

# Reclaiming Recreation

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**In 1912, Walter Harvey Weed wrote “Heaps of waste are everywhere prominent, attesting by their great size the extent of the underground workings” foreshadowing the environmental impact of mining on the Butte Hill. In 1983 the EPA designated the region as a Superfund Site with clean up beginning in 1987 to protect human health and the environment. Due to the EPA’s findings of the Practical Infeasibility to remove the hazardous materials (over 660 million metric tons of material have been displaced) a Waste Left in Place strategy was implemented. This process has resulted in large swaths of the town that are unoccupiable native grass fields as the cap is only tasked with providing protection for people and the environment. This fragile surface protection has not created places of value and in many instances has removed opportunities for recreation within the city. While clean up efforts have improved the health of the environment, they have been detrimental to the reclamation of the community. This paper presents a project that began as a graduate studio proposing alternative strategies to the reclamation effort that leverage the funding for clean up to provide opportunities for the community to reclaim the land through recreation and promote economic growth. The paper evidences the process over the last three years of working with a collection of interdisciplinary students from two universities, government agencies and the community to develop the design and funding mechanism for the reclamation of the former Bonanza Mine Dump, an unreclaimed site currently being illicitly used as a BMX track by children. The paper documents how the protection of human health could promote health, environmental understanding and create a new economy.**

We found the place to be endlessly rich and stimulating, a thousand times more interesting than the fakery of a Disneyland.

One of my early playgrounds was a stretch of mine waste bordered by a stream that ran orange and yellow. We called it Shit Creek. Today, it’s the site of the concentrator, where ore bearing small amounts of copper and molybdenum is prepared for smelting. Another playground, when I visited my older cousins on the Hill, was the Steward Mine. We played there while the mine operated. It helped to be lucky. It also helped to be able to run fast and scale fences quickly.<sup>1</sup>

## AN EXTRACTION COMMUNITY

The process of extraction has a profound impact on the environment, transforming and disfiguring the land through the sorting of geological conditions that has resulted in the Anthropocene age. This valuing of the subsurface condition over the surface landscape has a long history in this country as the vast resources present beneath us and the motivation to pull them to the surface are intimately tied to the urbanization of remote places. Former camps, ghost towns and boomtowns linked to mining evidence the significant impact the need for the extraction of subsurface materials and the desire for wealth have had on the settlement of this country. The expanse of the railroad network to reach these remote places allowed for the transportation of these valuable materials, and the significant wealth of a few had huge political influence. The drive of extraction for growth and wealth trumped all, including the existing environment, and created a new type of urban condition. There are few examples anywhere else in the world that showcase the collision of unimaginable wealth and the new urban ecology of mass extraction better than Butte.

“It was Geology, not geography that made this isolated valley such a remarkable place.”<sup>2</sup>

Butte, America, as it was known by many residents, was a world-renowned destination for mining, located in western Montana at approximately 5,538 ft. above sea level, atop the Boulder Batholith. The copper and gold veining which cross the Butte district in an east-west manner are contained within this host rock. These veins are the



Figure 1. Neversweat Mine - Butte, Montana 1900. Butte Silver-Bow Public Library

product of geologic processes along the Northern Rocky fault lines that generated an ore body that is 25 miles wide and 70 miles long and extends deep into the earth.<sup>3</sup> The ore veins of the region can stretch over 12,000 feet, have a vertical continuity of over 4,500 feet, and have mining widths approaching 50 feet. The subsurface resources available within the Butte Mining District have yet to be exhausted, and allow Butte to be still called the “Richest Hill on Earth.”<sup>4</sup> It is this richness and depth of resources that contributed to the construction of a complex network of shaft mines that extend over a mile deep to reach the ore. Approximately 49 miles of vertical shafts and 10,000 miles of horizontal workings exist under the Butte Hill (including much of the historic uptown) as miners followed the veins of valuable materials prior to the conversion to open pit mining.<sup>5</sup> It was the existence of this vast mineral resource, in this particular place of the intermountain west in the late 1800s, that set the stage for Butte’s urbanization.

