

Hamilton, Montana

GPHY 425 Midterm Project

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INTRODUCTION:

Hamilton is a small city nestled deep within the Bitterroot Valley in Ravalli, Montana. The town sits at an elevation of 3570, bordered on the West by the towering Bitterroot Range and the lower-lying Sapphire Mountains on the East. Hamilton sits on the Bitterroot River, a vital water resource for the valley. The Bitterroot Valley is around 45 miles in length and 7 in width, stretching from Missoula in the North to Lost Trail Pass and the Idaho border in the South. The Bitterroot Valley is the ancestral homeland of the Salish and Flathead Indians, who have been living in the region, and using the valley for its natural resources for tens of thousands of years (Montana. Indian Education Division 2009).

The land use of the Bitterroot Valley and the little town of Hamilton has been shaped by centuries of change, starting with the story of native peoples, bison, and horses. And then by explorers, missionaries, and emigrants. In the 1800s, mining, logging, and agriculture altered the topography, and Marcus Daly founded the town. By the 1900s, disease had struck, altering the economic focus and shifting the outlook of the Bitterroot region. This paper will touch on the physical aspects of the Bitterroot Valley, how its geologic past has shaped what the town became, and how land use has changed since the arrival of the human species.

Topography:

The character of Hamilton as a town is greatly influenced by the valley it sits in and the mountains that surround it. The north-south trending mountain ranges are a part of the Northern Rockies. The Bitterroot Mountains are strikingly uniform when viewed from the valley, with steep forested canyon walls that take off directly West and perpendicular to the valley floor. The range is littered with the remnants of glacial carving and deposition, aretes, cirques, and glacially sculpted valleys and lakes. Although many perennial snowfields persist at higher elevations, no active glaciers exist in the mountain range today. The crest of the mountain range is approximately 10 miles west of the central valley ((us), McMurtrey, and Swenson 1972).

The Sapphire Mountains are far more weathered than the Bitterroots. The majority of the range is below 8500 feet, with Fox and Congdon Peaks having altitudes of 8786 ft and 8898 ft, respectively. Moreover, unlike the neighboring range, the Sapphire Mountains are intersected with an extensive network of roads initially built for logging ("Sapphire Range" n.d.).

The Bitterroot River drains around 2800 square miles of land area ((us), McMurtrey, and Swenson 1972). Between Florence and Darby (near the headwaters and the convergence point between the Bitterroot and the Clark Fork Rivers), the Bitterroot is joined by five major tributary streams from the Sapphire Mountains and twenty from the Bitterroot Range. The city of Hamilton receives on average 13 inches of precipitation a year, while surrounding mountain ranges within Ravalli County receive up to 30 inches, the majority of which comes in the form of snowfall (Tilly et al. 2020).

A unique and impressive feature is the large and well-preserved terraces left by Glacial Lake Missoula that incise the valley walls and show evidence of a past lake in the Bitterroot Valley that coincided with dates of the last ice age.

Geology:

The oldest rocks in the Bitterroot Mountains are Precambrian in age ((us), McMurtrey, and Swenson 1972) and were uplifted initially with the Idaho Batholith, following the subduction of the Farallon Plate around 90 to 70 mya. The exact age and origin of many of these uplifted basement rocks are still unknown, but there is evidence to suggest that they could be from the Belt Group, which would make them around 1.5 billion years old. It is believed that at some point, the rocks that make up the Sapphire Mountains were originally uplifted with the granite batholith but slid off the top of the range, eventually creating the Sapphire Range. Around 50 million years ago, a period of active volcanism occurred, and as magma rose upwards towards the crust, the deformation and lifting could have caused the block that now makes up the Sapphire Range to Slough off. There is a high level of metamorphism in these rocks, and as the massive mountain range spread, it collapsed at an interface of a weaker mylonite. Extensional forces likely carried the crest of the Sapphires nearly 30 miles East. (Thomas 2021).

The homogenous nature of the East sloping uplifted dome caused streamflow to fall straight downhill to the East off of the Bitterroots. This allowed for fluvial erosion of the range in an East-West trending direction, perpendicular to the slope of the original dome, and parallel with every other drainage in the range. As a result, the canyons in the Bitterroot Mountains on the East side of the range are remarkably straight, all point in similar directions, and are relatively uniform. During the Ice Age, these canyons filled with large swaths of ice and glaciers scoured out U-shaped valleys and almost completely covered the range, leaving only the highest peaks visible above the ice. The valley began to fill up with alluvium, and Hamilton marked the threshold point in elevation that dictated glacial behavior. North of Hamilton, glaciers coming from the Bitterroot Mountains would terminate before they reached the valley floor, and the result would be sizeable glacial outwash fans at the mouth of every canyon. However, South of Hamilton, the glaciers were high enough up to extend onto the valley floor, leaving moraines and traces of glacial till in the Bitterroot Valley that can still be seen today (Thomas 2021). The Bitterroot Range had some of the lowest Equilibrium Line Altitudes out of any Pleistocene glaciers studied in Montana, as low around 5250 feet (Locke 1990) due to the range being a barrier to moisture coming off the Pacific.

