

Human History

The human history of the Morgan Valley and Knoxville area is perhaps typical of California's inner Coast Range, well inland of the Spanish-American missions. It was home to Native Americans for at least eight thousand years, until the late nineteenth century when European-American mercury miners and homesteaders arrived. Twentieth-century users of the land included ranchers, miners, and university researchers and students. Human influences can be seen throughout the landscape, from pit mortars and arrowheads, to mercury furnaces and homestead ruins, to the open pit, mine buildings, and experimental plots. Wandering around the wilder parts of the reserve, especially near water, you may well come across artifacts of the nineteenth century and before.

This chapter draws on many rich sources of information (see Appendix 1: References). As the mine was being constructed, in 1981-1984, a team of Sonoma State University archeologists investigated 53 sites where Native American artifacts were found (Bramlette and Fredrickson 1987). At the same time, private archeological consultants surveyed 8 sites, four in Morgan Valley and four in the Knoxville area, where the remains of nineteenth century mining and homesteading were to be destroyed by mine construction (Praetzellis and Praetzellis 1985). Homestake environmental engineer Dean Enderlin wrote a series of articles for the company newsletter on the mining history of the area, and former environmental manager Raymond Krauss wrote several articles on the development of the McLaughlin gold mine.

The most remarkable source of historical information about the region is the work of Eleanor Swent, who compiled an eleven-volume series on the Knoxville mining district for the Regional Oral History Project of UC Berkeley's Bancroft Library. The purpose of the Regional Oral History Project is to amass detailed first-hand material for the benefit of future historians, while the people who are part of history are still alive. Her interviews with a broad swath of local residents, not only Homestake personnel but former mercury miners, neighbors, and even opponents of the mine, are a priceless resource for anyone who will ever wish to study this quiet corner of California.

Native American History

The Clear Lake Basin has been well studied by archeologists because of its old and complex prehistory. The report by Bramlette and Fredrickson (1987) summarizes what is known of Clear Lake Basin prehistory as follows: The earliest known inhabitants were probably nomadic hunters and fishers who lived in small groups. Studies of projectile points, using a technique known as obsidian hydration dating, suggest ages of 10,000-6,000 B.C. for this cultural period. The appearance of handstones and milling slabs, 6,000-3,000 B.C., suggests a switch to seed resources as the climate

HUMAN HISTORY

became warmer and drier. The bowl mortar and pestle appeared in about 3,000 B.C., suggesting acorns had become a dominant food resource. The culture that existed at the time of Euro-American contact began about 500 A. D. This culture differed from its predecessors in using the bow and arrow in place of the throwing stick (atlatl) for hunting, and the bedrock (hopper) mortar instead of the bowl mortar for grinding acorns. (Bedrock mortars were used in conjunction with conical, open-bottomed baskets; they may be seen as rounded depressions, 10-20 cm in diameter, on flat rocks near streams.)

The Knoxville and Morgan Valley areas were much less studied than the nearby Clear Lake region until the pre-mine survey. The Bramlette and Fredrickson team investigated a 4,000-hectare area around the mine project and discovered significant artifacts at 53 sites. (Their collection, housed at Sonoma State, is available to researchers.) Artifacts included projectile points of obsidian and chert, milling slabs, handstones, mortars, beads, animal remains, and other items. Human remains were found at several sites. Several sites could be interpreted as habitations that had been continually occupied for 6,000-8,000 years. Several quarries and workshops for tools made from volcanic rock were found in Morgan Valley.

The presence of obsidian in the area demonstrates there had been trade with tribes in Napa Valley, Borax Lake near Clear Lake, and Annadel near Santa Rosa. (Obsidian that is smoky gray-white is from Borax Lake; rich black obsidian is probably from Napa Valley.) From these artifacts, using obsidian hydration dating, Bramlette and Fredrickson (1987) developed a cultural chronology for the Morgan Valley-Knoxville region. This chronology documents the shifting spatial patterns in use of the area, and shows the same pattern of cultural change over time that was known from Clear Lake.

