Macleish Mines: Geology and Historic Land Use

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1. Introduction
The Macleish Field Station, located in West Whately, Massachusetts serves the Smith community for purposes of research and recreation. Occupied first by Native Peoples of New England, then early settlers, and now communities of residents and students, this land has a long line of histories, changing its purposes as ownership changes. At Macleish, three lead mines remain from historical use. Based on the geology of this parcel of land, the value and status of this land has increased as owners use and explore these key features. The geology, a powerful driver in human-land interactions, often determines how we deem land valuable—the potential for profit. Profit, on the other hand, is what often drives the human interaction with the land. Though the land at Macleish is now used primarily for academic research and advancement, the history of land use shows this relationship between humans and geology. This paper explores the three mines located in the western parcel of Macleish and how the geology informs economic and social endeavors through history.

2. Site History
Whately, a small community containing both valleys of fertile soils and rocky hillsides, originally belonged to the Norwottuck people and their leader Quonquont of the Connecticut River Valley. The land changed hands in 1695 when the neighboring town of North Hatfield purchased it from the family of Quonquont. Though the town of Whately was not officially incorporated until 1771, colonial settlers occupied the area and took advantage of what the
landscape had to offer: the forests, streams and brooks, fertile soils, and the underlying economic geologic formations beneath them (Massachusetts Department of Conservation and Recreation, 2009). Early settlers utilized clay and iron deposits—the “Beds of lead, potash, umber, and sienna [which] supplied incomes for many in the late 1800's” (Whatley Open Space Committee, 2006). Since the mid 1700s, early settlers have occupied this parcel of land, now owned by Smith College, containing these “beds of lead.” A history of ownership has been pieced together through deeds from the Franklin County Registry of Deeds compiled by Meredith Gallogly (2012).

Though we do not know when these mine pits were created, the land has transferred hands many times since the original purchase in 1789 by Elisha Waite and often mentions these lead deposits as a part of the parcel. The property first stayed in the Waite family until George and Justin Waite sold this land to Silas B. Frary and Moses M. Sanderson in 1848 (Gallogly, 2012). A map printed in 1871 shows multiple lots belonging to Sandersons and Waites at that time, indicating that families may have owned more than one tract of land in Whately. The map also shows the occupations of the townspeople—the Sandersons listed worked as farmers at this time. Though they are not listed as blacksmiths, manufacturers, or even miners that might typically seek out lead deposits for their occupations, they may have mined for lead to make tools and other metal items, a highly coveted resource at this time.

Between 1848 and 1870 the northwestern parcel of the current Macleish Field Station went through many hands before it was sold to James O’Connell and Michael McMarney. They leased the premises to Richard Moore by in 1870 for “for purpose of searching for mineral and fossil substances, and of conducting mining and quarrying operations” (Crafts, 1899). The land was released the following year suggesting potential successful mining operations. O’Connell
and McMarney only owned the land for two years before selling it to Ransom Porter in 1874, possibly after the realization that a sustainable mine was not feasible in this setting. The deeds to the land no longer indicate purposes of mining after 1874, likely telling that the area was stripped of these minerals of interest, such as galena for lead. At the time lead was used for tools and also as an additive to clay for pottery and glaze. Iron deposits are also characteristic of this area, and were likely sought after at Macleish. Iron ore gave settlers brilliant colors “from the most intense ochre-yellow, through the paler shades of the same, into many varieties of red and clove-brown, including the much prized sienna-brown,” (Crafts, 1899) for painting and pottery glazes. Early settlers often created redware pottery and bricks from the clay sediment, easily collected near Mill River, to hold their foodstuffs and for building purposes. Laura Paul, another Smith student researching the history of Macleish, notes that the English Embargo halted importing of pottery, thus Whately Pottery was born (2009).

Just over one-hundred years later, the Trustees of Smith College purchased this land and have since then created the Macleish Field Station. The parcel of land where the mines occur now holds research sites and recreational trails.