It was not long after the mining boom of Butte that the state of Montana began calling itself the “Treasure State” and using the motto “Oro y Plata” (Gold and Silver) on the State Seal. The economics of Butte have always been tied to resource extraction. Mining began with gold, but quickly shifted to copper as the country’s growth and need for electricity fueled a round-the-clock extraction, with Butte producing 30% of the nation’s copper in 1920, and placed the mining town, with its \$55 million dollar annual income, at number five on the state list of revenue<sup>6</sup>. Butte’s material

was of such importance to the American war effort that after the bombing of the Miner’s Union Hall in 1914 and the subsequent labor strikes resulting from the Granite Mountain Fire, martial law was instated to ensure continuous production. It lasted through 1921, the longest period of military occupation in the U.S. since the Reconstruction era. During this time, striking miners were accused of treason, and were escorted to work at gunpoint in order to support the war effort<sup>7</sup>.

The draw of wealth was so great that immigrants were often instructed, “Don’t stop in America, go straight to Butte!” The strong attraction of Butte encouraged the development of a formidable community, both physically and socially. In 1890, Butte was one of the most culturally diverse cities in the country, with foreign-born residents exceeding 45% of the population<sup>8</sup>. Strong formal enclaves of Chinese, Cornish, Scandinavians, Lebanese and the largest population per capita of Irish in the U.S. existed within the city. In 1900, there were approximately 40,000 people living on the Butte Hill, and by 1920 that number had ballooned to nearly 90,000. This incredibly cosmopolitan population led to Butte becoming a formidable metropolis. In 1920, it built 7 large theatres hosting performances by Fred Astaire, Eddie Foy, Clark Gable, Bob Hope among others and was Charlie Chaplin’s first performance in the United States<sup>9</sup>. The mining industry was even investing in civic infrastructure. In 1899, copper baron William A Clark purchased 21 acres and invested one million of his own dollars to construct the Columbia Gardens Amusement Park, an oasis of green created in the barren landscape of extraction, for Butte residents to recreate.



Figure 2. Butte Panoramic Images from 1914. Panoramic Photographs Collection. Prints and Photographs Division. Library of Congress. LC-USZ62-61196 and LC-USZ62-133271

Despite these efforts at civility or the establishment of a cosmopolitan lifestyle, Butte's inseparable ties to mining caused it to struggle with a bifurcated identity. After less than 20 years of mining activity, the settlement had over 200 saloons and by 1900, 85% of its population was under the age of 25. Journalist Ray Stannard Baker said of Butte "It gives one the impression of an overgrown mining camp awakened suddenly to the consciousness that it is a city, putting on the airs and properties of the city, and yet often relapsing into the old, fascinating, reckless life of a frontier camp"<sup>10</sup>. It was this dualistic condition that made Butte such a unique place. Butte possessed many of the metropolitan qualities of contemporary "civilized" cities, yet remained linked to a mining camp lifestyle. Most importantly, these two realities occurred simultaneously, creating a specific cultural condition of work and recreation. (Fig. 2)

As mining techniques became more efficient and metal prices dropped, the process of mining became less significant to the city.

In the 1950s, when open-pit mining became the primary extraction method, the city transformed from a community intimately involved with the mining process to one that was simply adjacent to a mining operation. The transformation left almost 100 years of mine waste interspersed throughout the community as the pit then began its process of consuming the east side neighborhoods. As part of this transition the Columbia Gardens were closed in 1973 as the Continental Pit expanded and ultimately consumed the site after the facility burned, putting to rest the community's desire to relocate and reopen the gardens. The waste rock that had once contoured the city was now hauled to one location, creating an impoundment for the tailings, located north of the Berkeley Pit, generated by the processing of ore. Today over 660 million metric tons of waste rock are spread across the 25 square mile surface of the Butte Hill.<sup>11</sup>

Because of the seemingly endless lode of materials beneath the city there was discussion of continuing to expand the Berkeley Pit to the west. In 1972 the Butte Regional/Urban Design Assistance Team, which included representatives from the American Institute of Architects and local professionals, proposed to move the residents and historic structures from the top of the hill down into the valley

in order to expand the Pit westward into what is now the historic uptown of Butte. City council ultimately halted the plan in 1976<sup>12</sup>. This is not a unique proposition for active mining communities as it is currently happening in the town of Kiruna, Sweden to expand iron ore extraction. However, this proposal brings into question the value of a resource versus the value of a community's culture and what happens when the wealth of mining can no longer support a community's play.