From roughly 500 A.D. until European contact, the area of the present reserve was inhabited by the Hill Patwin and Lake Miwok. The Hill Patwin were Wintun speakers related to the River Patwin of the Sacramento Valley. The Lake Miwok were related to the Miwok of western Sonoma and Marin counties, and more distantly to the Sierran Miwok; they occupied a narrow strip of land from Clear Lake to Pope Valley, including the headwaters of Putah and Cache creeks. Both tribes were divided into smaller groups sometimes called "tribelets"; several small tribelets typically surrounded one larger one, which was occupied by a leader and usually contained a dance house.

In the McLaughlin region there were two Lake Miwok and three Hill Patwin tribelets. Lake Miwok territory included Morgan Valley near Grizzly Peak and a small area southwest of the tailings pond, while the remainder was occupied by Hill Patwin. The principal Hill Patwin settlement, called Waitaluk, was along Hunting Creek in northern Morgan Valley, less than two miles north of the tailings pond. The Davis Creek valley contained a Hill Patwin group called the Chenposel, who were centered in a village on Cache Creek called Tebti. Another Hill Patwin tribelet called the Topaidisel lived along Knoxville Creek; their principal settlement, Topai, is now beneath the Berryessa Reservoir.

HUMAN HISTORY

Both tribes used the area for seasonal resource gathering. Year-round foods would have included deer, squirrel, woodrat, quail, rabbit, and rodents, supplemented by seeds, bulbs, and greens. At the beginning of autumn, temporary camps were established near oak groves and acorns were harvested to serve as subsistence throughout the year. In winter, back in the main village, they survived on acorns and other stored food. In late winter to early spring they began fishing the streams and harvesting clover greens. Later in the spring, they harvested bulbs, roots, worms, and grasshoppers. In summer they lived in the main village and ate manzanita berries, gooseberries, blackberries, wild grapes, juniper berries, pine nuts, roots, bulbs and larvae of ground wasps.

There were no recorded conflicts between Native Americans and settlers, although many occurred around Clear Lake in the nineteenth century. Instead, Euro-American diseases probably brought Native American inhabitation of this region to an end.

Nineteenth-Century History

The discovery of silver in nearby Napa Valley attracted prospectors to the Morgan Valley - Knoxville area in 1858-1859. No silver was found, but in 1861 mercury (“quicksilver”) in its cinnabar form was discovered. Mercury ore was then extremely valuable because it was used in the gold recovery process known as amalgamation. Several mines went into operation, beginning with the XLCR (pronounced Excelsior) in 1861 and the Manhattan in 1869. The XLCR, later renamed the Redington, Boston and finally the Knoxville mine, became perhaps the state’s third largest mercury mine after the legendary New Idria and New Almaden mines.



William Brewer, whose accounts **Manhattan Mine, 1881** of traveling up and down

California in 1861-1865 on the state’s first geologic survey are a naturalists’ classic, never visited the Knoxville mine, but his description of conditions faced by mercury miners at New Idria are probably representative of what took place at Knoxville. Miners worked in deep shafts, often under extremely hot conditions because of the geothermal activity associated with mercury deposits. The worst health effects were suffered by the workers who cleaned the crude furnaces used to roast the pure mercury out of the ore. Brewer describes these workers being paid the then-exorbitant wage of \$20 a day to ruin their health for a lifetime. Praetzellis and Praetzellis (1985) provide a more amusing account of a visit to the Knoxville mine, taken from an 1872 article in the Napa Reporter. The reporter survived a steamy and sulfurous descent to a depth

HUMAN HISTORY

of 220 feet, and described what is now the McLaughlin Reserve as “a terrible waste of God’s country... being nothing but a jumble of hills and canyons covered with sage brush.”

