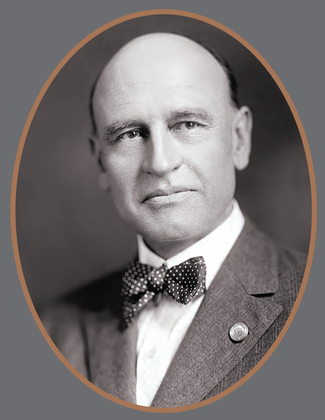
Mining in the Robinson District

Welcome to the KGHM Robinson Nevada Mining Keystone Pavilion overlooking Keystone Dump operations at Ruth, Nevada.

EARLY MINING White Pine County's Robinson Mining District, established in 1868, played a minor role in the early precious metal mining that made Nevada "the Silver State." Prospectors found gold and silver in nearby Robinson Canyon, but late nineteenth-century mines there proved unprofitable. At first the low-grade copper ore here in Ruth had no market, but demand slowly grew from the U.S. electrical industry.



MARK L. REQUA (1865–1937)
Source: Library of Congress

COPPER BOOM In 1902, mining railroad entrepreneur Mark Requa realized Ruth's copper ore could be mined profitably. Requa organized the Nevada Consolidated Copper Company (NCCC) in 1904 and raised funds to build a mine at Ruth, a plant at McGill to process ore, and the Nevada Northern Railway to ship copper to market. Requa's vision proved successful. However, by 1906 his financial backers, the Guggenheim family mining concerns, took control of his copper empire. The NCCC began mining at the Liberty Pit in 1907, made their first copper at McGill in 1908, and built the town of Ruth to house their workers. NCCC's World War I–era production made Nevada one of the biggest U.S. copper mining states, and output increased in the 1920s to meet electrical industry demand. The "Silver State" had become a copper state.

KENNECOTT COPPER In 1933, the NCCC came under full control of the Kennecott Copper Corporation (KCC). Kennecott Copper had mines in Alaska, Arizona, New Mexico, Utah, and Chile and was for many years the largest copper company in the world. KCC prospered during World War II, the postwar economic boom, and the Korean War. In the 1950s it was White Pine County's biggest employer. In the 1960s KCC profited from the demand for copper for the communications and computer industries as well as the Vietnam War, with record production at Ruth in 1969. KCC was the biggest U.S. copper producer in 1970, when it made 25 percent of domestic copper.

CHALLENGE AND REBIRTH In the 1970s, the U.S. copper industry suffered from foreign competition, low prices, and environmental regulation. When KCC finally stopped mining here in 1978, Ruth had produced more than 1.5 million tons of copper and 2.7 million ounces of gold. After 1991, the copper pits at Ruth were opened again and mined successively by Magma Copper, BHP Billiton, Quadra FNX, and, starting in 2012, KGHM Polska Miedz.

KEYSTONE PAVILION In 2019, KGHM started moving waste rock from its Ruth Pit expansion project to the Keystone Dump, made from waste rock removed from the Liberty Pit until 1958. KGHM recognized that activity would change the historic Keystone Dump's appearance and created the Keystone Pavilion to celebrate local mining history and to commemorate the Keystone Dump's historical relationship to the town of Ruth.

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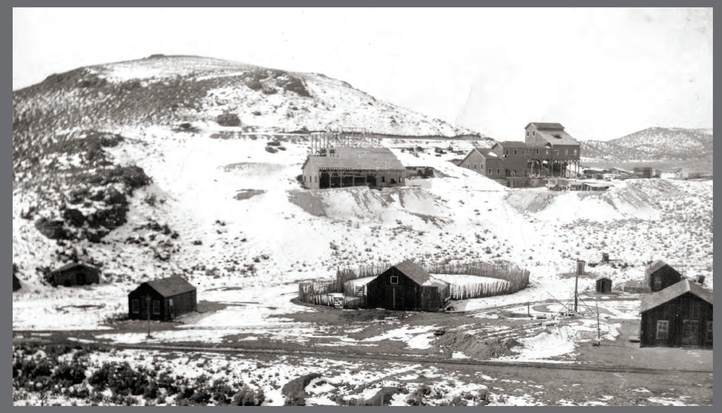
KGHM is committed to Zero Harm to our Employees, our Communities, and the Environment.