An arm of Glacial Lake Missoula ran far into the Bitterroot Valley, covering present-day Hamilton and stretching as far as Conner. At its highest, this lake reached shorelines of 4150 feet, and Hamilton would have been under 580 feet of water. This period coincided with glaciers coming out of the Bitterroot Range. Some of these glacial tongues would have reached the water, calving into the glacial lake, and periodically draining in large-scale outburst floods caused by repeated floods collapse of the Ice Dam near Clark Fork River. (Thomas 2021). The last significant period of glaciation is dated around 12600 years ago, during the little ice age. It is believed Paleo-Indians of the Clovis could have entered the Bitterroot Valley for the first time just after the ice began to retreat but did not settle in the area until much later (Richey 1999).

Ecology:

The Bitterroot Valley and the surrounding mountains support large populations of ungulates and wildlife. According to Craig Jouronnais, the state game manager, there are 10 to 12 wolf packs that inhabit the region and a minimum of 45 to 65 wolves. The elk population dropped to around 3000 in the 1970s but has steadily climbed back up to 6000 with increased regulation on hunting (Chadwick 2010). Nearly 40 percent of Ravalli County is forested, mainly composed of conifer-dominated systems or a combination of Engelmann spruce and alpine fir (Tilly et al. 2020).

HISTORY:

Early Native History:

The native history in this region of Montana is a long and complex story and one that is often overlooked and forgotten. The first Native people thought to live in Montana were Paleo-Indians during the Clovis period. They were a nomadic group of bison and mammoth hunters, who roamed the open grasslands of the plains near White Sulphur Springs, and East of the Crazies. This was during the glaciation of the Bitterroot, where the valley would have looked vastly different and almost entirely uninhabitable compared to today. It is unclear whether the people from the Clovis Period or the animals they were hunting had ever entered the Bitterroot Valley (Richey 1999).

The Clovis people disappeared entirely from Montana as the climate began to warm following the little ice age. After this, there is a long stretch with no recorded history of Native People living permanently in the valley, although there were other native groups regionally, and it was used as a transient travel corridor. There was a lack of bison in the Bitterroot compared to the abundant herds that lived on vast plains in almost every other direction. Bison controlled most of the regional lifestyle and travel patterns of the people living during this time, and the lack of bison can be used as a proxy to explain the lack of people. The Salishan tribes from along the Columbia River in Eastern Washington walked through the Bitterroot every year towards the Eastern bison hunting grounds. This travel route was coined the "Road to the Buffalo," with Shoshone rock art discovered near Lost Trail Pass and several other evidence of human travel but not permanent settlement (Richey 1999). Around 2000 years ago, a prominent spike in charcoal deposits in the varve of a bog was discovered, indicating that controlled low-intensity aboriginal burning must have occurred. Burning was also backed up with historical accounts of seeing burn evidence as early explorers came through the valley (Richey 1999). The primary theory that explains the reasoning behind this is that Native peoples burned forests in favor of open grasslands and healthier forests. Grasslands would have also given them an advantage in terms of being able to see potential enemies across the valley from further away. (Richey 1999) points out that the burning in the valley and the creation of more extensive grasslands could have also been an attempt to attract bison.

There is no exact timeline for when native people permanently moved into the Bitterroot Valley. Nevertheless, historians know that the valley became a sort of respite for the Salish (also known as Flathead) peoples, who came because the lack of bison made it far less likely they were going to be attacked by the Blackfeet of the Shoshone. They still made a journey to go bison hunting every year in the Great Plains. The Salish was a very nomadic people group, and their lifestyle involved often traveling great distances out of the Bitterroot Valley based on the season. From April and May through the summer, the Salish stayed notably more centralized in the valley, with their main camps near the present-day town of Stevensville. They gathered wild berries, plants, and the bitterroot flower, which is named after the valley and mountains. In the fall, ungulates were hunted, and whitefish could be caught in the Bitterroot River (Richey 1999). See (Figure 1) for a rough estimate of where native people groups lived during this time and where Native Reservations are today.