By 1880 the town of Knoxville had about 300 people and fifty buildings, including a hotel, church and school. Most of the inhabitants were immigrant men between the ages of 25 and 35, with about half coming from Ireland. But the prosperity of the town fluctuated with the market value of mercury, and when the price hit bottom in 1910, the town diminished to five dwellings. Mining activity resumed during wartime (1915-1918, 1939-1943) when the price of mercury soared due to its use in explosive detonators.

Gold in the form of microscopic flecks and tiny veins is associated with the same hot springs formations that host mercury. On July 26, 1875, US Deputy Mineral Surveyor Frederick Mow discovered gold in the Knoxville area. However, the gold deposit at McLaughlin was not economical to exploit until the 1970’s, when the recognition of microscopic gold deposits, technological advances in mining methods, and high gold prices all coincided.

The Knoxville town and mine site was cleaned up in the 1980’s by a contractor working for the Gamble family, who then owned the land. The old furnaces and piles of roasted ore (calcine) were buried and the buildings were leveled. In 1992, Homestake bought the Gamble ranch, and a later lot-line adjustment added Knoxville to the future McLaughlin Reserve. The town is now reduced to a few stone walls, and the mine is visible as a cliff of exposed orange-colored rock; the tunnels are long since covered up. Oaks are noticeably sparse around the Knoxville site. Considerable oak cutting occurred in the mercury mining days, as more than a cord of wood was needed to fire the furnaces for twenty-four hours, but most of the cleared areas appear to have recovered since then. However, in the 1960’s the Gambles cleared oaks south of Knoxville in an attempt to improve the range for cattle, and there has been little regeneration of oaks in this area.



Old Manhattan Mine retort with newer One Shot Mercury Mine Retort, 1981

Another historic mine, the Manhattan, was operated through the 1970’s by William Wilder of the One Shot Mining Company. After mercury mining became unprofitable, Wilder managed to keep his business going by mining decorative stone from the old hot springs terrace and recycling mercury batteries. Wilder had an office in several 1959 San Francisco city buses, and enjoyed a legendary knack for all things mechanical. When he sold his

land to Homestake in 1981, Wilder moved the old Manhattan mine equipment and the rest of his “boneyard”, including the buses, to a parcel along the Reiff Road where it can still be seen. The mine site itself cannot be seen, since it is now Homestake’s open pit.

Four mines above Davis Creek were consolidated into the Reed mine, the remains of which can be seen above the Reiff Road where Davis Creek enters the reservoir. The Reed mine has been the major focus of mercury cleanup and research efforts sponsored by Homestake, described in the aquatic ecology chapter. The Harrison mine, also in the Davis Creek watershed, sits abandoned on a private inholding within the reserve. Also on this land is the residence of the Strop family, descendants of the Harrison who filed the 1867 mine claim. Remains of the original Harrison homestead can be seen on a knoll south of the mine and just north of Knoxville-Berryessa road. Ephraim Harrison made a living cutting wood for the mines.

The late nineteenth century also brought a wave of homesteaders who grew crops and raised livestock, primarily in Morgan Valley. The Morrell/Hand ranch occupied a site that was previously a Native American settlement and later became the site of Homestake’s Core Shed, where the company stored its exploration drill core and created its company picnic area. The large black walnut trees at this site date to 1863, the same year the homestead papers were filed; botanists still debate whether these trees are of Californian or East Coast stock. Also present at the Core Shed are pears, pomegranates, and other old introduced trees. The large flat field just north of the Core Shed was irrigated and used to grow hay. In the former Quarry Valley, where the tailings pond now lies, was the large homestead of the Ebbinghausen family. Other homesteads were found at Springer’s Flat, a mile southeast of Morgan Valley, and at the “Correa House” site just west of the waste rock pile, where old vineyards can still be seen.

As elsewhere in the west, more homesteaders failed than succeeded in the arid landscape. By the early twentieth century, only a few ranchers and miners lived in Morgan Valley. The 1960s and 1970s brought some additional settlers seeking to escape urbanized society in a valley that had an unpaved access road and no electricity or telephones.