KEYSTONE HILL, MINE, AND MILL The Keystone Dump at Ruth and the area immediately east were named for the Keystone Mine and Mill on Keystone Hill, shown in this circa 1900 view. The small wood buildings and round animal pen in the foreground reflect mining camp life in the Robinson District before the early twentieth-century copper boom. *Source: Nevada State Railroad Museum-Ely*

NEVADA NORTHERN RAILWAY The NNRY, completed in 1908, was the Robinson Mining District's transportation lifeline. It carried people and supplies between Ely, mines at Ruth, and transcontinental railroad connections over 100 miles to the north. In this 1930s view a NNRY train pulls cars of copper ore from Ruth through Keystone Tunnel in Robinson Canyon to be processed at McGill. *Source: Nevada Northern Railway National Historic Landmark*

EARLY MINING AT THE LIBERTY PIT The Nevada Consolidated Copper Company began excavating the large, low-grade copper ore deposit at Ruth in 1907. NCCC used new "open-pit" mining methods with steam shovels and railroad trains to rapidly move large amounts of ore and waste rock. This operation, which became known as the Liberty Pit, was the third open-pit copper mine to open in the United States after Bingham Canyon, Utah, and Morenci, Arizona. *Source: Memories of the Ruth Mining Area*

MCGILL REDUCTION WORKS At McGill, 20 miles northeast of Ruth, copper ore was concentrated and smelted to make impure "blister" copper that was refined in Baltimore, Maryland. This facility, shown here in the 1930s, was key to making Ruth copper mining profitable for Nevada Consolidated Copper and its successor, the Kennecott Copper Corporation. The works started producing copper in 1908 and closed in 1983. The surrounding town of McGill was one of two NCCC/KCC-owned "company towns" in the Robinson District. *Source: Special Collections Department, University of Nevada, Reno Libraries*

OLD RUTH TOWN SITE This panoramic photograph taken in 1924 shows the first location of the mining town of Ruth, established east of the Liberty Pit in 1904. The Nevada Consolidated Copper Company and later Kennecott Copper rented out the neat rows of well-kept, company-owned houses to their employees, and provided all local services and utilities. At its peak, Old Ruth housed over 2,000 workers from the U.S. and countries including Austria, Denmark, France, Germany, Greece, Hungary, Japan, Norway, and Sweden. Visible in the distance to the west above the houses at right is the Liberty Pit, with its associated Puritan and Sunshine waste rock dumps extending north to the right. The Keystone Dump area is out of the view to the right. *Source: Memories of the Ruth Mining Area*

The Ruth Mining Landscape

THE LIBERTY PIT Mining at Ruth expanded tremendously by the 1930s, as seen in this Liberty Pit view. This ore deposit is a *porphyry* type, a large, low-grade formation, here a few miles long and hundreds of feet deep. Beginning in 1907, steam shovels loaded trains with tens of millions of tons a year of ore bound for McGill, and waste rock bound for dumps including Keystone. Eventually about twenty miles of track spiraled around the busy pit; there are ten trains in this view. The Liberty Pit was the fourth-largest U.S. copper-producing open-pit mine in the early 1930s, and for a short time the biggest open-pit mine in the world. When KCC stopped mining the Liberty Pit in 1969, it was the biggest open-pit mine in Nevada, more than a mile long, five-eighths of a mile wide, and nearly 900 feet deep. *Source: Nevada State Railroad Museum-Ely*

RUTH MINING AREA, 1936 This view looking east shows Kennecott Copper operations, with the Liberty Pit at lower right, and at left, from top to bottom, the Keystone, Sunshine, and Puritan waste-rock dumps. At upper right is KCC's Old Ruth company town, including the Lone Tree Extension above the pit, which helped the town reach its maximum population of 2,200 workers. At lower left is Rieptown, once notorious for its drinking and gambling saloons. Both town sites were eventually swallowed up by open-pit mining. The 1950s "New Ruth" town site is at left center. *Source: Nevada Historical Society*

AERIAL PANORAMA OF RUTH, NEVADA, MINING OPERATIONS
Source: KGHM Robinson Nevada Mining