#### **HISTORIC TRAPPINGS**

At the turn of the last century, over 45 mining companies and almost 18,000 miners in 34 different labor unions were working the Hill. Today there is one active mining operation at the Continental Pit which is run by Montana Resources with approximately 350 employees. Butte is uncommon among the cohort of "boomtowns" that went bust or redefined themselves within a new economy. The most significant contributor to the new economy and image of the city is the exploitation of the historic past in tourism and festivals that rely on nostalgia, trapping Butte in a period defined by the Historic Landmark designation. In 1961 Butte became a National Historic Landmark which was then expanded to the Butte-Anaconda Historic District in 2006, becoming the largest historic landmark district in the country with over 6,000 contributing properties. In 1963 the World Museum of Mining was founded on the west side of Butte on the former Orphan Girl mine yard "to preserve the enduring history of Butte and the legacy of its rich mining and cultural heritage". This overlay of the past is so significant that there are also contaminated landscapes and channel walls for the creek that are made of smelter slag, included as part of this historically-designated fabric to be preserved for future generations. In 2002 Butte held its first Evel Knievel days as a way of celebrating their new festival city image. In the same year they were also named a Distinctive Destination by the National Trust for Historic Preservation which bolstered their position as a tourist destination.

Another example of the burden's of the past can be seen in the abandoned Berkeley Pit. This increasing body of acidic water in the former open pit mine has become an attraction for the town with billboards along the interstate boasting the overlook as a tourist destination between Glacier and Yellowstone National Parks. This attraction offers very little to the community that bears its environmental burden and the pending mechanized cleaning of the water that will run in perpetuity to prevent contamination of the region's water system. But tourism is not the only new economy for this mining town. The anthropogeomorphological condition, a byproduct landscape created by industrialized sorting regimes, that gave Butte its form has generated a new economy of reclamation. This economic investment is not dissimilar to tourism as it does very little to allow the community to reclaim culture, specifically one that is leveraging the past for a new future.

#### **SUPERFUND**

In 1983 the Environmental Protection Agency (EPA) designated Silver Bow Creek as a Superfund Site, making it the largest superfund site in the United States, reaching from Butte 120 miles to Milltown, just east of Missoula, Montana. This designation started the process of collecting data and determining the appropriate remediation projects in the Butte Priority Soils Operable Unit (BPSOU). Clean up operations began in 1987 and were divided into two phases. An initial Phase I that was an expedited Response Action to source areas of contamination by removing or capping waste dumps, railroad beds and other related areas of mine waste. Phase II is the final remediation work related to addressing the remaining environmental and human health issues associated with water and soil. This plan resulted in the Record of Decision (ROD) being adopted in 2006. In 2008, The Atlantic Richfield Company (ARCO) agreed to pay \$187 million to finance the cleanup of the Clark Fork River contamination as a result of a century of mining activity in Butte and Anaconda<sup>13</sup>.

"The environmental benefits will go directly to local landowners with improved soil, and extend to all Montanans through cleaner water and improved fisheries." said Robbie Roberts, EPA's Regional Administrator from Denver<sup>14</sup>.

#### **RECLAMATION AND RESTORATION**

The EPA's general mission is to protect human health and the environment through implementation of environmental laws enacted by Congress and assigned to EPA for implementation<sup>15</sup>. Due to the EPA's findings of the Practical Infeasibility to remove the hazardous materials a Waste Left in Place (WLIP) strategy was implemented. In order to stabilize the ground and reduce the risk of erosion, all waste rock to be capped in place was graded to a maximum slope of 1:3. BRES Appendix B, Butte Hill Revegetation Specifications, to the 2006 ROD for BPSOU outlines the criteria for the WLIP cap to provide a barrier between people and the waste material. Once the site was properly graded for slope and drainage a minimum of 18 inches, settled depth, of cover soil is placed over the waste rock and is then seeded with an approved mix which is irrigated for a maximum of two years to establish the plant life. The cap continues to be monitored to ensure that it is providing the level of protection for people and the environment and nothing else. Reclamation of the Butte Hill is similar to that of many sites where the EPA standards and the state laws governing hard rock mining reclamation dictate an attempt to return the landscape to its "pre-mining condition." Could this investment not only protect human health but also promote health?