The Gold Mine

Homestake Mining Company of California (a subsidiary of Barrick Gold Corporation since 2002) is a San Francisco-based company that specializes in gold and has operated gold mines around the world. It was founded in 1877 by George Hearst to exploit a rich discovery in Lead, South Dakota. In 1927, the company’s fortunes were faltering badly until a young Harvard and Berkeley-trained geologist, Donald McLaughlin, persuaded the company to investigate a new lode at its Lead mine. This risky prediction proved successful, and McLaughlin became company president in 1944; later he became Professor and Dean of Engineering at UC Berkeley, and served as a UC Regent. In 1985, the year of McLaughlin’s death, the company named its new

HUMAN HISTORY

Napa-Yolo-Lake County mine in his honor. The reserve takes its name from him and his wife Sylvia, a philanthropist and environmentalist.

Hot springs gold deposits are often very low in concentration; the McLaughlin ore body averaged only 0.10 ounce per ton of ore. However, during the 1970's, two factors increased the feasibility of mining such deposits: advances in technology, such as earth moving equipment and cyanide-based processing techniques, and President Nixon's termination of the longstanding convertibility of U.S. dollars into gold, which sent the price over \$700 an ounce. James Anderson, head of explorations at Homestake, began exploring possibilities in the hot springs deposits of Napa and Lake counties. He persuaded geologist Donald Gustafson to conduct preliminary testing near Knoxville and Wilbur Hot Springs. Eventually, 55 miles of exploration holes were drilled in the Knoxville area. As Anderson told interviewer Eleanor Swent, "My whole view of the world was economic discovery, not just discovery of something you couldn't do anything with, and the whole thing was geared on a risk/reward ratio. I was convinced that I could find economic mines."

Even after deciding to proceed with the new project, Homestake spent five years and \$285 million before gold extraction began. Land was acquired, massive environmental studies were performed, and a new public road was constructed from Lower Lake to the mine. A total of 327 permits were obtained from the three counties, three regional air quality districts, and regional and state water districts affected by the mine. At the ribbon-cutting ceremony, these permits were piled together in a tower of paper eight feet high.

Opposition to the mine was raised by a group of farmers from the Capay Valley in Yolo County, led by UC Davis English professor turned almond farmer Will Baker. Considering the mercury mining history of the area, they worried that the creation of Davis Creek Reservoir would increase mercury contamination in Cache Creek. They were also concerned that blasting in the pit would send dust and asbestos particles into the air and affect crops and health. They argued that the proposed mine violated the Williamson Act, under which the Davis Creek valley had been set aside for agriculture and open space in return for tax breaks; Homestake was ultimately granted a controversial exemption from this act.

The Capay farmers were unable to prevent the mine, but their vigilant opposition had lasting effects. As Baker told Eleanor Swent, "Someday some historian is ... going to look through that and they're going to say, Well, not everybody signed on to this thing; here's a couple of wackos off here saying, Wait a minute, you guys. Do we have to have every gold mine? ... Of course the bulldozers are going to run over them, but at some point the historian will say, Well, there was some opposition." To win approval for its plans, Homestake agreed to employ the most progressive design ever used at a gold mine.

HUMAN HISTORY

In its permit applications, Homestake spelled out a massive program for the reclamation of disturbed areas. The company also agreed to clean up contamination from the previous century of mercury mining, and to monitor air quality, water quality, wildlife, rare plants, aquatic ecology and revegetated areas, which it has done by hiring reputable independent scientists. The company submitted annual environmental monitoring reports through 2002 that quantify all of these activities. Scaled back reports will continue through the cessation of mine activities, specifically monitoring water quality of the areas of the tailings pond and waste rock piles. Finally, the company reassured local residents by promising that after it closed, the mine site would become a field station for environmental studies, rather than an abandoned wasteland like many closed mines. Much of this environmental package was designed by a former Sonoma County planner, Raymond Krauss, who was the mine's environmental manager from 1982 until 1998.