- ★ **YOU ARE HERE** at the Keystone Pavilion
- 1 **U.S. Route 6:** The Grand Army of the Republic Highway
- 2 **U.S. Route 50:** The Lincoln Highway, also known as the "Loneliest Road in America."
- 3 **Robinson Canyon:** An area of early Robinson Mining District gold and silver mining activity centered 1869–1880 at Mineral City, known as Lane City after 1896.
- 4 **State Centennial History Marker No. 9:** "Copper Country," at U.S. Route 50 / County Route 44 intersection.
- 5 **Keystone Mine site:** Location of a small late-nineteenth century mine.
- 6 **Keystone Mill site:** This mill processed precious metal ores from surrounding mines before the circa 1900 copper boom.
- 7 **Nevada Northern Railway:** Main line from Ely, Nevada, through Robinson Canyon to Keystone Junction.
- 8 **Nevada Northern Railway:** Original main line to the Liberty Pit and "Old Ruth." Ore was shipped by rail to McGill, Nevada, for processing until mining ended in 1978.
- 9 **Liberty Pit:** Excavated by Nevada Consolidated Copper Company (NCCC) and Kennecott Copper Corporation (KCC) 1907–1969. Between 1913 and 1958 about 40 percent of the ore was mined by Consolidated Coppermines Co. (CCCo.), which owned part of the pit. KCC ceased mining here in 1969 in favor of the Tripp-Veteran Pit. Magma Copper resumed mining the pit in 1995, and BHP Billiton mined it from 1996 to 1999.
- 10 **Keystone Dump:** Waste rock from Liberty Pit was dumped here by train until 1958. Four attempts to leach Keystone Dump for its copper content between 1924 and 1949 were less successful than at other Liberty Pit dumps.
- 11 **Juniper Dump, 12. Sunshine Dump, 13. Puritan Dump, 14 Mollie Gibson Dump:** Waste-rock dumps for the Liberty Pit, these dumps were successfully leached for their copper content by KCC at various times beginning in the early 1940s.
- 15 **"Old Ruth" town site:** A NCCC "company town" established in 1904 reached a maximum population of over 2,000 workers. In 1952–1953 KCC moved the buildings and residents to "New Ruth" to make way for expanded underground mining in the area.
- 16 **Ruth Deep Shaft site:** KCC operated this underground mine from 1955 to 1965. The design for the Keystone Pavilion shelter around you is based on the Deep Ruth Shaft headframe structure, demolished in 2009.
- 17 **"New Ruth:"** Now simply called Ruth, the town was built from the relocated Old Ruth buildings in the early 1950s. KCC's local employees were allowed to buy and own their own homes here for the first time. Ruth was officially accepted as an unincorporated Nevada town in 1958.
- 18 **Tripp-Veteran Pit:** The CCCo. combined two smaller pits into the Tripp Pit in 1955. KCC started the Veteran Pit in 1955 when ore in the original Liberty Pit started running out. After KCC took over CCCo. in 1958, it merged the Tripp and Veteran pits and then closed them in favor of expanding the Liberty Pit. KCC restarted Trip-Veteran operations in 1966 and stopped them again in 1971. Quadra Mining Ltd. focused its mining in the Tripp-Veteran Pit during the company's 2004–2012 mine ownership.
- 19 **Ruth Pit:** KCC began mining here in 1968. KGHM Polska Miedz/Robinson Nevada Mining Company focused operations here in 2015. Ruth Pit waste-rock dumping on Keystone Dump starting in 2019 changed its historic appearance.
- 20 **Ore Concentrator Mill:** Built by Magma Copper in 1994 and also the site of mine plant offices.
- 21 **Nevada Northern Railway:** 1994 extension to the Magma Copper ore mill
- 22 **Fallen Miners Memorial:** Dedicated in 2018 to the over 300 miners who lost their lives in the Robinson Mining District since 1877.

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NEW RUTH AND KEYSTONE DUMP In the late 1940s, Kennecott Copper planned to mine underground in the area under Old Ruth from a new Deep Ruth Shaft located east of Keystone Dump, which they anticipated would cause the ground under the town to subside. In 1952–1953, KCC relocated around 1,200 people and over 150 buildings two miles northwest to "New Ruth," just west of Keystone Dump, as seen in this mid-1960s aerial view. KCC provided services, utilities, schools, recreational facilities, and an infirmary, but in a move away from corporate paternalism, the company allowed employees to purchase rather than rent the relocated houses. *Source: Nevada Northern Railway and the Copper Camps of White Pine County, Nevada*

THE HISTORIC KEYSTONE DUMP This 2007 view looking southwest from the former Tonopah Canyon Road bridge over the NNRY tracks captured the mass, shape, and texture of the historic Keystone Dump as it looked before KGHM Ruth Pit operations began to change the landscape in 2019. The parallel terraces in the dump's north face at right were made to stabilize the slope where a mine access road passed close to the dump. *Source: Milestone Heritage Consulting / Matt Kierstead*

KEYSTONE DUMP FROM KEYSTONE STREET The eroded waste-rock slopes of the historic Keystone Dump loomed over 200 feet above the streets of New Ruth and dominated the landscape east of town for almost 70 years after its houses, some now more than 100 years old, were relocated from Old Ruth in the early 1950s. *Source: Milestone Heritage Consulting / Matt Kierstead*