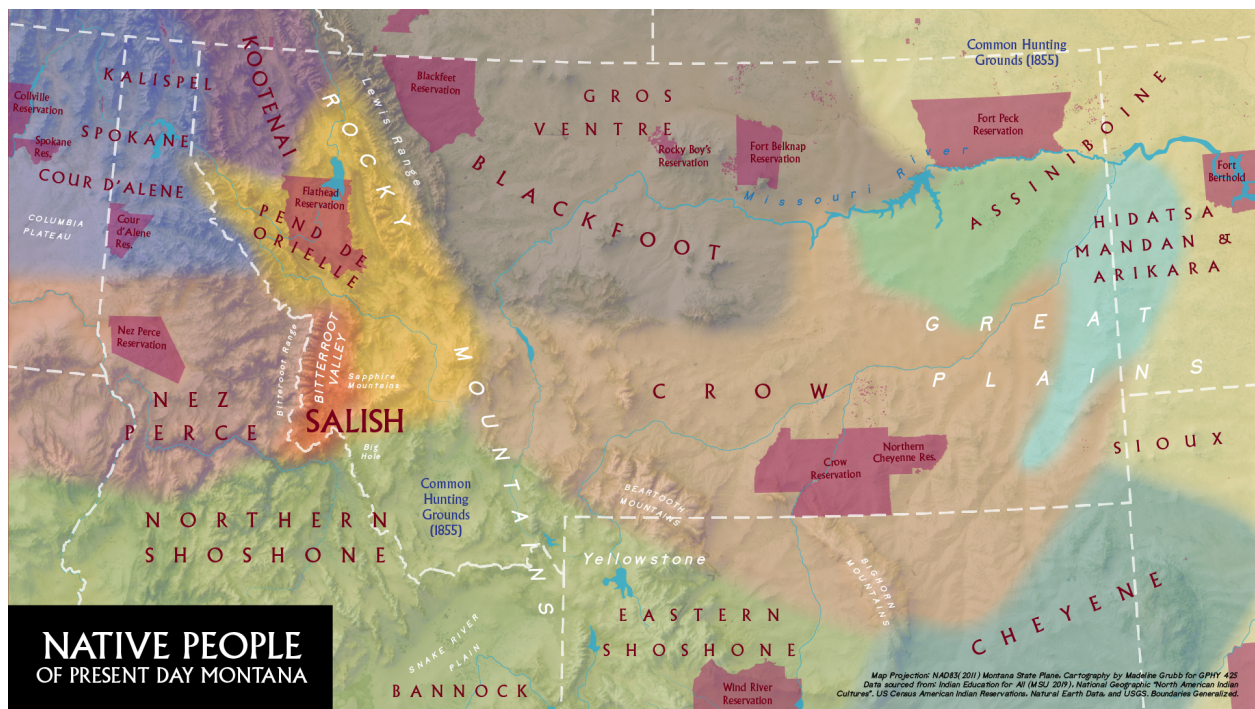


Figure 1: Native People of Present-Day Montana Map, Madeline Grubb 2022.

The 1700s:

Salish legend tells that the tribe stole their first horses from the Shoshone in 1730. The arrival of horses was brought on by the need to be more efficient in the Bison hunt and potentially as a defense tactic or upper hand over other local tribes. The presence of horses in significant numbers was the most considerable alteration on land-use change and social structure in the Bitterroot during this century. Later on, when Lewis and Clark came through the valley in 1805, Clark noted the Salish had 33 lodges at the Southern end of the valley near present-day Hamilton and at least 500 horses, according to Clark (Devoto 1805). The Bitterroot Valley was dubbed "Horse Valley" by Clark (Ibid, p 234). During this period, the ability to ride instead of

walk to the bison hunting grounds allowed the Salish to travel swiftly, hunt for longer, and return home with more meat back to the Bitterroot. The valley was also the ideal location to raise horses, a little further West and far more protected from the brutally cold winters on the Great Plains. The Salish horses' superiority compared to other tribes caused great rivalry and led to a culture of stealing and murder between tribes for this precious resource. The Salish also continued the practice of controlled burning in the Bitterroot to allow their horses plenty of open space to forage (Richey 1999). See (Figure 2) for a map of Native place names for select locations in the Bitterroot Valley.