3. Existing Conditions

The three mine pits at Macleish today are located in the northwestern parcel and currently are difficult to interpret without prior knowledge of their existence. Two of the three mines are relatively close to each other and to the present day field station. The third mine location is further up the hill near a registered vernal pool. The images below show their existing conditions in November, 2016. Leaf accumulation in the mines due to the time of year the images were taken obstructs the view of the walls of the mine, but may help show the shallowness of the pits. The forest where these mines are located, however, is young, indicating that the mines
may have originally existed in pastoral land. With sheep farming sweeping through New England in the early to mid 19th century, it is likely that the mine pits were dug in pastures. Some years the mines fill with rainwater and act as small-scale habitats for salamanders and other amphibious forest wildlife.

Figure 1: First mine pit at Macleish, closest to the field station. Early settlers likely mined these areas for the mineral galena, rich in lead. Galena is typically associated with the mineral quartz which exists as a quartz line or vein through Macleish. Photo by Emma Harnisch (November, 2016)

Figure 2: The two mines closest to the field station at Macleish may have been connected by a exploratory tunnel that has since collapsed. Photo by Emma Harnisch (November, 2016).
In Figure 1, we see the typical pit found at Macleish, fairly shallow, rock lined walls, rectangular shape, and now overgrown with moss, even trees and other plants. Figure 2 shows a collapsed tunnel that may have been used as an exploratory trench to look for more minerals in interest such as sphalerite for zinc and iron deposits. In the third image, we see a pile of rocks and leaves which indicates a tailings pile where excess rock from the mine was placed after excavation. The tailings pile shows that the mines were active at one point, likely early settlers separating key minerals from the host rock. It is unclear where the settlers may have smelted the mineral material to further separate the lead bound within galena.

The geology of the area, clearly documented as early as 1899 in James Crafts History of the town of Whately, Mass., shows that the area was known to contain “A vein of sulphuret of lead…. from six to eight feet, traversing the granite formation, and is found disseminated in masses in quartz.” As Crafts mentions, these galena deposits typically associate with quartz, making these veins easier to identify. He also mentions “three distinct veins of this metal…. One is found on the westerly margin of Poplar hill and extends into Conway,” (Crafts, 1899) this vein
runs through Macleish. Geologically, these veins form from hydrothermal fluids that precipitate quartz in these long cracks within the bedrock. Galena, a much rarer mineral than quartz, often forms in these veins due to their common chemical components. When viewing Macleish aerially, these mines appear in a line—the quartz vein that runs through the land.

4. Analysis

In any landscape, we attach value. Early settlers attached worth to these areas deemed “of some commercial value” (Crafts, 1899) and saw the land as a place of profit. Gazetteers, like those written by Crafts and another history of Whately by Elias Nason in 1874, describe the land on the basis of economic interests. Nason even calculates the total amount of profit gained from the land, including agricultural and animal products, and “metallic articles” (1874). Nason writes this history after deeds to the land indicated mining intrigue in the northwestern parcel of Macleish, it is possible that the local lead from these three mines are included in this calculation. Our current understandings of historic landscapes are often driven by economics and how people profited from the land. In the Whately Open Space and Recreation Plan, the authors note that the deposits of galena and iron ore “supplied incomes for many in the late 1800’s” (Whately Open Space Committee, 2006). This obsession with our economic ties to the land, however, is driven by the land itself.

Humans do not decide where they make this profit, rather, the land decides. Don Mitchell, prominent geographer, reminds us that the geology beneath us dictates “What is possible and what is not – literally what can be produced in the landscape [and] is a function of what is produced elsewhere to be sold for profit” (Mitchell, 2008). In Whately and at Macleish, quartz veins guide our interactions with landscape based on the potential of economic gain. This reliance on geologic formations to provide us with profit—we seek out specialty minerals or
suitable agricultural land and make even risky business to find the right land and the right profit. But of course, “no capital invested in the landscape is ever guaranteed,” (Mitchell, 2008) making this anticipation of profit even more coveted.

In turn, this desire for a specific feature in the landscape has the power to change our social experience with the land. For a time, people from outside the community sought out these potential deposits of lead for economic purposes. The status of the land has the potential to change the status of those owning, living, and using the land. It is the geology and “The landscape’s very materiality [that] shapes individual and social behavior, practices, and processes,” (Mitchell 43) seen even on a small scale at Macleish. Throughout the history of Whatley, the geologic features below us have informed our interactions with the land and with each other, creating an intricate relationship between land use, economics and status.

Works Cited:


“Map of Whately.” 1871, map, Whately Historical Society.


