has maps of copper mines across the globe. There is a breakdown of how much and where copper is mined on every continent. There were displays explaining how important copper was in man's early history. Both copper and tin were necessary to create a Bronze Age. My favorite part of the information room were the many mineral specimens of copper that were displayed there along with examples of malachite, turquoise, chrysocolla and others. The rocks are beautiful.

There are rooms dedicated to Art and Architecture, with copper ceiling panels, vases and fine art. There was another room dedicated to religious art but some of the rooms which really slowed the pace were those dedicated to the culinary arts. Not only were all the items on display made of copper but many of the kitchen items were decades old and some centuries old. It was neat to explore kitchen items which once used to be commonplace, all of them oddly shaped and some of which I was not certain how to use or what for. All the antique kitchen items were made of gleaming copper, including the highly polished copper stove in the corner. There were many wine chillers on display, embossed with elaborate designs, some of them centuries old. There were charts and photos supplied by local Verde Valley Vineyards, explaining how copper is an essential soil nutrient for those hoping to turn grapes into fine wine. Especially striking among the culinary ware was an 1850s cognac still, kettles and tubes built of bright gleaming copper.

One room of the Copper Art Museum is for displaying Military Art. A wall with a series of large photographs explains that much of the artillery used in World War I, especially the shell casings



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The entry at the Copper Art Museum in Clarkdale. Gary Every | Nugget

were made of copper. World War I was a horrible war and millions of rounds of artillery were fired. There were enormous piles of spent casings. When the war had ended, some enterprising artists gathered up these spent shell casing and created

Continued on page 30



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#### **COPPER ART** Continued from Page 29

cheap and beautiful souvenirs for the war weary soldiers to take home after the war. With blocks of wood and little hammers these enterprising artists created beauty out of horror. Some shell casings wore images of flowers and

grapes, others listed the sights of famous battles and campaigns. Shell casings adorned with religious symbols were very popular but just as popular were nature pictures, flowers, and animals. Many of the animals were symbolic of

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the nations fighting the war lions for England and roosters for France. The Copper Art Museum has over 525 examples of these antique artistic artillery shell casings. Inside a glass case, beside funky spiked helmets and

other copper adornments was a crucifix with Jesus nailed to a cross made of bullets. I was extremely moved by this piece of homemade art, imagining a reluctant soldier who wondered why man inflicted the horrors of war upon his fellow man.

We were moving slowly through the Copper Art, following the copper footsteps as we took our time examining all the copper artifacts on display. Even the hallways were filled with decades old magazine advertisements and industrial posters extolling the virtues of copper. Returning back near the entrance there are photos depicting the life of this building back in its former heyday, when the hallways were filled with bustling high school students. The wall is adorned with images, photos and yearbook displays from the early decades of the twentieth century when the



Examples of the shell casings.

Gary Every | Nugget

Clarkdale high school was filled with students, most of whose parents earned their

paychecks manufacturing copper to be shipped around the globe.



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ASARCO

Continued from Page 13

included in the plan are the installation of improved primary and secondary hoods, and an electrostatic precipitator for solids removal prior to SO2 recapture at the smelter's existing acid plants. Larger ladles (300 cu. ft. instead of 200 cu. ft.) will be installed to reduce the number of hot metal transfers. Additional upgrades will capture secondary gases and direct them to the acid plant for conversion to a sulfuric acid product.

Overall the plan aims to reduce SO2 emissions at the Hayden smelter by 85 percent, with a total SO2 capture rate of 99.7 percent of what is produced during the copper smelting process.

The plans were made public during a meeting of the Arizona House Committee on Energy, Environment and Natural Resources held Aug. 22 at the Gila Community College Pueblo Campus in Globe.

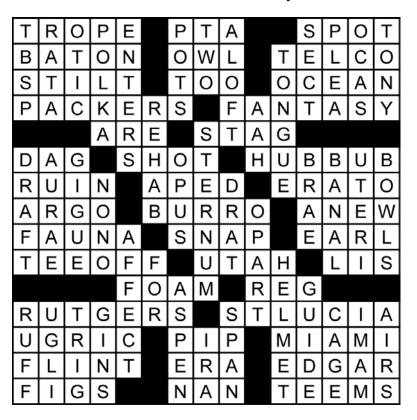
ADEQ is expected to rule on the ARARCO plan early this fall. If approved the plan will then go to EPA for an additional 45day comment period. With EPA approval, ASARCO could begin work on the upgrades before year's end. Work on the converter retrofit will be performed as to not disrupt the operation of the smelter and keep all employees working their regular daily schedules, Aldrich said. The smelting plant must operate within the EPA emission limits by Oct. 3, 2018.

Meeting the standard is important to keep the Hayden copper smelting plant operating and providing employment for residents of the Hayden/Winkelman area, Aldrich added.

This project is worth the investment because demand for copper has remained steady in recent years. Since 2010, copper has averaged around \$3.15 a pound, Aldrich noted. This is up from under \$1 a pound as late as 2003. Copper continues its traditional uses inside electrical and electronic products and delivering electricity to homes. Only in the outdoor modules of air conditioning systems and heat pumps has copper lost as several manufacturers have switched from copper to aluminum wiring to thwart thieves attracted by high prices for salvaged copper from stripping these modules of copper wire for a fast \$70 payoff while ruining \$3,000 in equipment.

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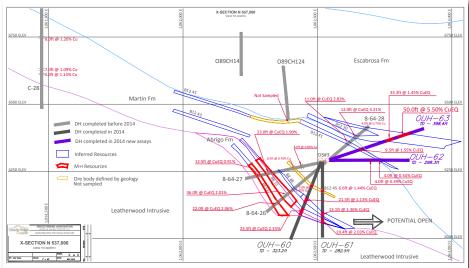


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For more information contact: 520-357-2841



A diagram of the results of the Oracle Mining Additional Drill From 2014 Drill Program. Diagram courtesy of Oracle Ridge Mining

## **Oracle Ridge Mine update**

**By John Hernandez** Pinal Nugget

Oracle Mining Corporation (TSX:OMN) is a Vancouver, Canada based company. The company owns the Oracle Ridge copper mine project located in the Catalina Mountains.

The Oracle Ridge mine operated as a copper-silver-gold mine from 1990 to 1996. It closed due to low copper prices and production problems.

The mine is now in the permitting and detail design stage for resuming mining operations. The drilling has been suspended at this time as Oracle Ridge mine is seeking additional



The Oracle Ridge Mine is located on Mt. Lemmon above Oracle. Photo courtesy of Oracle Ridge Copper

Photo courtesy of Oracle Ridge Cop

funding to complete the drill program.

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