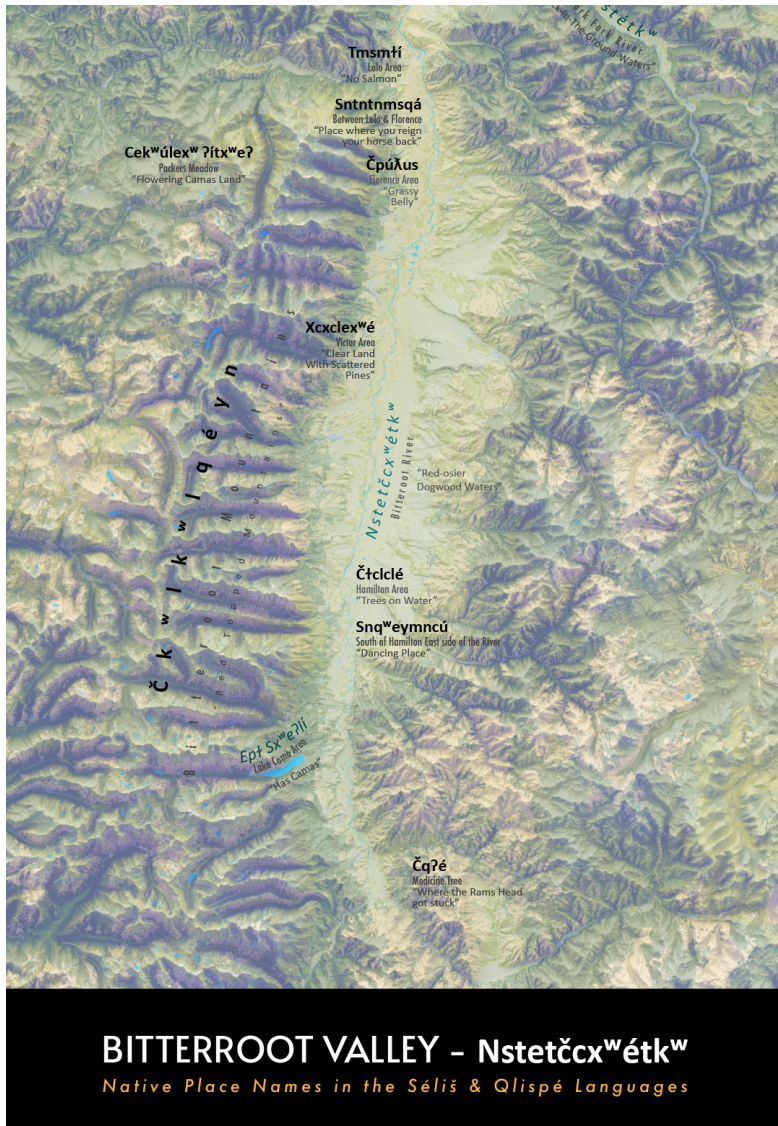


Figure 2: Native Place Names of the Bitterroot Valley Map (rough draft) Madeline Grubb 2022.

The 1800s:

In 1805 Lewis and Clark came through the Bitterroot Valley on their journey westwards, but only briefly (Figure 3), and this marked the first time the Salish had any recorded contact with white men. Between 1812 and 1820, Ignace Lamoine and a group of Catholic Iroquois under the

guidance of David Thompson came through the Salish territory. They settled in the Bitterroot after being displaced from the Montreal region (Buckley 1989). This group of Iroquois brought a new set of ideas and knowledge about what was happening to Native peoples on the East Coast, ideas that the Salish were wholly unfamiliar with. The Salish, whose livelihoods had primarily been dictated by horses for 100 years, and knew nothing of Indian Reservations or the Bible, were receptive to listening to the newcomers in the valley. The Iroquois described the Jesuits as incredibly holy black-robed figures who brought peace and extraordinary powers. This sounded like a splendid way to restore peace and possibly gain supernatural powers to the Salish, who were constantly in a state of warfare with their neighbors over horses. The Salish's own religious beliefs likely fed into their understanding of Catholicism. They had strong beliefs of good and evil and a sense of great spirituality pre-white man, and the teaching from the Iroquois made them even more receptive to the traditions of the Catholic Church (Richey 1999).