Ruth’s Landmark Keystone Dump

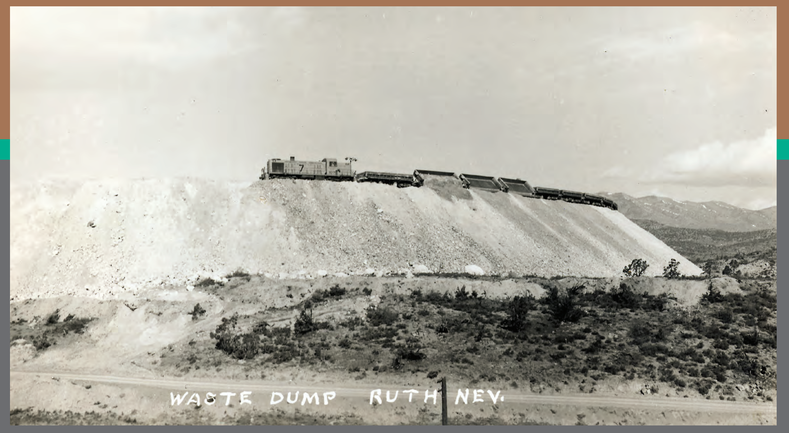
DANIEL C. JACKLING (1869–1956)
Source: Special Collections Department, University of Nevada, Reno Libraries

Mining engineer Daniel Jackling, “father of the porphyry coppers,” proved that large, low-grade ore deposits found in the western U.S. and previously considered worthless could be mined economically by applying mass-production methods and machines: open-pit mining with steam shovels and railroad locomotives hauling ore cars on movable tracks. After his pioneering success in Utah in 1905 at what became the huge Bingham Canyon open-pit mine, Jackling investigated copper deposits, including Ruth’s, and encouraged the New York City–based Guggenheim mining and smelting concern to invest in his approach at other U.S. mines. Ruth copper production based on the Utah model began in 1908 and was rapidly adopted by the copper mining industry. Jackling developed the Chino, New Mexico, and Ray, Arizona, copper pit mines and ultimately became president of all these Kennecott Copper properties in 1925. *Source: Special Collections Department, University of Nevada, Reno Libraries*

OPEN-PIT MINING MACHINES This World War I–era Liberty Pit image captures the working machines that made open-pit mining of porphyry copper ore deposits economical. The steam shovel in the trench at right is loading freshly blasted copper ore into a train of hopper cars that will take the ore to McGill for processing. At right, beyond the steam shovel, a pair of steam-powered “Keystone Drillers” are boring vertical holes for the placement of explosive charges to break up fresh ore for loading into the next train. *Source: Nevada Historical Society*

BLASTING ORE AND WASTE ROCK Miners expanded the Liberty Pit by blasting tall stepped “benches” down through the low-grade copper ore deposit as shown in this 1920s view. Huge amounts of waste rock containing little or no copper were hauled out of the pit to waste-rock dumps like Keystone Dump, which became a characteristic landform type of the open-pit mining process and landscape. *Source: Nevada Historical Society*

LEACHING COPPER AT KEYSTONE DUMP The town of Ruth at upper right is dwarfed by Keystone Dump in this 2018 aerial view. The grid patterns on the dump are leaching pond berms. Beginning in 1919, Ruth mining companies leached small but profitable amounts of extra copper by slowly flowing water through the Liberty Pit dumps, collecting the fluid, sprinkling it over scrap metal, and recovering the precipitated metallic copper. Leaching at Keystone was less successful than at the Mollie Gibson, Puritan, and Sunshine dumps, and ended in 1949. *Source: KGHM Robinson Nevada Mining*



DUMPING WASTE ROCK AT KEYSTONE DUMP At first, mine dumps were built using trains of “dump cars” pulled by steam locomotives on movable tracks at the edges of the dumps. In 1948, Kennecott Copper introduced more-efficient diesel locomotives, and steam engines were taken out of service in 1950. In this image from the early 1950s, a diesel locomotive is on waste-rock duty on Keystone Dump, with three side-dump cars in action. In 1958, KCC ended railroad operations in the Liberty Pit and switched to more-efficient diesel trucks. *Source: Nevada Historical Society*

COPPER MINE CONTEMPLATION *Workers sitting at edge of copper pit, Ruth, Nevada.* U.S. Farm Securities Administration documentary photographer Arthur Rothstein captured this scene looking west across the Liberty Pit in March 1940. *Source: Library of Congress*

KEYSTONE MEMORIES Kennecott Copper stopped dumping waste rock at Keystone Dump in 1958. Further expansion was blocked by existing roads and Nevada Northern Railway lines running along the sides of the dump, which then contained 94 million tons of material covering 190 acres. Over the next sixty years of exposure to the elements, Keystone Dump waste rock softened and its slopes eroded, taking on a corrugated texture that became familiar to travelers on U.S. Route 50 and Ruth residents, miners, and visitors. The historic Keystone Dump symbolized over 100 years of human effort and changing landscape. KGHM’s changes to the Keystone Dump landscape are part of another chapter in Ruth’s rich mining history. *Source: Milestone Heritage Consulting / Matt Kierstead*

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