Within the 2006 ROD for the BPSOU the EPA identifies areas of redevelopment within the reclamation sites. Of specific note are the outline to create the Butte Hill Trail on the abandoned rail bed, now the BA & P Trail, Open Space to both help with storm water management and to improve the aesthetics of the town, Education



Figure 3. Missoula Gulch Reclamation Site, Butte, Montana 2014. Photograph by Author

related to damage to the WLIP protection of the mining material, and park and recreational areas for the residents. While this does exceed the basic criteria of Human Health and the Environment, it is a passive and rather generic approach to both the physical and social restoration to a place as unique as Butte. One can only imagine what the city of Butte would look like today had the sorting of the waste rock from mining not been based on efficiency, but rather on a conscious decision of beneficial place making.

Some of the reclamation efforts have resulted in a new economy through tourism and have created community assets. Festivals in Butte (Evel Knievel Days, St. Patrick's day, Chinese New Year and the Montana Folk Festival) collectively draw over 250,000 people to the city each year earning it the title of Tourism Community of the Year by the Montana Office of Tourism and a new nickname, the Festival City. The Montana Folk Festival, held in the shadow of the Original Mine Headframe, alone brings in over 150,000 people annually to this community of 34,000 and is anticipated to more than double in the future. However, this festival site remains closed to the public except for special events.

Reclamation efforts have also restored significant areas of natural habitat and the efforts specifically surrounding Silver-Bow Creek and the Clark Fork River have restored native fish populations to the waterways. While this is a success for the displaced native species, most of the reclamation sites are an uninhabitable landscape of fragile prairie segregating many parts of the community once connected by mining. (Fig 3) Much of Butte's affected land has been remediated as open space, which does not allow for community recreation activities. The protection of human health through reclamation has not incorporated the restoration of the unique play, albeit historically dangerous, the community of Butte once had. The aim of returning the Butte Hill to its "pre-mining condition" ignores the opportunity to leverage this post-industrial landscape for a new future. Looking to the past, a time prior to the settlement of Butte, traps the community in an uninhabitable place, for without mining there would be no community.

## THE STUDIO PREMISE

Graduate students in the School of Architecture at Montana State University were asked to consider the role of designers in the ongoing Reclamation of the landscape with a focus on the Restoration of the community of Butte. Students selected sites adjacent to the BA & P Hill Trail, the former rail connection between Butte and Anaconda, that is now an asphalt trail over 26 miles long. Because of the historic use adjacent to the rail line in Butte, the trail is flanked on both sides by sloping hillsides of primarily low grasses as a result of the Remediation phase of the EPA cap in place approach to protecting people from the dangers of exposed waste rock from mining. Very little thought was given to the use of these capped sites as the focus was to address immediate and significant human health and environmental risks. Since this work began in 1987 little has changed until recently when the Restoration phase of the Reclamation work began. It is within this context that students analyzed the existing conditions to propose new ways of "Restoring the Landscape" with a focus on also providing amenity for the community. How could the significant investment in Reclamation also be used to Restore recreation? This Studio focused on alternative reclamation strategies where small interventions could instigate larger-scale change.

The programs chosen by the students included a Botanical Garden that referenced the loss of the Columbia Gardens and other botanic species along the Clark Fork River though specific species selection coupled with their relationship of available soil depth though site re-grading. Another project became a didactic slice into the waste rock of the region to uncover the native soil as a way to educate the public of the recent history and transformation of the region. This project also considered itself as a part of a larger agenda of the historic district by demonstrating the history of the reclamation work in one location. One project looked at the larger connectivity of the region and leveraged stormwater management and sediment control as a way of initiating both new habitat creation and the restoration of historic pedestrian connections. A final project identified community reconnection as the driving force of restoration through gardening and gathering.