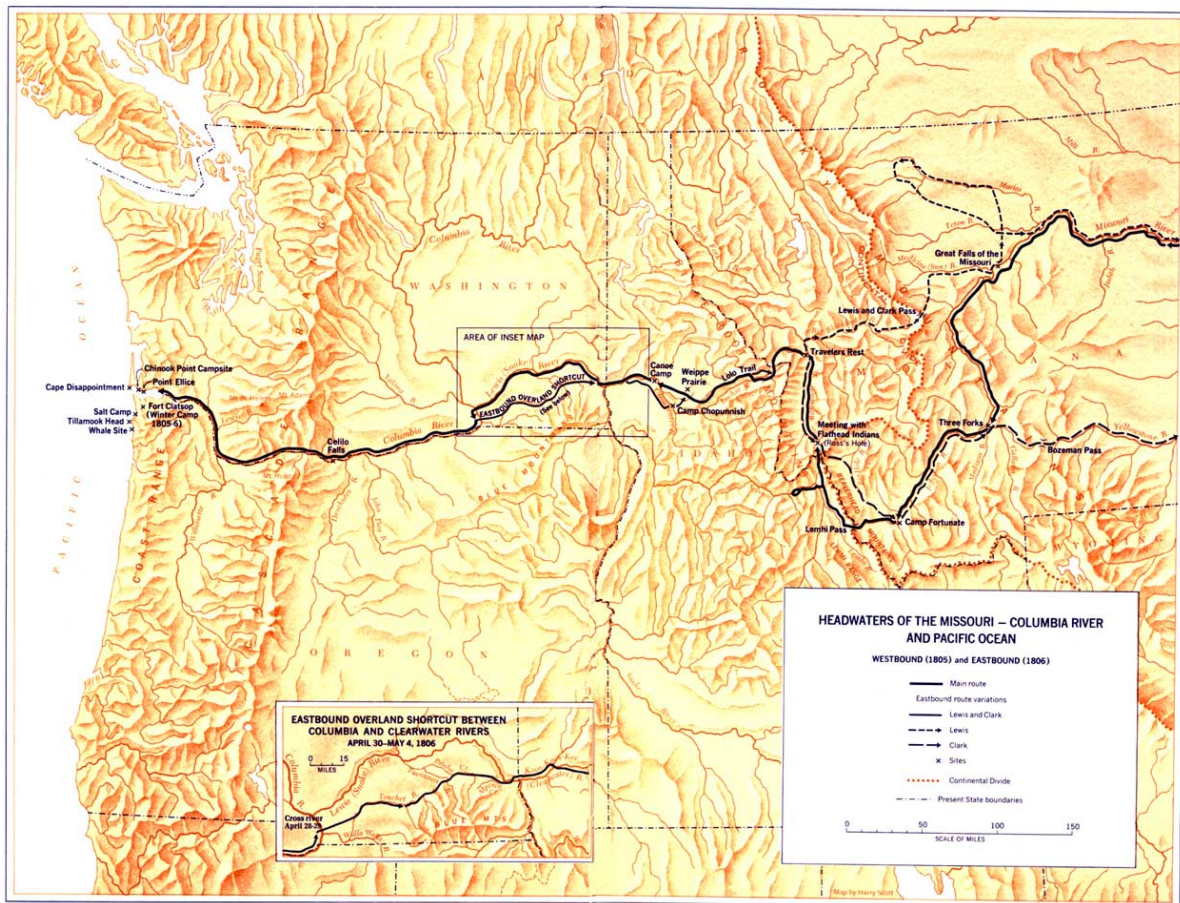


Figure 3: Lewis and Clark 1805-1806 Journey West Map - National Park Service

By the early 1830s, A small group of Salish and Iroquois began to seek Jesuit priests to live among them. Father DeSmet responded to this request with a very targeted strategy of Catholic conversion for the tribe. He and his small party traveled West in 1841 and founded a Jesuit Missionary in the Bitterroot Valley near present-day Stevensville, around 20 miles north of Hamilton. DeSmet hoped to replicate in the Bitterroot a conversion strategy that had been

successfully pulled off colonizing isolated native people in Paraguay. St Mary's Reduction was designed like a town, entirely fenced, with its own agricultural and cattle lands. DeSmet's goal was to isolate the Salish as much as possible, but this was in direct opposition to their traditional lifestyle of travel and bison hunting. By 1846 this dichotomy came to a head, and there was resentment building among the Salish against the white missionaries. After the "Black Robes" arrival, the Salish began to split into two groups, one who lived a traditional hunter-gatherer lifestyle and another who began to tend animals and crops and started farming in the Missionary village.

By the 1850s, there was great unrest in the valley, growing distrust, widespread poverty of Native Salish people, and the ever-increasing white settler. Salish populations had dropped from 1840 to 1849 from nearly 800 to a mere 350. In 1841, John C Fremont described the "Oregon Trail" running through the Bitterroot Valley. Westward expansion and this access to information led many emigrants to travel this route, up to five thousand annually by 1847 (Richey 1999). In 1850, after a largely unsuccessful attempt to convert any Salish, the St Mary's Missionary was sold to John Owen, a white trader, for \$250, who established it as Fort Owen (Richey 1999).