The design of the mine itself is unusually environmentally sound in several ways. The waste rock ("overburden") taken from above the ore body was placed on impermeable bedrock to trap the acidic waters that are created when sulfur-rich rock is exposed to air and water. This acid mine drainage is captured in settling ponds at the base of the piles, and disposed by pumping into the pit. These rock piles were covered with clay, then with stockpiled soil, and revegetated. The ore was crushed in the grinding mill near the pit, mixed into a slurry using water from Davis Creek Reservoir, and piped 8 km to the processing mill. The processing mill was placed in such a distant location because the small valley formerly called Quarry Valley had highly impermeable bedrock, and thus was considered ideal for a tailings pond. At the processing mill, gold was recovered in a contained aqueous cyanide process. Until 1997, autoclaves the size of train cars were used in a high pressure oxidation process designed to immobilize heavy metals, eliminate acid formation and reduce the concentration of cyanide in the tailings. Cyanide degrades rapidly, and in 15 years of weekly monitoring, no dead wildlife were found in or around the tailings pond.

Mining in the open pit ceased in 1997, as did the use of the expensive autoclaves, and the work force dropped from 350 to 100 employees. The mill continued to process the stockpiled ore until July 2002 and then closed. Reclamation of the tailings pond and other disturbed areas will continue for several more years. The 200 meter (640 foot) deep open pit will remain, but its sides will be smoothed and revegetated. The company will tear down and remove the processing mill and nearly all of the buildings.

Before the McLaughlin mine, nearby Lower Lake was one of the most economically depressed towns in California. The arrival of the mine changed the area significantly as Homestake provided jobs and donated money for new schools, hospitals and a community college. The closure of the mine will slow the economy of Lower Lake, and Morgan Valley will revert to being a quieter place, though its new roads, phones and electricity will remain.

HUMAN HISTORY

The McLaughlin UC Natural Reserve

In its county permits, Homestake promised to create an environmental field station at the mine site, and in 1985 the company approached the University of California's Natural Reserve System (NRS) as a possible partner. In response, a group of UC Davis biologists surveyed the flora and fauna of the mine property and several other sites in the area, and wrote a report to NRS recommending the creation of a reserve to represent the state's serpentine habitats. Their 1986 report helped convince the NRS to accept Homestake's offer.



Sylvia McLaughlin and Susan Harrison at the dedication of the new Donald and Sylvia McLaughlin Reserve visitor sign, 1999

In January 1993, a signed agreement between Homestake and the Regents of the University of California created the Donald and Sylvia McLaughlin Reserve on a small (130 hectare) parcel as a way to find out whether the concept would work. In 1998, a modest overnight facility was set up in an unused warehouse, and was named the Ray Krauss Field Station. At the same time, Homestake allowed the Natural Reserve System to begin managing the natural areas of the property as a reserve. During the next several years, use of the reserve for studies of ecology, evolution and other environmental sciences grew rapidly. The Natural Reserve System staff converted the mine's extensive environmental database into a form that researchers could use. Field trips and other events made the university community and the public more aware of the reserve. For four years, an active mine coexisted with an increasingly active environmental research station.

In 1999, in a deal brokered by the Land Trust of Napa County and financed by the Packard Foundation and the state's Wildlife Conservation Board, Homestake sold the 3680-hectare former Gamble property to the south of the reserve to the state. This land became the Knoxville Wildlife Area of the California Department of Fish and Game, and is now open to the public for hunting and other non-motorized recreation.

In December 2002, a month after the mine closed, a three-way agreement was signed between Homestake (now a subsidiary of Barrick Gold Corporation), the Regents of the University of California, and the Land Trust of Napa County. This agreement gives the University the exclusive right to manage and use the property for research and education. The Land Trust holds a conservation easement that prohibits commercial use of the property. Homestake will continue to own most or all of the property, but the University has an option to take title to some of the land where a future field station may be built. In the next several years, as Homestake finishes decommissioning and reclamation, the Natural Reserve System will continue converting the former mine into an environmental field station that serves the needs of university researchers, educators, and the regional public.