This work was then exhibited in the Butte Silver Bow County offices and used as a departure point for new conversations regarding reclamation work. It also shifted the focus of the planned work for the following summer to more directly address improvements along the Hill Trail. As a result of this work a new conversation emerged regarding an 8 acre parcel surrounding the former Bonanza Mine.

## THE BONANZA MINE DUMP

Located on the southwest side of Uptown Butte, the Bonanza Mine Dump is an 8 acre parcel that is adjacent to West Elementary School and a growing residential neighborhood. This site is a mine dump associated with the underground workings of the Bonanza Mine which reaches over 1,000 feet below the surface. The mine shaft was only active in hauling material to the surface for a short period



Figure 4. Existing BMX track created by community youth at the former Bonanza Mine with West Elementary beyond. Photograph by Author

of time and became an air shaft for the larger mining network once it connected the the nearby Travona Mine at the 1,000' sill level.

As the Reclamation efforts began, all sites of potential risk were tested to determine their need for immediate remediation. Mine waste in Butte includes heavy metals such as lead and arsenic which are harmful to human health above concentrations of 500 UNITS in recreation activities and 1000 UNITS if classified as "open space." In the initial testing one soil sample from the Bonanza site was identified as being above the safe limit for heavy metals in open space; when averaged with the only other sample taken on the 8 acre site, the toxicity levels were found to be below the safe limit. Based on this evidence, it was decided that the Bonanza site would not be reclaimed and only a small area around the mine shaft cap would be addressed.

Dobbs childhood play amongst the mine waste of Butte continues to this day within the unreclaimed sites which provide opportunity for community youth. For decades now the Bonanza site has been used as an illicit BMX course as community youth have exploited the opportunities of the abandoned site. (Fig 4) Unlike most of the former mine sites that are fenced or posted with signs forbidding use, this site has become a playground that is owned by the community, though one that is also exposing youth to the toxicity the EPA is working to cap.

The Montana State University School of Architecture and Plant Sciences & Plant Pathology team is seeking to return recreation opportunities to the city of Butte through the redevelopment of the vacant, underutilized, former mine site by leveraging the investment for reclamation to provide recreation and economic development for the community. Working with the community and local government a plan to redevelop the site as a park with a sanctioned BMX track has received \$600,000 of the \$1 million needed for construction through grants, in-kind donation and other funding sources.

As a result of this project the community of Butte and the larger region of Western Montana will have a safer environment and

improved waterways through the reclamation of the site. This project will also contribute to the outdoor recreational activities available to the community and impact the economy of Butte through increased visitation to use the track and race. The track will connect the existing communities of Bozeman and Great Falls, the two other towns in Montana with sanctioned tracks, and the larger BMX community of the region. Events held at the existing tracks attract riders from neighboring states as well as from the local community. This track will grow the network of BMX racing available to Western Montana and races will be coordinated between the communities increasing the opportunities for youth to engage in recreational activities. The project also demonstrates how investment in a community asset, coupled with reclamation efforts, can have a larger impact, in both social and economic improvement for Butte.

Construction of the park and track is anticipated for the summer of 2017. Once complete, this project will be evaluated in three different areas: ridership and use of the track, economic impact the track has for the community, and the reduction of contaminants associated with mining entering into Butte Area One and Silver Bow Creek. This team will work with the non-profit organization that will operate the track to document number of riders who use the park and track on non-event days and will document the number of racers who show up for events and where those racers reside. The adjacent Elementary School will be developing programming for both recreation and education that relate to the track and the reclamation of the former mining site. In collaboration with the track operators, Community Development Office and the Chamber of Commerce, local businesses will be surveyed to document the economic impact of the track. Finally, Montana Tech and CFWEP will be involved in the environmental monitoring of Silver Bow Creek / Clark Fork River watershed to document the protection of human health and the environment as a result of the reclamation of the Bonanza Mine site.