By 1857 the Salish had a herd of nearly 4000 horses, nearly ten horses per person as estimated by John Owen (Ibid pg. 216). The ability to travel that the horses provided to the Salish made them a transient people in the Bitterroot Valley, always coming and going and never seeming settled. This was used as justification for the land grab that occurred as white settlers began to arrive in great numbers. Because the Salish had maintained the valley for their horses to graze, to the white settlers, it looked like a prime place to raise cattle and tend to agriculture. The white settlers' perception of Native people is incredibly ironic and blatantly hypocritical. While the Salish have their roots in the Rocky Mountains for potentially 1000 years, the white man did not settle in the Bitterroot until the 1840s, and within 20 years were throwing out wild accusations against the Indians, even though the Salish had shown them nothing but guidance, compassion, and even an initial eagerness to learn from the Missionaries and Settlers. In 1860, John Owen's diary states, "Indians are Stealing right and left. Pend d'Oreilles, Nez Perces & Flatheads, all stealing." Several days later, he added, "Annoyed very much by Indian visitors; I will not be sorry when they leave the valley" (Dunbar pg. 214). This is a very blatantly backward perception of what was happening in the Bitterroot Valley.

By 1860, Fort Owen acted as the center of trade and commerce for hundreds of miles in either direction. Several miles East of Hamilton, Gold was found in the Sapphire Mountains at "Gold Creek." The first census was also conducted this year, although only white settlers were counted, with Native people counted only if they were married to white men or if the white men had mixed children. Two hundred sixty-one people of European Descent were counted (1860 Census).

In 1855, with the prospect of a railroad route through the Bitterroot, negotiations were made with the Salish, Upper Pend d'Oreille, and Kootenai tribes about relocating them onto one central Indian Reservation "under their own accord." However, up until the 1870s, no survey had been done on where this land would be. In November of 1871, when the US government wanted to

get rid of the Salish from the Bitterroot Valley for good, but 60 of them refused to leave, the congressman and future president James Garfield forged the signature of the Salish's Chief and had them forcibly removed (Richey 1999). It was a blatant and utterly unethical act of fraud by the American Government against the Salish.

The latter portion of the 1800s in the Bitterroot was primarily dictated by mining, the railroad, and logging. Hard rock mining in Butte led to an increased need for timber extraction in the next several decades. By 1870 there were two sawmills in the Bitterroot Valley, both between Hamilton and Victor on the West side of the River.

Things began to change for Hamilton with the arrival of "Copper King" Marcus Daly, who came to the valley in 1875. Daly made his fortune Hard-Rock mining in Butte and Smelting in Anaconda. Not only does this date mark the initial settling of Hamilton as we know it, but also a turning point for the Bitterroot Valley as a whole. After 1875, logging became more and more prominent on a more significant economic scale. With the opening of the Western Pacific railroad in Missoula and the commerce it brought to the Bitterroot and the notion that another railroad would open soon in the shadow of the mountains, real estate prices skyrocketed. In 1890, Daly had the town of Hamilton plotted by James W. Hamilton. A large sawmill and dam were built on the North end of town (Figure 4), and Daly's farm began raising livestock in great numbers and employing hundreds of people in the area. By 1893, when Ravalli County was incorporated, Daly owned nearly 22,000 acres of the valley and incorporated all the land into the Bitterroot Stock Farm. He alone paid one-sixth of the property tax for the entire county. The town of Hamilton became a project of sorts for him. He made sure Hamilton would be the county seat and have all the necessary services and businesses for a thriving small town. Daly also instigated the "Big Ditch," an irrigation system that led from Lake Como through his farm property past Hamilton to the drier easterly portion of the valley.



Figure 5: Chief Charlo 1870 - Unknown Photographer

The 1900s:

The 1900s in the Bitterroot Valley were largely dictated by the introduction of disease and the economic intervention that followed. There was also a rapid increase in orchard trees, with just over 11,000 in 1890 (the orchard trees were counted in the census), and by 1900, there were

302,360 apple trees alone (Coon 1926). Marcus Daly died in 1900, and the local newspaper published a letter written by R. Parkhurst "Mr. Daly was the great transformer of the Bitterroot valley. I cannot enter into details. It is only by comparing the condition of our valley now with what it was when Mr. Daly came to it that we can realize the surprising changes that have taken place since that time. To a far greater extent than anyone else in our valley, he has made the "desert to blossom as the rose." The 1900 census showed the valley now had 7822 residents (Coon 1926). Between 1904 and nearly 1950, logging in the Bitterroot Valley came to a halt after nearly all of the accessible timber had been removed, and it no longer made economic sense for the mills (Richey 1999).

Bitterroot Valley Irrigation Company was re-incorporated in 1906. They were the leading force behind the subdivision and sales in the valley for the next seven years with the idea of "vacation living." The idea they marketed was a summer escape in Montana where one could also make money off of owning apple orchard lands. A resort-style property constructed south of Hamilton was geared towards wealthy Chicagoans. Oddly enough, they hired Frank Lloyd Wright as an architect. The valley became a prized retreat for the rich, at least in theory; the advertising campaigns that came out of this time vastly exaggerated the remaining natural resources (Richey 1999). As great as the Bitterroot Valley sounded at the time, several things happened that changed the course of its history.

Firstly, in 1900 fever infection outbreaks began popping up, a deadly disease of unknown origin geographically centered on the West side of the Bitterroot River. Four out of every five who contracted it ended up dead. The theory of the time was that it came from drinking snowmelt in the spring coming off the Bitterroot Range ("History of Rocky Mountain Labs (RML)" n.d.). In 1901, the Montana State Board of Health was founded, and their very first initiative was to investigate this mysterious disease. In 1906, Dr. Howard Ricketts visited the valley every summer and was able to show that the disease was transmitted by the Rocky Mountain Wood Tick (*Rickettsia rickettsii*). Ricketts died soon after; of Typhus while working in Mexico, but many others continued the work. Clarence Birdseye, a student working for the US biological Survey, collected 4,500 ticks in the valley. Funding for the research of this spotted fever came from the state and the federal government, and Dr. Robert Coolery developed a strategy that involved ranchers in the valley to bring their herds to a centralized location and have them swim through a vat of Arsen. They were under threat of quarantine to do this, which caused distrust between local ranchers and the government. By 1913, both working vats were destroyed, one by sledgehammers and another by dynamite ("History of Rocky Mountain Labs (RML)" n.d.).

The first vaccine was tested against the disease, and by 1921 an abandoned schoolhouse on the West side of town was sequestered by the US Public Health Service and dubbed "The Schoolhouse Lab." When it was announced that a proper lab was to be built in Hamilton, there was public outcry over its planned location on the East side of the Bitterroot. Until this point, the disease had only ever been detected on the West side of the River. Residents worried about ticks escaping the laboratory and infecting the town, especially since five researchers had already died of the disease. A lawsuit was filed, and to appease the townspeople a moat was constructed around the lab with the idea that ticks would not be able to swim across. ("History of

Rocky Mountain Labs (RML)" n.d.). This building would become Rocky Mountain Laboratories, and the work that would be conducted was vital to Hamilton's economy going into the 2000s.

At the same time as Rocky Mountain Fever was hitting residents in Hamilton hard, a different type of plague was attacking the orchards. Between 1912 and 1914, nearly half of the apple trees in a test site near Victor were killed by a "severe blight epidemic," according to the Montana Agriculture Experiment (Station 1921). By 1914, Bitterroot Valley Irrigation Company filed for bankruptcy. Much of this failure can be attributed to the inefficiency of irrigation and uncertainty of water. In 1916, after the valley's lowest water season, a brochure was printed on how Bitter Root Valley Lands could be sold for Disposal (Richey 1999). The presence of the wood tick and the presence of disease made these properties increasingly hard to sell ("History of Rocky Mountain Labs (RML)" n.d.).

All these factors led to an economic Depression in Hamilton and the valley that lasted until the Second World War (Richey 1999). Funnily enough, the reasons Hamilton was struggling in the first place also led to its bounce back. During WWII, there was a shortage of vaccines, and in 1937, the lab founded for tick research became part of the effort to fight spotted fever, Typhus, and yellow fever. RML became a "National Vaccine Factory" and received funding from the federal government ("History of Rocky Mountain Labs (RML)" n.d.). Blueprints and images of some of these initial buildings are shown in (*Figures 6 and 7*).

Hamilton saw many shifts during this period. Livestock production soared from the 1930s to the 1950s, and this switch to meat production, which was in high demand, allowed some wealth to return to the valley. In 1964, the valley saw its peak in the acreage of agricultural lands, and between then and 1992, there was a 53 percent drop in apple orchards, at the same time as the population doubled. Subdivisions began to pop up, replacing agriculture and grazing lands in many places.

The 2000s:

The 2000s have ushered in a new type of change in the Bitterroot Valley. Widespread development and the movement of many new residents into the valley have been occurring quickly for the last several decades. In 2000, only 3,705 people lived in Hamilton. By 2010, 4348, and in 2020 5171 (US Census 2000, 2010, 2020). Recreation and tourism in the valley are both on the rise and flourishing. Hamilton's proximity to Missoula and the college town culture that comes with it also allows for more flux of people through the valley. The Bitterroot Valley was hit especially hard with fires in the 2001 and 2016 seasons. In 2001 a dry thunderstorm ignited over 70 fires in the Bitterroot Mountains overnight. Several of these small fires grew into complexes, and overall, 170 structures and 70 homes had been burned (Halvorson 2002). In 2016, the Roaring Lion fire led to 600 homes being evacuated and over 13 square miles burned just south of town ("Montana Wildfire Roundup for August 8, 2016" 2016).