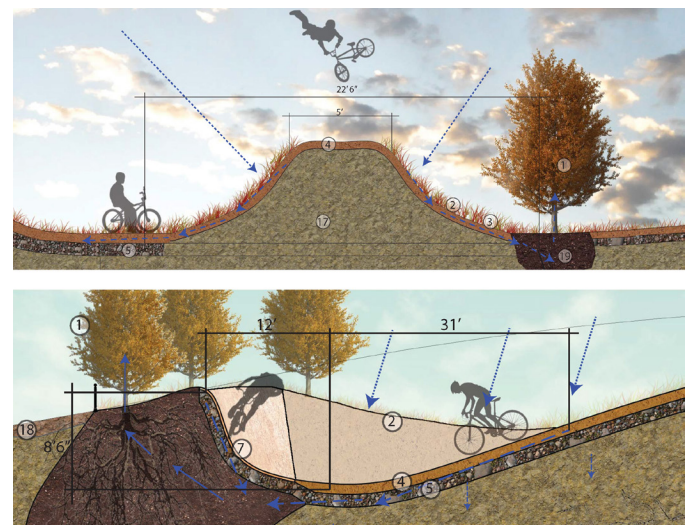


Figure 5. Proposed sections of track over WLIP cap and mine waste. Thomas Battis and Michael Highland

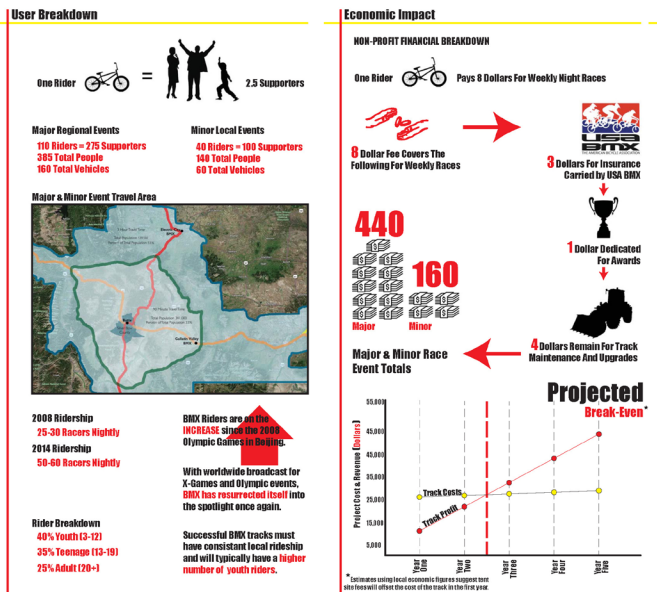


Figure 6. Rider demographics and economic impact of the BMX track in Butte. Casey Kispert and Andrew Stucker



Figure 7. Rendering of proposed BMX park on the former Bonanza Mine. Thomas Battis and Michael Highland

## MOVING FORWARD

The question of continuing to inhabit such a remote place constructed within a toxic landscape when so few people are directly involved with mining rather than retreating cannot be ignored if we are concerned about health. The residue of mining will forever be present within the community and require a constant management to continue to protect people and the environment. Butte today has a significantly healthier environment with improved air quality, drinking water and the return of native species all through the efforts of Reclamation. However, these efforts fall short in reclaiming the culture of the community created by mining that has been lost given the shift in priorities and wealth. They also fall short in promoting a new trajectory for Butte, one that promotes health and a new economy that is only possible because of its historic relationship to mining, not burdened by the past.

This project proposes a new strategy that leverages the significant investment in remediation to promote healthy recreation as a catalyst for larger change to the ongoing reclamation efforts. It proposes a methodology for reclamation that values the culture of a place that should be integral to the remediation efforts and should be systemically interwoven into a larger plan of social, ecological and financial resilience. We will continue to see reclamation efforts at a multitude of scales, be they related to extraction or climate change, that will involve long established communities. Retreating and restoring the place to a previous time ignores the responsibility and opportunity we have within the creation of the Anthropocene age. Reclamation has the potential to move forward in ways not previously imagined while still restoring the ecology of that place for a more mutually beneficial future. There is a significant role for the designer in the process. If we can engage in the remaking of the land in creative and productive ways, one can inform places that are specific and address the current and future needs of a community. These investments can promote a holistic health for the community and can become some of the most significant forms of place-making that we can engage.

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