To better understand the perspective of a Hamilton resident and the spatially intertwined issues that the town is up against today, I interviewed a good friend of mine born and raised in Hamilton, Grace Kemp (*Notes from the interview attached in the appendix*). While only

representative of one person's experience, her story is also an incredibly insightful look into the town itself, and much of what she said reflects what I have been researching. Grace's parents and her grandparents moved to Hamilton from Helena, MT, in 2000, right before she was born. Her father had gotten a job in the timber framing industry, and they were able to rent a house on Skalkaho Road for several years before purchasing a house in downtown Hamilton, a few blocks off the main street. Grace told stories of her neighbors, the sweet retired couple, whose 100-year old mom lived with them and whom Grace called Grandma growing up. The native guy with the southern wife who lived on the corner house and had a totem pole in their backyard; A single mother who smoked a pack a day and whom Grace adored. To Grace, Hamilton still has that small-town feel, and it was clear everybody really cared for each other. She really seems to love the Bitterroot Valley and the town where she grew up and will be living over the summer working in a management position on a local farm.

When asked about the most significant change in land use over the last 20 years, Grace cited the rapid development and millionaires with lots of money moving into the valley. She said that if her family had not bought their house when they did, they would not be able to afford to move there now. The cost of living is high, and workers in the service industry struggle to make ends meet. Both her parents have bounced around jobs, from being a realtor to a city council member to physical therapy. Her grandparents live near the end of Hamilton Heights Road. The 83-acre ranch property (Montana Cadastral) just downslope of their home (which Grace mentioned as being her favorite place in the entire valley) just got bought out by a prominent developer thinking about building a subdivision. Talking to Grace, I got the sense that the long-time residents of Hamilton understand that the area is changing quickly. In order to keep up, the city has put into place many measures of restricting development.

Rocky Mountain Laboratories, Grace credited as being both the largest economic and cultural driving force in the town of Hamilton. It seems to be a part of everyday life there. Economically, it employs nearly 10% of the town (RML About Us). Many High School students get jobs there when they are young, do data entry, and gain a world-class science education at one of the nation's highest level security research labs. One rumor I had heard before about Hamilton was that a level 4 lab was placed there because in the unlikely case that a deadly pathogen did escape, there was only one road in and out of town, and the whole town could be quarantined to curb any spread. Grace confirmed that she also had this understanding while growing up but had never found any evidence to prove this point. She had heard this from her mom's friends who worked at RML. The lab also brings in a worldwide team of scientists and cultural diversity that a small Montana town would not likely see otherwise.

CONCLUSION:

The ironic thing about Hamilton and the Bitterroot Valley is that it has seen these cyclical geographic changes, where recent history is lost but quickly replaced by the new reality. The land and humans have co-evolved, and these spatial relationships have changed since Native People first settled in the Bitterroot Valley thousands of years ago. The Salish were originally stewarding the forests and burning grasslands for their horses. This burning, in turn, had two significant effects. First, better horses lead to more warfare then increased poverty of the Salish,

and better grasslands lead to white people stumbling upon the Bitterroot Valley and seeing a great place for agriculture and grazing of stock. This influx of homesteaders led to the Salish being pushed further and further out of the valley. When they stopped using controlled burning, the land became far more arid, the water dried up, and the reason why the valley had initially been so attractive to agriculture ceased to exist. This settlement and destruction of natural resources happened concurrently when Rocky Mountain Spotted Fever was widespread, which initially led to an exodus of farmers and ranchers and the disposal of lands but eventually became one of Hamilton's main economic drivers employing a large portion of the town. Both of the potential reasons why this lab is placed in Hamilton relate to geography. First, you have the physical geography of this disease; it made sense in the early 1900s to study ticks at the spread site. And secondly, the physically isolated town is surrounded by significant orographic barriers, with only one road going through the town.

In the coming decades, Hamilton will likely experience many of the same changes due to climate change and population growth as other towns across the Mountain West; more drought, more wildfires, more people, and less water. Nevertheless, Hamilton is resilient, the Salish people, who still know this valley to be their ancestral homelands, are resilient, and the mountains and landscape itself are resilient. Hamilton will hopefully continue to thrive in the next 100 years, with increasing recreation opportunities, and people who care deeply about protecting the valley and its natural resources.

The key thing I learned about Hamilton, was just how fragile the Valley is to change. I really had no previous conceptions about the Bitterroot, and learning about the Native history of the valley and Montana as a whole was very cool. If I could do it again, I would likely try to not get as focused on the details, but rather synthesize the history as a whole, how it relates to geography, and get less bogged down with all this unnecessary information. This project was a ton of work, and it was very time-consuming to sift through that much data for such a long time span. Ideally, if the requirements were simplified, it would be easier to focus on a specific topic of interest within the community and it would be a less time-consuming assignment.

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